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# FACTOR ASSOCIATED WITH THE USE OF PROSTHESIS : CASE STUDY OF DISABLED PERSONS WHO RECEIVED PROSTHESIS MADE BY MATERIAL IN THAILAND AT TRANG PROVINCIAL HOSPITAL

NATTEE BOONJAN

With compliments
of
บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS (REHABILITATION
SERVICE FOR PERSONS WITH DISABILITIES)
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**FACTORS ASSOCIATED WITH THE USE OF PROSTHESIS : CASE STUDY OF DISABLED PERSONS WHO RECEIVED PROSTHESIS MADE BY MATERIAL PRODUCED IN THAILAND AT TRANG PROVINCIAL HOSPITAL**

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4236184 RSRS/M: MAJOR: REHABILITATION SERVICE FOR PEOPLE WITH DISABILITIES ; M.A.( REHABILITATION SERVICE FOR PEOPLE WITH DISABILITIES )
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Disabled persons with leg amputations, who have received prostheses for daily usage purposes, have different behaviors in using their prostheses. There are many factors involved. More than half of all disabled persons in Trang province have used their prosthesis. Therefore, these people were chosen as the study group and the purposes of this survey research are: to study disabled persons behaviors in using their prosthesis and to find out the factors associated with the use of prostheses completely produced in Thailand.

The data for this case study was collected from disabled persons who had received services at Prosthetic and Orthotic Department, Trang Provincial Hospital, during the period of 1997-2000. The total number of disabled persons in the study group was 169. The data was then analyzed and presented using the methods of: multivariate analysis, average Chi-square test and logistic regression.

Multivariate analysis and logistic regression were chosen as the methods for analyzing and testing the data, respectively. According to the this model, it was found that the disabled persons who have the highest rate of prosthesis usage are: those who are younger than 23 years old, those with disabilities caused by accidents, those disabled for 9 years or more, and those with higher satisfaction level (mean or more) in the convenience of use of the prosthesis compared to those who have not used any prosthesis. Various factors relating to the use of prosthesis were compared by using the Bivariate Analysis and Chi-square test methods. From that comparative study, it was found that the factors associated with the use of prosthesis with statistical significance at the level of 0.01 and 0.05 are: gender, age, duration of disability, causes of disability, mental environment, safety, convenience of use, and maintenance. All other studied factors are not associated with the use of prosthesis at all.

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นัทธี บุญจันทร์ : ปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียม : ศึกษาเฉพาะคนพิการที่มารับขาเทียมที่ผลิตจากวัสดุภายในประเทศ ในโรงพยาบาลตรัง (FACTORS ASSOCIATED WITH THE USE OF PROSTHESIS:CASE STUDY OF DISABLED PERSONS WHO RECEIVED PROSTHESES COMPLETELY PRODUCED IN THAILAND AT TRANG PROVINCIAL HOSPITAL ) คณะกรรมการควบคุมวิทยานิพนธ์ : พิมพา ขจรธรรม , Ph.D.,วิไล กุศลวิศิษฏ์กุล , M.Sc. ,อรอนงค์ สงเจริญ , M.Sc.,ปิยะวิทย์ สรไชยเมธา ,M.D. 109 หน้า ISBN 974-04-1922-4

คนพิการที่ถูกตัดขา และได้รับขาเทียมเพื่อนำไปใช้ในการประกอบกิจวัตรประจำวัน ซึ่งจะมีความสัมพันธ์กับการใช้ขาเทียม ในจังหวัดตรังมีคนพิการมากกว่าครึ่งหนึ่งที่ใช้ขาเทียม ดังนั้นการวิจัยเชิงสำรวจนี้มีวัตถุประสงค์เพื่อ ศึกษาพฤติกรรมการใช้ขาเทียมและศึกษาปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียมที่ผลิตจากวัสดุภายในประเทศ

การศึกษาครั้งนี้ใช้ข้อมูลจากผู้รับบริการขาเทียมที่ผลิตจากวัสดุภายในประเทศ ที่มารับบริการจากหน่วยงานกายอุปกรณ์ โรงพยาบาลตรัง ตั้งแต่ปี พ.ศ. 2540 - 2543 ได้คนพิการจำนวน 169 คน มาวิเคราะห์แล้วนำเสนอข้อมูลด้วยค่าร้อยละ ค่าเฉลี่ย ไคสแควร์ และสถิติถดถอยแบบโลจิสติค

ผลการวิจัยพบว่า คนพิการที่ใช้ขาเทียมมากที่สุดเป็นคนพิการที่มีอายุน้อยกว่า 23 ปี มีสาเหตุของความพิการจากอุบัติเหตุ มีระยะเวลาที่พิการตั้งแต่ 9 ปีขึ้นไป และมีความพอใจสูงกว่าค่าเฉลี่ยต่อความสะดวกสบายต่อการใช้ขาเทียมมากกว่าคนพิการที่ไม่ใช้ขาเทียม จากการเปรียบเทียบปัจจัยต่างๆ ตามพฤติกรรมการใช้ขาเทียมด้วยเทคนิคการวิเคราะห์แบบสองทาง(Bivariate Analysis ) และทดสอบด้วยสถิติไคสแควร์ พบว่า ตัวแปร เพศ อายุ ระยะเวลาที่พิการ สาเหตุของความพิการ สภาพแวดล้อมทางจิตใจ ความปลอดภัย ความสะดวกสบายต่อการใช้ และการบำรุงรักษา มีความสัมพันธ์กับการใช้ขาเทียมของคนพิการอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 และ 0.05 ในการวิเคราะห์ปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียมโดยใช้เทคนิคการวิเคราะห์แบบพหุ(Multivariate Analysis) และทดสอบด้วยสถิติถดถอยแบบโลจิสติค โดยนำตัวแปรที่มีความสัมพันธ์จากการทดสอบด้วยสถิติไคสแควร์ ทุกตัวเข้าไปในแบบจำลองพร้อมๆ กัน พบว่า อายุ ระยะเวลาที่พิการ สาเหตุของความพิการ และความสะดวกสบายต่อการใช้ มีความสัมพันธ์กับการใช้ขาเทียมของคนพิการอย่างมีนัยสำคัญทางสถิติ ส่วนตัวแปรที่เหลือไม่มีความสัมพันธ์กับการใช้ขาเทียมของคนพิการ

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# CHAPTER I

# INTRODUCTION

## Background and Importance of problems

Nowadays, advances in various fields of knowledge especially in the field of "Medical Science" have allowed the development of new techniques, methods, medical supplies, accessories, and medicinal equipments; which would be beneficial for the treatment for all patients including those with infectious, non-infectious and traumatic diseases. With these new developments, both acute and chronic patients could now survive and prolong their lives even if some of their organs might not be able to function normally like before, or as we call "the disability". This is the reason why there are so many disabled persons. It is normal for any human being to have the desire to live a long life. Disabled persons are a minority group in our country. The national policies stated in the "Health Care Program" of our "National Economic and Social Plan Vol. 8 (1997-2001)" are to upgrade the conditions of these disabled persons. The targets set for this program are: to increase the percentages of the accessibility to health care services from 70.0% to 100.0%; and to increase the accessible rate to Assitive Technology by 25.0% by the year 2006 (Namkang Wongkesa, 1997).

Based on the studies on Epidemics and Disability in Thailand by Dr. Bunlu Siripanich, et al. (1982), it is found that the rate of the Disabled with arm amputation was 168.8 persons per 100,000 of total population; and the ratio of males and females with this type of disability was 1.58 : 1.00. Approximately 40% of these disabled persons were in the working age and 73% had to rely on their relatives for living. The

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main causes of disabilities are: diseases (42%) and accidents (32%). Based on the survey undertaken by the National Statistic Bureau in 1986, the number of people with arm amputation was 19,990 which increased to 99,500 in 1991.

The result of this survey indicates that there is a significant increase in the number of people with arm amputation. The major reason for this phenomenon might be the new technologies used in various facilities or in a production process (e.g. mechanical equipments) without realizing the importance of safety. This kind of ignorance would lead to the loss of organs either directly or indirectly.Examples of possible causes of the disability are: accidents, traffic accidents and the lacking of personal hygiene, etc.

When someone loses his/her organs especially the limbs which are important for the movement and sensation, he/she would also feel that the body boundaries have been lost. The impacts of the disability on that person would occur in many aspects including physical, psychological and social ones. Murray and Zentner (1975: 299) mentioned that movement is important for any normal individual. People do not only want to be able to move, they also desire the abilities to control these movements. Once people have lost their limbs, the remaining thing is the disability. They could not walk or go places, and would feel that they have less ability to take care of themselves. People with disabilities would, therefore, feel that they are handicapped, and their physical limitation is an obstacle for various kinds of activities such as movement, working, performing routine activities, etc. They would not be able to perform their normal activities or have less ability, be disadvantaged at work, or have less income (Kittiya Ratanakorn, 1988: 25). As a result, they might have to change their roles in their families and society. According to Lambert (1985: 60-61) and

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Huber, et al. (1988: 326), arm or leg amputation affects the abilities in moving, performing routine activities, and socializing with others in the society. The disabled persons are then forced by these effects to adapt to their new life style. Their way of life would be affected as they change from independent persons to dependent persons. Therefore, to enable these people to have a health-promoting life style, even with limited abilities, they must be encouraged to carry on with their lives and take responsibilities in their own rehabilitation without needs to rely on others.

In 1898, experts of WHO defined a word "Rehabilitation" as the mixture and integration of medical, educational, occupational, and social methods; for the purpose of maximizing one's abilities (WHO, 1989: 3)

Rehabilitation is a specified process and its main purpose is to serve individuals with sickness and disability including those with acute or chronic diseases, the elderly, and those in recovering stages of their sickness. They must be encouraged to adjust their physical, mental, social, intellectual, and economical conditions to return to their normal state as much as possible, so that they could help themselves and perform various kinds of work as efficiently as they could; and be able to continue their normal daily lives.

Wall and T-seng (1986: 236) have gathered the studies on the social and economical status of person with disability as a result of the rehabilitation for the disabled, and found that the direct benefits for the disabled are the abilities to find jobs and earn their own income which would reduce their dependence on others or welfare received from the government; and finally they would be more satisfied with their lives. The direct benefit for the government is the increasing amount of tax revenue in accordance with the increasing job stability and income of the disabled. The indirect

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positive impacts would be on the family members of the disabled due to the decreasing difficulties in taking care of them or the decreasing related expenses. Even the employers of these disabled people would indirectly benefit from their rehabilitation.

Rehabilitation of disabled persons Act 1991 was announced in the Royal Gazette on 20th November 1991. The Act was enforced once the responsible Ministries have completed their details of regulations and announced their policies on 11th August 1994. There are 3 Ministries involved, i.e. Ministry of Labour and Social Welfare, Ministry of Public Health and Ministry of Education. The focuses of this Act are on the basic rights of the disabled, i.e. the welfare, the development and the rehabilitation through medical, educational, social methods, and occupational training. Moreover, the rehabilitation Act would assist the disabled persons in solving and eliminating their economic and social problems. The society as a whole would be encouraged to participate in the assistance and the rehabilitation of all disabled people, with the emphasis on the rights of the disable persons and their equal opportunities comparing to others.

The enforcement of the Act is considered as a practical tool with the focus on the improvement of the services and the cooperation of related personnel. The target of this cooperation is the disabled persons particularly their participation and the assertion of their rights. The medical rehabilitation will increase their basic abilities to further acquire the knowledge in other areas e.g. education, occupation, etc; which would be the basis for their roles and social involvement; and as a result, become a valuable human resource who are beneficial for the country.

Current services provided by hospitals in Thailand include nursing care, prevention, support and rehabilitation. Rehabilitative activities have been supported

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since the announcement of the "Rehabilitation of disabled persons Act 1991". Hospitals across the country have provided services of the rehabilitation for the benefits of disabled persons, who are a minority group in the society. Disabled persons are part of the country's resources, but the impairment is an obstacle in their living, their work, and social activities. Therefore, we should encourage and give them opportunities to improve their self-competence, become independent, and live in the society happily.

Prosthetic and Orthotic Departments at provincial hospitals all over the country and the Prosthetic Foundation, under the patronage of HRH. Princess Mother Srinagarindra, have provided services relating to the lower and upper extremities Prosthesis and Orthosis for the Disabled since 1993. These services are free of charge and the prosthesis produced from local materials are well functioned, durable, cheap, and suitable for our tropical climate.

As a researcher working with a lot of amputated patients, I have realized the importance of the prostheses in assisting the Disabled after their amputation; so that they would be able to return to their healthy state and continue their normal, happy lives. However from my own experiences in working with the Mobile Unit of Trang Hospital, I had the chances to make home visits to follow up the treatment for the Sick and the Disabled. It is found that some of the disabled persons have two or three prosthesis at home but they have never used one. They told me that they got these prosthesis from different service providers/clinics according to the advice from their friends and relatives. In my opinion, if the disabled persons do not use the received prosthesis, then our government wastes a lot of money in this matter. I am, therefore, interested in researching about factors relating to the use of prostheses made from

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local materials. At Prosthetic and Orthotic Department, Trang Hospital, a sample group of patients was chosen for this research. These patients are those with lower extremity amputation and had used their artificial legs for at least 3 months.

**Research Questions:**

1. How is the behavior of a disabled person in their prosthesis usage after receiving prosthesis?
2. Which factors are associated with the use of prosthesis?

**Purposes of the study:**

1. To examine the behaviors of disabled persons in their prosthesis usage.
2. To identify the factors associated with the use of prosthesis produced from local materials.

**Hypothesis:**

1. Personal factors are associated with the use of prosthesis. The specific cases of study are listed below:

    1.1. Gender: the use of prosthesis in males and females

    1.2. Age: the use of prosthesis in relation to age

    1.3. Marital Status: the use of prosthesis in relation to the marital status

    1.4. Education: the use of prosthesis in relation to the level of education

    1.5. Occupation: the use of prosthesis in relation to the occupation

    1.6.Duration of disability: the use of prosthesis in relation to the duration of disability

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1.7.Cause of disability: the use of prosthesis in relation to the cause of disability

1.8. Level of amputation: the use of prosthesis in relation to the level of amputation

2. Environmental factors are associated with the use of prosthesis.

3. Prosthesis factors are associated with the use of prosthesis.

**Scope of the research**

This research is the study about the behaviors and the factors associated with the use of prosthesis made from local materials. The sample group of disabled persons chosen for this research are those with amputation at: foot level, ankle level, below-knee level, through-knee level, above-knee level and hip-disarticulated level; excluding those with complex disabilities. These people had received their prosthesis for at least three months (within the period from 1997 to 2000). The prosthesis was provided by Prosthetic and Orthotic Department, Trang Hospital with the support from the Prosthetic Foundation under the patronage of HRH. Princess Mother in the provision of materials and equipments for producing prosthesis.

**Factors used in the research**

I have specified the factors for my research as follows:

1. Independent Variables

1.1. Personal factors: gender, age, marital status, occupation, education, duration of disability, cause of disability and level of amputation.

1.2. Environmental factors: workplace environment, home environment, social environment and psychological environment.

1.3. Prosthesis factors: safety, convenience, and maintenance.

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2. Dependent Variables i.e. behaviors of the disabled persons in using or not-using prostheses.

**Definitions of terms:**

**Received Information**

Information concerning the causes of disability, the rehabilitation, the use of prosthesis, advices on the services, advices regarding disability registration, and hygienic instructions.

**Disabled persons**

Patients with all levels of leg amputation who had come for the prosthetic services at Prosthetic and Orthotic Department, Trang Hospital, from 1997-2000.

**Prosthetic and Orthotic Department**

Prosthetic and Orthotic Department, Trang Hospital, which is opened for the services relating to prostheses and braces

**Disabled persons with 'use' behaviors**

Disable persons who have come for the prosthetic services, and have used their prosthesis in their daily lives

**Disabled persons with 'non-use' or 'abandoned' behaviors**

Disable persons who have come for the prosthetic services, but have not used (avoided or abandoned) their prosthesis in their daily lives.

**Personal factors**

Personal factors and factors relating to the disability studied in this research i.e. gender, age, marital status, occupation, education, duration of disability, cause of disability and level of amputation.

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- Gender: Male or Female
- Age: Age according to calendar year, in round number
- Marital Status: Single, Married, Widow, Divorced or Separated
- Educational level: The highest educational level
- Occupation: Previous jobs (prior to the amputation) and current jobs (after the amputation)
- Duration of disability: The period of time from amputation-stage until the research-month, calculated in round numbers of years and months. The remnants which are more than 15 days are to be rounded up to 1 month.
- Causes of disability: Accidents, diseases or congenital disabilities
- Level of amputation: Levels of amputation according to the anatomical principles: ankle, below-knee, through-knee, above-knee levels and hip disarticulation.

**Environment**

Surrounding environments of the disabled persons i.e. workplace environment, home environment, social environment and psychological environment.

**Prosthesis (Leg Prosthesis)**

Artificial limbs as a substitute for amputation.

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**Conceptual framework**

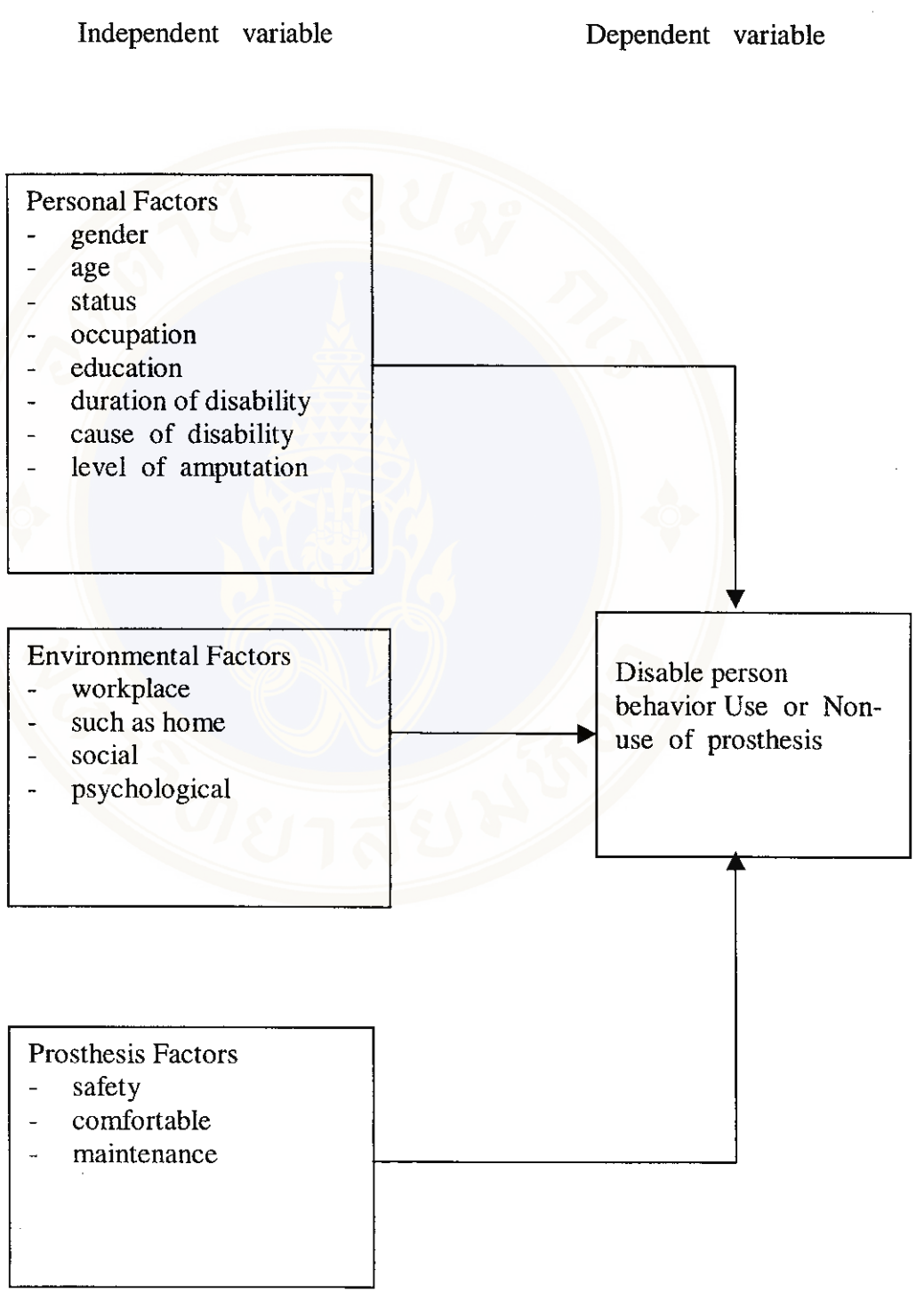


Figure 1: Conceptual framework.

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**Expected Benefits**

1. To identify the problems and needs of the disabled persons regarding the usage of prostheses.
2. To acquire the knowledge about the personal factors of the disabled persons that are related to the problems in the usage of prostheses produced from local materials.
3. To perceive the information about the usage rates of prostheses.
4. To further use the results from the research in order to develop the quality of services in terms of the appropriate advice for the disabled persons.

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# CHAPTER II

# LITERATURE REVIEW

In this research, the factors associated with the use of prosthesis produced from local materials in a group of disabled persons at Trang Provincial Hospital are being discussed. The related work and documents in this area of research have been reviewed and presented in the following orders:

1. Assistive Technology for disabled persons
2. Data regarding Trang Hospital and its work procedure
3. Knowledge about Amputation and Prosthesis
4. Factors associated with the use of Prosthesis
5. Related research.

## 1. Assistive Technology

Assistive Technologies for disabled persons are equipments, devices or any products either purchased or modified for the usage, the treatment/care or the development of users' abilities according to their specific needs and required skills; including the usage to help them performing their daily work.

Assistive Technologies can be categorized as follows:

1. Architectural Assistive Technology – meaning any constructions to use as part of an infrastructure, mostly for public facilities e.g. slants, corridors, and toilets, etc.
2. Physical Assistive Technology – meaning Prosthesis and Orthosis that disabled persons can take with them when going places; as these

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equipments would help eliminating their obstacles in traveling e.g. lower limb prosthesis, wheel chair, etc.

3. Assistive Information Technology - meaning equipments/technologies that help eliminating or decreasing the obstacles in accessing news and information. This kind of technologies can be classified according to the types of disabilities and types of assistive communicating devices.

The benefits of Assistive Technologies for disabled persons:

- For encouraging disabled persons to help themselves and become independent.
- For increasing movement and mobility of disabled persons.
- For assisting disabled persons in communication.
- For increasing their abilities opportunity to participate in labor market.
- For increasing their abilities to perform work.
- For increasing their self-esteem.

The purposes of Assistive technologies are: to increase the quality of life for disabled persons so that they are free from obstacles which make them become disadvantaged comparing to normal individuals, to improve their functional capabilities in daily activities, studying, and working; and also to enable them to participate in social activities like others without or with minimum obstacles. These assistive technologies should be designed based on the needs of disabled persons and shald let disabled persons be part of such design. The development of this kind of technologies must, therefore, take the disability conditions i.e. physical disabilities, audiotorial disabilities, mental disabilities, and learning disabilities; into consideration (Poonpit Amatayakul, 2539 BE).

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## 2. Information regarding Trang Hospital and its work procedure

**Trang Hospital**

Trang Hospital is a central hospital, 370 beds in size (as of 24 July 1997). The services provided by the hospital include medical treatments and rehabilitation. The hospital administrative structure is divided into various units and departments, Rehabilitation services including prosthesis and orthosis fitting are provided through the Department of Rehabilitation .

**Department of Rehabilitation**

All personnel who provide services in rehabilitation are under the supervision of Department of Rehabilitation. They are responsible for the treatment and the rehabilitation of patients and disabled persons. The mission to be accomplished by Department of Rehabilitation is to be "The leader in the excellence of services" by the cooperation of everyone according to our organizational chart shown below (Department of Rehabilitation, 2542: 2).

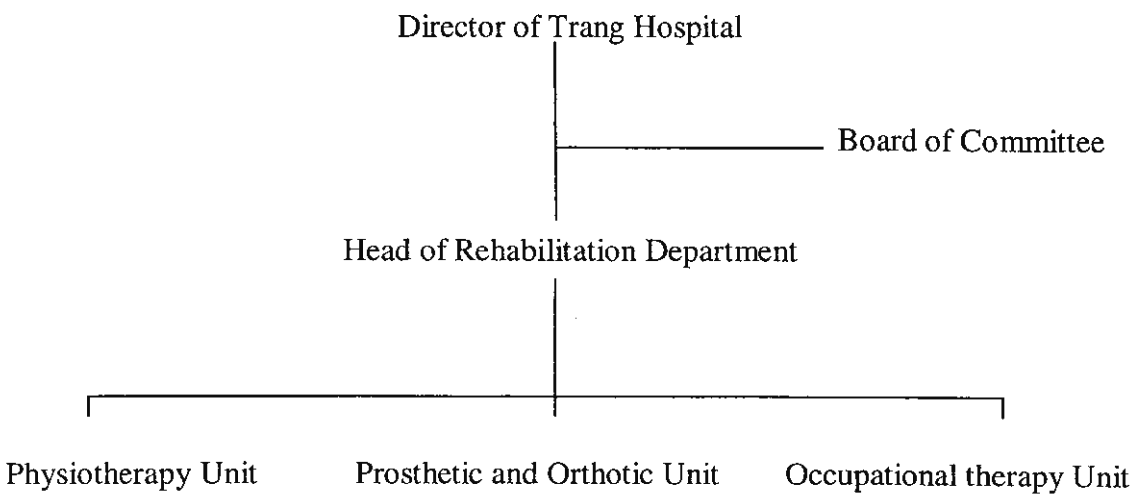


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Figure 2: Organizational Chart

**Management of Prosthetic & Orthotic Unit**

Prosthesis and Orthosis are equipments produced for supporting or using as a substitute for the missing human organs. There are two types of Prosthesis and Orthosis as follows:

1. Prosthesis – meaning equipments produced as a substitute for the missing human organs, either for functioning or cosmetic purposes or both such as lower lime or upper lime .
2. Orthosis - meaning equipments produced for supporting human organs into their normal positions such as crutches, canes, braces or walkers.

**Steps for services at Prosthetic & Orthotic Unit**

Shurr Donald G. and Thomas M. (Shurr Donald G., Thomas M., 1990: 225) have mentioned that the steps for Prosthetic & Orthotic services are as follows:

1. Checking and Evaluation of disability conditions
2. Measurement and Casting
3. Making and Measurement of the organs
4. Trial for fitting based on statistical principles
5. Rectification and Dynamic measurement
6. Re-evaluation and After-fitting services

## 3. Knowledge about Amputation and Prosthesis

Amputation is an operation of an unwanted human organ. The remaining part of that organ, following the amputation, is called a "stump" which can be used later on.

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Based on the history, amputation has started since ancient times or around 5,000 years B.C. when the purposes of amputation were for rituals, punishment, and treatment (Dr. Tumrongrat Kaewkarn: 2539 BE). In Thailand, the first case recorded was in 2379 BE.

The diseases relating to circulation problems and diabetes are currently the major causes of amputation in Western World. This group of diseases is found less in Thailand or Eastern World. The amaent of disabilities caused by injuries or wars depend on the political situation and geographic history of each region.

The ultimate goal for effective amputation depends on pathologic conditions and the purposes of treatment. The amputation of an unwanted organ is the operation for supportive purposes, with the aim to make effective use of the remaining parts.

Amputation of legs to create a suitable stump for prosthesis is an operation that needs lots of medical and artistic skills. Moreover, practicing of prosthesis usage and mental conditions of patients are still crucial factors to take into consideration.

To provide a successful result of the operation in order to make use of the stump, we must ask for the cooperation from relating personnel, especially from Prosthetists and Physiotherapists, who would arrange for the fitting of prosthesis into the stump and train the patients how to use it so that it is functioning like a natural organ as much as possible.

**Level of Amputation**

The level of amputation depends on: the pathological conditions to be eliminated, the blood circulation, the skin texture, the tissue, the nearby organs (anatomy), and the suitability of the stump to be fitted with the prepared artificial leg

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including the stump rehabilitation in the recovering process. The level of amputation can be classified according to anatomy as follows:

1. **Foot Level** – After the amputation at feet level, there is probably no need to use prosthesis. Supportive shoes will do. Boyd & Pirgoff Method is not popular and Chopart & Lisfranc method causes problem in achillis tendon.
2. **Ankle Level** – A suitable "Syme" is very popular because the stump can directly bear the weight.
3. **Below-Knee Level** - The stump should have suitable length and shape, and be able to be fitted with prosthesis well. The best amputation of leg to create a stump should be between 4-7 inches or 1 inch per 1 foot of height, or approximately 1 palm lower than upper anterior level of tibia.
4. **Knee Disarticulation** – Knee Disarticulation is the amputation at knee level or what is now called "Through Knee Amputation (T.K.)" which is quite popular at the moment. The anterior skin should be left in suitable length.
5. **Above-Knee Level** – Amputation at above-knee level is moderately popular and is done together with myoplasty to get better control over the prosthesis. The stump should not be too short or too long, otherwise the benefits of using that stump would be lost.
6. **Hip Disarticulation** – Hip Disarticulation means the amputation of leg at the hip level. This type of amputation makes it hard to arrange for prosthesis. The fitting and the practicing for usage are also more difficult than other types of amputation.

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According to the Rehabilitation Act 1991, the assessment of seventy of the condition of physical or mobility disability can be classified into 5 levels. Persons with lower limb amputation grouped into the 3rd category. [Which is described as loosing abilities in the movement of only one hand, one arm, or one leg. And such disability is not harmful to daily-life routines of that persons.]

**Causes of disability**

From the statistics of the patients who have come for services at Department of Rehabilitation, Trang Hospital; there are 287 patients in total. General causes of disability, which may lead to amputation, are listed below:

1. Congenital causes (8 cases) - An operation is probably needed to correct the impairment and make it suitable for prosthesis fitting.
2. Acquired causes (279 cases) – The disabilities happened at a later stage in life are usually caused by:
   2.1. Accidents (193 cases) - a major cause of disabilities in Thailand e.g. road accidents, machineries, circuits, dangerous animals, etc.
   2.2. Diseases (86 cases)- such as diseases due to problems in the blood circulation, tumor, etc.

**Acknowledgement and Adjustment for the Loss**

Losing an organ is a major loss for any human being. The feelings occurred could not be clearly explained unless one has experienced it him/herself. The thoughts and reactions of those who have lost their organs differ greatly.

Kessler (1951: 20) compared the loss as "grief of death of a loved one". The major grief oecurd in the first period, which is called "acute grief".

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Lindemann (1944: 101) has mentioned about this "acute grief" that it is a reaction which can be classified into 3 categories:

- Somatic reaction
- Emotional reaction
- Behavioral reaction

Parkes (1975: 11) compared the "acute grief" and "the grief of death of a loved one" of disabled persons who have lost their organs; and found that the reactions are the same i.e. shock, numbness, disbelief, anger, and guilt. They might also change their behaviors and often get jealous of others who do not have the same suffering.

Another type of feeling that might occur is "shame". This shame would not happen right after the amputation but would happen after the discharge from the hospital; which could lead to family worries.

Hughes and White (1946: 25) made his studies on Word War II victims (350 physically disabled persons) and found that most of them could maintain their normal personalities. 83% can adjust themselves both physically and mentally. The minorities who could not adjust themselves that well were usually those with childish and impulsive emotions.

Roy (1984) has combined the scientific concepts of Bertalenffy (1968), System Theory, Helson's Adaptation level theory (1964) and Philosophy based on Humanistic value and Veritivity; to create a basis for his theory. According to Roy's theory (1983: 258-260), it is believed that an individual is a system of adaptation, which interacts with internal and external environments all the times. The environments according to Roy's concept include every situation or event surrounding that individual (Roy, 1984: 22). If an individual is a system of adaptation, then the surrounding environment is

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the input for that system; which stimulates that individual to adapt to the changes. These stimuli can be categorized into 3 types:

1. Focal Stimuli – meaning internal or external stimuli, which directly affect individuals and are so important that they have to adapt themselves e.g. amputation of legs.

2. Contexual Stimuli – meaning other stimuli (apart from the direct stimuli) which have an effect on the direct stimuli, and related to the adaptation of that individual. These stimuli are various factors both internal and external, which could be positive or negative factors e.g. gender, age, marital status, educational level, occupation, period of disability and causes of disability, etc.

3. Residual Stimuli – meaning the stimuli influenced by past experiences. The effects of these stimuli are not obvious and individuals might not realize the importance of these factors; as they are not easily noticed e.g. attitudes, beliefs, habits, and personalities of disabled persons.

For the Disabled who have lost their limbs, the accompanying problems usually found are the socio-psychological deficiency. However, the treatment during the rehabilitating period usually focuses on the physical recovery. For the patients with socio-psychological problems, they would perceive that their quality of life is being threatened and adaptation is required to live in the society again. Sufficient encouragement from their family members and relatives would help patients to adapt themselves better and become healthier. The mortality rate would also be decreased (Turner, 1983 cited by McNett, 1987: 99).

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**Exercises and Care after Amputation**

Pornthip Moolasartsathorn (2543 BE: 84-90) had suggested disabled persons to take the exercising steps as follows:

1. "Stump bandaging" step - Stump bandaging is required 24 hours/day to help the stump to shrink as soon as possible. This can be done right after the operation and continued until permanent prosthesis is received.
2. After the operation, when the scar has started to heal, the exercise recommended by doctors is swimming. Swimming would help the remaining part of the body (or the stump) to be exercised, as well, so that the stump would be strong enough to bear the body weight after being fitted with prosthesis.
3. Exercises in bed - During recovery period, patients can exercise by crawling and kneeling down on the bed. Once they have been able to do both positions well, then they can continue exercising by standing up. The purposes of these exercises are to practise balancing themselves and bearing their own body weights against the gravity. This is because disabled persons can easily lose their balance. At first, they would feel like they could not balance themselves, therefore, they must practise balancing themselves first.
4. Try pushing the body up from the sleeping (face-down) and the sitting positions, so that the patient can balance themselves better when they want to get up or sit next time.

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5. Lie down (face-up or face-down), stretch, and then bend the hips towards the body, to exercise the hips (flexion and extension), so that the hips would be strong enough to bear the body weight after the prosthesis fitting.
6. Practise walking with a crutch to practise balancing yourself. It will also help exercising the normal leg. By exercising the normal part (leg), the stump would benefit from the exercises, as well.
7. Hold the stump with a rope and pull it up and down to exercise the stump. Elastic rope is usually used so that the Disabled can pull and stretch it.
8. Once the patient has done all the exercises according to the doctor's instructions, they would then be ready to receive an artificial leg. After the first fitting, the disabled persons would feel that their balancing is still not good. They might have to practise walking by holding a balancing bar until they feel comfortable and strong enough to bear their body weight. Then they can walk normally. Usually, disabled persons who have lost their legs cannot exercise much due to the pain from the operation wound, plus the feelings that they cannot do normal activities like before. So they usually limit their own activities (Ekachai Julajarit, 2531 BE:710-716). Therefore, there should be rehabilitation with the emphasis on the movement of joints. The movement should be done by the patients themselves, as it would help with the blood circulation. Without exercises, the muscles in that part would be smaller in size and become too weak to function properly.

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**Knowledge about Prosthesis**

**1. History**

Prosthesis is one of the ancient histories. Historians have found prosthesis in Mummy. The first prosthesis ever found was from Capua tomb. It is believed that it had been made since the period of Roman Empire around 300 B.C. It was made of cooper and wood and was kept at Museum of Royal College of Surgeons in England. However, it was lost during World War II when the museum was destroyed by a bomb. In the mid of the 17th century, Verduin, a Dutch surgeon, had designed a Below-Knee Prosthesis which is similar to what we used 10-20 years ago, but it was not popular. Ardint one hundual years later, this type of prosthesis was then reused.

Benjamin F. Palmer was the first to register his design of prosthesis in 1846. Then the invention of prosthesis was given lots of attention in the U.S.A. in 1895. Patents have been granted to 250 types of invented prosthesis.

In Thailand, there are a lot of disabled persons. Before 1960, there were 4 ways that a disabled person could get prosthesis:

1. Go overseas to get prosthesis in other countries – very few people do this due to the high cost and the inconveniences of the travelling in the past.
2. Request the surgeon to import prosthesis from overseas.
3. Ask for a local-made prosthesis, under the supervision of the skillful surgeons.
4. Make their own prosthesis – either by the Disabled themselves or their relatives. This is the most popular way to get prosthesis. There are hundreds of types of prosthesis made by local people and some are very

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good. The materials used are: bamboos, rattan, canvas, steel, brass, copper, zinc and aluminium, etc.

**Development of prosthesis in Thailand**

In 2507 BE, Siriraj Hospital, made Thailand's first prosthesis (Syum) with a wooden socket. It was very difficult to grind a wooden socket and a skill technician is required. So plastic sockets based on Canadian techniques are used later on. (Dumrong Kitkusol 2526 BE),

In 2513 BE, Pramongkutklao Hospital established the "Prosthetic and Orthotic Department" to serve the military soldiers who have lost their legs from accidents. (Lt.Gen.Thamrongrat Kaewkan 2544 BE),

In 2522 BE, Lerdsin Hospital, Department of Medical Services, Ministry of Public Health; founded a Prosthesis School where Ekachai Julajarit was the trainer to produce skillful Prosthetists for hospitals in different regions all over the country. (Pradit Saksri 2529 BE),

In 2539 BE, Prosthesis Foundation under the patronage of HRH Princess Mother Srinagarindra and Rehabilitation Department, Chiengmai University; studied the procedure of the production of polypropylene sockets and found that the technologies used by International Committee Red Cross (ICRC) for the Disabled in Cambodia, Laos, Vietnam and Myanmar; can be used in Thailand. There was no need to use machineries and the production cost is not high i.e. approximately 1,000-1,500 Bath per prosthesis. ICRC has now approved and allowed the use of their BK techniques to train prosthesis all over Thailand in order to upgrade our prosthetic techniques to the standards of neighboring countries. In this way, we would be able to

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save a lot of money, reduce the needs to import raw materials and also improve our trade balance. (Terdchai Cheevakate 2542 BE),

**2. Types of prosthesis**

There are two types of prosthesis:

1. Temporary Prosthesis (Pylon)

Pylon is very useful for patients after the amputation. By using Pylon, disabled persons would be able to walk freely without using crutches. Their muscles would be rehabilitated into normal conditions and their mental conditions would also be improved. The temporary prosthesis will be used for about 1-2 months. After that a person with disability will then use conventional prosthesis.

2. Conventional Prosthesis

Standard prosthesis currently used is American Technology (produced with the cooperation of both military and civil groups). There was an effort to produce weight-bearing sockets and it was found that a patellar tendon could bear the patient's weight very well. So prosthesis was designed so that the lower part of the front socket comes out a little bit against the patellar tendon. This type of prosthesis is called "patellar tendon bearing below knee prosthesis" or PTB in short. The first trial of PTB (2 years) on thousands of disabled persons in the U.S.A. showed satisfactory results. Radcliffe and Foort had then published a manual of PTB and it has become very popular all over the world. The prosthesis is categorized into 6 levels as follows:

1. Foot level
2. Ankle level
3. Below-Knee level
4. Through-Knee level

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5. Above-Knee level
6. Hip Disarticulation or through Hip.

In Thailand, we prosthesis have bur produced for about 30 years , by using the imported materials and some local materials. A prosthesis produced within the country consists of:

1. Sach Foot
2. Joint
3. Shank
   3.1.Endoskeleton System (Modular-metal)
   3.2.Exoskeleton System (Wood or synthetic foam)
4. Socket
5. Suspension
6. Artificial Knee Joint

Polypropylene prosthesis is easy to produce because polypropylene can be melt by heat. Therefore, all parts can be fused into one piece by welding. Later on, Hi Density Poly Ethylene (HDPE) has been used instead because it is the type of plastic with high elasticity which is very difficult to break. A typical HDPE prosthesis consists of:

1. Socket
   1.1 Soft socket made of pelite
   1.2 Hard socket made of polypropylene

2:Mounting plate - a plastic plate inserted between the socket and alignment unit

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3. Alignment unit:

   3.1.Convex round disc – a disc with smooth surface on one side and rough curved surface on the other, with a hole for a bolt in the middle

   3.2.Concave cylinder – a cylinder for a shank, curved at the upper top to match the Convex round disc. Next to this concave cylinder, there is a shank with smooth top. Located below concave surface is a window for a tool used for screwing the socket (after adjustment of dynamic alignment).

4. Foot attachment (or ankle) - with a shank at the upper top. This shank will be attached to concave cylinder. Within foot attachment, there is a hole fixed with metal screw.
5. Sach foot
6. Calf shell (pre-shaped polypropylene) - used as cosmetic cover after dynamic alignment adjustment, can be fused into socket and foot attachment by welding.
7. Supracondylar strap (if needed) – in case the patient is used to the old style PTB socket
8. Safety knee - made of plastic, for Endoskeleton prosthesis.

**Evaluation and Selection of suitable prosthesis**

Factors to be considered when selecting suitable prosthesis are:

1. Age, body size and anatomical characteristics of the user.
2. Severity of disability.
3. Abilities of patients in using prosthesis.

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4. Location place when prosthesis will be used.
5. Acceptability of prosthesis.
6. Cosmetics
7. Stability and durability of the prosthesis.
8. Cost of the prosthesis.

**Evaluating criteria in prosthesis selection**

1. Users' characteristics: types of disability, period of disability, diagnosis, size, and body weight
2. Users' needs: considering from activities, users' satisfaction, durability and stability of prosthesis.
3. Physical and sensory skills: joint movement, abilities to use muscles, strength, visibility and perception.
4. Skills in prosthesis usage: abilities in walking and performing activities.
5. Weight of prosthesis: normally 2-3 kgs, and increasing according to level of amputation.

**Fitting problems**

According to Terdchai Cheevaket (2543 BE), there are many problems in prosthesis fitting because prosthesis must bear the body weight of the user every time he/she stands up and walks. Apart from the direct effects on the stump, there are also problems in maintenance. The causes of these problems could be:

1. Pain – If there is pain at the areas of: patella, tibial , tuberosity , fibular head, fibular end, tibia end, and tibia crest; it means that the socket is not fitted properly.

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(slip-down socket). This problem can be solved by using a hot-air gun to blow the socket out and push a weight-bearing point in, but it is not a proper way to solve this problem.

2. Pain while walking – Find out whether there is pain while walking with the prosthesis or not. If there is pain or pressure at any point while walking, it means that there is a poor alignment somewhere such as:

- Proximal medial & Distal lateral pain: as a result of medial foot alignment
- Proximal lateral & Distal medial pain: as a result of lateral foot alignment
- Pain at Antero distal end (front end) of stump: as a result of front alignment of the socket, which forces the stump into a bended position. When walking, the user would feel like he/she is going to fall, thus, stretch out the stump quickly; making the front end of the stump hit the socket and resulting in pain.
- Patella pain: as a result of backward leaning of the socket, forcing the stump into a stretched position, pressuring the patella, and resulting in pain.

3. Stump shrinkage and loose socket: This is a common problem. The stump of a patients with below-knee amputation usually shrinks, except in a growing child. The stump shrinkage is considered normal because of the unused muscles, which could result in a loose socket.

4. Maintenance: Like other kinds of equipments that can be deteriorated, maintenance for prosthesis is necessary. The durability of the prosthesis depends on the materials and the techniques used in the production process; and also depends on the maintenance.

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## 4. Factors associated with the use of Prosthesis

Factors associated with the use of prosthesis depend on: backgrounds, health conditions, environment, society and culture of the users. From the literature review, the area of the study in this research was chosen based on the concepts of M P T (Milieu, Personal, Technology) of Scherer, Marcia J. (1994); who had studied the needs of disabled persons and the use of assistive technologies. Environmental conditions, personal characteristics, and types of technology were the areas of study to find out the factors influencing the usage of prosthesis. The M P T framework of concepts used in this research is explained below:

**Personal Factors**: According to Scherer, Marcia J. (1994), the factors associated with the use of prosthesis are: self-dependence, motivation, techno-phobia, the feeling that technologies will make the conditions of the organ worse, the realization of the benefits of technologies, and the participation in the selection of assistive technologies.

The variables used in this research to find out the factors associated with the use of prosthesis are: gender, age, marital status, education, occupation, duration of disability , causes of disability, and level of amputation. These variables are discussed below.

1. **Gender**: Gender is associated with the use of prosthesis. Females tend to look after themselves better than males, especially when they are sick. Males usually rely on their family members more than females. (Neimi, et al., 1988: 1101-1107). It is also found that females have better relaxation and self-care comparing to males. (Muhlen Kamp & Sayles, 1986: 334-338).

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2. **Age**: Age is related to the use of prosthesis. Wanida Orprasertsak and others (2538 BE: 39-45) have found that age has a positive relationship with rehabilitation with statistical significance (p-value < 0.05); which is in accordance with the study of Wipa Durongpisitkul (2525 BE: 114), the study of Siripan Vejchasit and others (2531 BE: 49) and the study of Suchittra Nillerd (2539 BE: b) who found that age is related to medical services.

3. **Marital status**: Marital status is associated with the participation in the activities and the self-care abilities. It is also a factor identifying the family status and roles in the society. The spouse can help: reducing the use of energy, increasing the motivation, enhancing the needs of health care, supporting the acquiring of knowledge, and expressing the worries & cares. The spouse can also participate in decision-making, and social activities (Hilbert, 1985: 217-220). Moreover, the spouse is also the supportive force in the society, and the source of the self-care encouragement (Somchit Hanucharoenkul, 1989: 22).

4. **Educational level**: Education is a basis of the thinking and the decision-making. It helps an individual to realize the importance and understand the benefits of health care, resulting in the acquiring of more knowledge and ways to improve his/her health. According to Ruth (Ruth, 1973: 136-156), disabled persons with low educational level have difficulties in understanding the causes of disabilities, the treatment and the self-care. As this information is scientific knowledge, therefore, highly educated disabled persons would have better understanding in these matters. Jalowice & Powers (Jalowice & Powers, 1981: 10-15) mentioned that education would make individuals realizing the importance of various factors which facilitate the use of knowledge and past experiences. A well-educated person would have more skills in

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acquiring the knowledge or asking questions, than those with low educational levels (Muhlenkamp & Sayles, 1968: 336).

5. **Occupation**: Occupation identifies economic and social status. It is a factor which has an influence on the response to basic needs and self-care abilities. It is also a source of benefits which would lead to better living and better self-care (Somchit Hanucharoenkul, 1989: 22-27). Based on the study of Wimolrat Phuvarawutpanich (2532 BE: 67), it is found that occupation has a negative relationship with the lack of self-support. In other words, persons with occupations can look after themselves better.

6. **Duration of disabilities**: Dumrong Kitkusol (2526 BE: 152) mentioned that "Time is the best medicine" for disabled persons because it will help them learn to adjust themselves and take care of themselves better. The longer period of time would also help them further develop their abilities in self-care and have more self-confidence in performing various activities. All these things would lead to the improvement of interpersonal relationship and participation in social activities.

7. **Causes of disability**: This is another factor associated with the use of prosthesis. As the loss of limbs can cause sadness and worries, the attitudes towards the society of the disabled persons is therefore changed. According to Thavorn Butsomta (2525 BE), different types of disabilities would result in different mental conditions of each disabled person, which would affect their behaviors.

8. **Level of amputation**: Level of amputation is associated with the use of prosthesis. The differences in the degree of disabilities result in differences in the adjustment abilities. Based on the study of Thavorn Butsomta (2525 BE) on the

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mental health of military soldiers with disability as a result of war, it is found that the higher the degree of disability, the worse his/her mental health would be.

**Environmental Factors**

Scherer, Marcia J. (1994) studied the environmental factors such as suitable workplace and home environments, to find out whether it can support the use of assistive technologies or not and what adjustment is needed. The environmental factors also include social, mental, and cultural factors. The emphasis was on the family conditions (e.g. family members, friends) to find out whether they are supportive to the use of assistive technologies or not. For examples, family members and friends might encourage the use of prosthesis by creating a suitable environment; or they might discourage the use of prosthesis by serving the disabled persons too much which makes them feel that there is no need to become independent.

Poonpit Amatayakul (2542 BE) mentioned that environment is an issue with a very wide scope of studies, whether it is inside or outside environment. Especially the outside environment, it is related to other people in terms of living and working issues, and the issues about law and rights of disabled persons.

Inside environment is to do with the daily self-care of disabled persons, from the morning (when they wake up) until night-time (when they go to bed). It is the issue about the conveniences within and around the house, and the suitability of the landscape.

Outside environment can be divided into different parts e.g. Assistive Technology at workplace, Public IT equipments, participation in social activities, and landscape. In this research, environmental factors are associated with the use of prosthesis, the variables studied are:

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- Workplace environment.
- Home environment.
- Social environment.
- Psychological and emotional environment.

**Prosthetic Factors**

Scherer, Marcia J. (1994) studied about the safety, the convenience of use, the efficiency, the life span, and the maintenance of Assistive Technology. The variables studied in the research are:

- Safety
- Convenience
- Maintenance

## 5. Related Research

Newman, Linda Lee (1995) studied the importance of Assistive Technology on disabled persons with visual disability. It is found that technology can help improving the persons with visual disability. The research was carried out in a sample group of 13 people (males and females). The people are different in terms of age and degree of disability. The study adduced issue on the use of assistive technology i.e. whether it helped them or not; and whether they liked it or not, it was found that most of the supple did not like assistive technology because they strll felt sad about their loss.This problem could be solved by educating them to have more knowledge about assistive technology.

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Chaffin, Jerry D. (1993) studied about the usage and the needs for mechanical devices and services of Assistive Technology by sending E-mail to 288 people who have different kind of disabilities (from the total number of 388). Ninety five percent of the studied group responded that they had used Assistive Technology (45 types of A.T.). The only Assistive Technology they had not used is the help in traveling. Disabled persons want to use different types of assistive technologies. The research on those who are likely to use mechanical devices revealed that money had always been a major problem. There are 4 ways to provide assistive technology as follow :

1. Arrange sufficient assistive technologies according to the requests
2. Distribution for financial support.
3. Loan services.
4. Training in the use of technologies.

Kimbuendo, Ntoto J. Oseph (1994) had carried out the analysis on funding system for Assistive Technology, to help those with eyes & ears problems. There are new devices coming into the market every year, but users have no access to them. There is an effort to find the solutions to solve the problem of confusing parents who lack the knowledge of services useful for their disabled children. The service personnel mentioned about specialists in this area that they are not very cooperative. The purpose of the current study is to make the assistive technology become more specific according to the needs of individuals. There are 2 groups of study:

1. Problem child.
2. Parents with disabled children.

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Open-end questions in the forms of questionnaires were used in this study. Then the data was collected to improve the following aspects of services:

1. Knowledge about services.
2. Level of Preference.
3. Satisfaction of services.

By using the percentages, the average, Chi-square test and t-test, the level of preference and satisfaction in relation to the use of assistive devices were analyzed. The problems found are:

1. Financial problems.
2. Lack of opportunity to use Assistive Technology.
3. Lack of knowledge about devices.
4. Services provided by specialists and their advices on the use of devices.

Scherer, Marcia J. (1994) studied the use of assistive technology which depends on the types of technology. Based on the results of the study, 8% of the sample group did not use (never use or abandon) the assistive technology; and as high as 75% abandoned the assistive technology in the first 1-3 months.

One of the devices being abandoned the most is hearing aids. The reasons why hearing aids are abandoned are the factors of: the loss of hearing nature, cost, visibility of the devices, the disappointment that "perfect hearing" is not restored, and the interruptions from other noises (difficulties in discriminating a speaker's voice from background noise).

All assistive technologies are designed to help individuals to live normally in the society. The development of hearing aids devices has not contributed to the

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improvement of self-confidence for those using the technology. In that case, psychological methods must be used. Assistive Technology is just a device that helps individuals achieve their goals in different conditions of environment. Changing attitudes of people would help them choose to use assistive technologies more. We should not only improve the functioning of the devices.

Mitchell (1994) studied the issues of American people who like or are afraid of technologies (Techno-phobia). It is noted in the article "Technophiles and Technophobia" that the ratio of people with Techno-phobia and those who like the technology is more than 2: 1. Those who love technology would use it, while those with Techno-phobia would try to avoid it. It is our challenge to make those with Techno-phobia use new technical products; and stop those who like technology from grabbing new products. Those considered as Techno-phobic are those who avoid, or are afraid of technologies e.g. VCRs, computers, etc. Each of the Techno-phobic persons is very conservative and has never used any technology. For them, the capabilities gained from using technologies are not worth the anxiety and inconveniences occurred from using them.

Based on the literature reviewed, it is found that no one has studied about the factors relating to the use of prosthesis produced from local materials. Therefore, The research interested in the studying of this issue. The main purpose for this research is to find out the factors relating to the use of prosthesis produced from local materials, using the sample group of patients who came for services at Prosthetic and Orthotic Department, Trang Hospital, and had been fitted with prosthesis for at least 3 months. The concepts of Scherer, Marcia. J. (1994) within the framework of M P T (Milieu, Personal, Technology) are used as a guideline for this research; in order to study about

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the personal factors e.g. gender, age, marital status, occupation, educational level, period of disability, causes of disability, level of amputation, environmental factors, and prosthetic factors.

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# CHAPTER III

# METHODOLOGY

**Design of the study:**

This research is a survey research with a cross sectional study of the factors associated with the use of prosthesis made by material produced in Thailand at Trang provincial hospital. The research procedure is as follows:

**Targeted Group of Population**

The selected group of population for this research was the group of lower extremity amputation disabled persons, who have received their prosthesis made by materials in Thailand from Prosthetic and Orthetic Department, Trang hospital. Based on the hospital records of the patients at Prosthetic and Orthetic Department from 1997-2000, only the first-time patient who had receive the lower extremity prosthesis. More then 3 months from this department were chosen. The total number of the selected population are 287. The questionnaires was used and, the information from these people is gathered. After 3 months, the researcher was able to gather the information from 169 respondents.

**Research Equipment**

The equipment used for the data collection is the questionnaire regarding the factors associated with the use of prosthesis produced from materials obtained within the country. The content of the questionnaire covers the basic information about the factors i.e. personal factors, environmental factors, prosthesis factors. The

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questionnaire has been created by the researcher based on the review of some literary work and related documents including various theories. The measurement method used in the questionnaire is Likert Scale. Designed by the researcher himself, the questionnaire is divided into 4 parts as follows:

**Part 1: Information about demographic characteristics** of the respondent's as: gender, age, marital status, education, occupation, duration of disability, cause of disability, and level of amputation. There are 20 questions for this part of the questionnaire.

**Part 2: Information about the current lower limb prosthesis** of the respondents. There are 22 questions.

**Part 3: Information about the factors associated with the usage of prosthesis**. By applying the Likert Scale measurement, there are 5 answers for each question. There are positive and negative statements in the questionnaire in order to obtain the information of how the respondents feel about their prosthesis. whether they have positive, negative, or indifference feelings. There are 36 questions in total: 27 for the positive questions and 9 for the negative ones. The positive questions are the questions number: 1, 2, 3, 4, 5, 7, 9, 11, 12, 13, 14, 16, 17, 18, 19, 20, 23, 24, 27, 28, 29, 30, 31, 32, 33, 34, and 36. The negative questions are the questions number: 6, 8, 10, 15, 21, 22, 25, 26, and 35. The choices of the answers for each question are: strongly agree, very much agree, quite agree, disagree, and strongly disagree. The scores are then marked based on the following criteria:

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For positive statements:

| | | |
|---|---|---|
| Strongly agree | is equal to | 5 |
| Very much agree | " | 4 |
| Somewhat | " | 3 |
| Disagree | " | 2 |
| Strongly disagree | " | 1 |

For negative statements:

| | | |
|---|---|---|
| Strongly Agree | is equal to | 1 |
| Very much agree | " | 2 |
| Somewhat | " | 3 |
| Disagree | " | 4 |
| Strongly disagree | " | 5 |

When answering the questionnaire, the respondents decide on their own opinion how much they agree with each statement. The questionnaire regarding the factors associated with the usage of prosthesis consists of:

The questions about the environmental factors, which are divided into: workplace environment, home environment, social environment, and mental environment. The total number of the questions in this part is 22 i.e. the questions number 1-22. The range of the total scores for this part is between 22-110 scores.

The questions about prosthesis factors which are divided into: safety, comfortably, and maintenance. There are 14 questions in total i.e. questions number 23-36. The range of the total scores for this part is between 14-70 scores.

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Evaluation: Results are evaluated accordingly the average score for each factor. The scores of the respondents are divided into 2 groups: lower than the average score, and higher than the average score.

**Part 4: The recommendations for servicing**. Open-end questions are used in this part.

**Equipment Quality Check**

The procedure for the equipment quality check is as follows:

1. Content Validity of the questionnaire – The questionnaires are proposed to the consulting tutors and thesis-supervising committee: 3 members in total. Following the study objectives checks the content validity of the questionnaires. The criterion for this check is based on the agreement from 2 out of the 3 qualified personnel. Then the questionnaires are adjusted according to the comments of thesis-supervising committee before distributing to the respondent.
2. Reliability of the questionnaire – The adjusted questionnaires are tried out with 20 disabled patients at Sirintorn National Medical Rehabilitation Center who have the same characteristics as the sample group in this research. The reliability of the questionnaires is then calculated by finding the Alpha Coefficient using the method of Lee J. Cronbach (Lee J.Cronbach's Alpha Coefficient) (Cronbach, Lee J: p 161) The result from the analysis shows that the reliability of this questionnaire is equal to 0.78. The formula for this calculation is:

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$$\alpha = \frac{n}{n-1}\left[1 - \frac{\Sigma \sigma_i^2}{\sigma_x^2}\right]$$

$\alpha$ means Alpha Coefficient or the Reliability of the questionnaire

n means Total numbers of statements

$\sigma_i^2$ means Single Item Variance

$\sigma_x^2$ means Total Test Variance

The questionnaires are adjusted to make all the statements more appropriate and consulting tutors once more prior to the process of the data collection.

**Data Collection**

The researcher does the data collection. The researcher gathers the data from the targeted population at Trang hospital. Before collecting the data, an introduction letter from the dean of Faculty of Graduate studies, Mahidol University has been given to the Hospital Director asking for permission of the data collecting process from May-July 2001. The steps of the data collection are:

1. Upon finding a disabled person when he/she is waiting for the services or after receiving the services at Trang hospital. The researcher would introduce himself, explain the objectives of the study and ask for his/her cooperation in the data collecting process.
2. In case of the disabled person is cooperative, a questionnaire will be given to him/her. He/she will be explained in details how to answer the questionnaire and no time limit for the answers.

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3. In case of an illiterate person, all questions will be read by the researcher. The respondent can answer the questions one by one and his/her answers will be recorded in the questionnaire by the researcher.
4. Once answered all the questions in the questionnaire, the disabled person is allowed to ask anything in doubt and he/she will be explained until understood. The researcher checks the accuracy and the completeness of the questionnaire. If any answer is missing, the respondent would be asked to give his/her additional answer(s) for the missing question(s) in order to get their complete answers.
5. Analyze the collected data by using a statistic package program

**Data Analysis**

In this research, the data is analyzed and categorized into 2 groups i.e. descriptive statistics and analytic statistics. Details as follows:

**Descriptive statistics**

General information regarding the personal factors of a disabled person with used prosthesis. Gender, age, marital status, education, occupation, duration of disability, cause of disability, level of amputation, environment and prosthesis. The data will be analyzed in terms of frequency, percentages, means, and the standard deviation.

**Analytic statistics**

Analyze the relationships between the independent variables and the dependent variables. Find the relationships of: gender, age, marital status, education, duration of disability, cause of disability, level of amputation, workplace environment,

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home environment, social environment, psychological environment, safety, comfortably, and maintenance; by using the method of logistic regression.

Independence variable for Logistic Regression are.

| Variable | Dummy Variable | |
|---|---|---|
| **Personal Factor** | | |
| 1. Gender | $X_1$ | |
| Female | 0 | |
| Male | 1 | |
| 2. Age (year) | $X_{21}$ | $X_{22}$ |
| less than 23 | 1 | 0 |
| 23 - 59 | 0 | 1 |
| more than 60 | 0 | 0 |
| 3. Marital status | $X_3$ | |
| marital | 0 | |
| single / separated / widowed | 1 | |
| 4. Education | $X_4$ | |
| less than primary | 0 | |
| more than primary | 1 | |

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| | | |
|---|---|---|
| 5. Occupation | $X_{51}$ | $X_{52}$ |
| not occupation | 1 | 0 |
| agriculture | 0 | 1 |
| not agriculture | 0 | 0 |
| 6. Duration of disability ( year) | $X_{61}$ | $X_{62}$ |
| 1 - 3 | 1 | 0 |
| 4 - 8 | 0 | 1 |
| more than 9 | 0 | 0 |
| 7. Cause of disability | $X_7$ | |
| not accident | 0 | |
| accident | 1 | |
| 8. Level of amputation | $X_8$ | |
| above knee | 0 | |
| below knee | 1 | |

**Environmental factor**

| | |
|---|---|
| 9. workplace environment | $X_9$ |
| lower than mean | 0 |
| mean or more | 1 |
| 10. home environment | $X_{10}$ |
| lower then mean | 0 |
| mean or more | 1 |

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| | |
|---|---|
| 11. Social environment | $X_{11}$ |
| lower than mean | 0 |
| mean or more | 1 |
| 12. Psychological environment | $X_{12}$ |
| lower than mean | 0 |
| mean or more | 1 |

**Prosthesis Factor**

| | |
|---|---|
| 13. Safety | $X_{13}$ |
| lower than mean | 0 |
| mean or more | 1 |
| 14. Comfortable | $X_{14}$ |
| lower than mean | 0 |
| mean or more | 1 |
| 15. Maintenance | $X_{15}$ |
| lower than mean | 0 |
| mean or more | 1 |

**Dependent Variable :The use of prosthesis**

Behavior use of prosthesis is nominal scale by dummy variables

0 = not use

1 = use

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# CHAPTER IV

# RESULTS

In this chapter, the results and the data analysis of the research are presented according to the conceptual mentioned in the previous chapter. The content of the presentation in this chapter is divided into 3 parts:

Part 1: General characteristics of the disabled person in terms of personal data, information about the prosthesis being used, and information about the factors associated with the use of prosthesis; are described. In this part, descriptive statistics is used for the data analysis by calculating the percentages, the average, and the standard deviation of the data.

1.1 General characteristics in terms of personal data.

1.2 Information about the prosthesis being used.

1.3 Information about the factors associated with the use of prosthesis.

Part 2: The comparison of the factors based on the behaviors of the disabled person in use or non-use prosthesis. This includes the testing of the relationship between various factors by using the bivariate analysis with Chi-square statistics.

2.1 Personal factors based on the behaviors in using prosthesis.

2.2 Environmental factors based on the behaviors in using prosthesis.

2.3 Prosthesis factors based on the behaviors in using prosthesis.

Part 3: The analysis of the factors associated with the use of prosthesis by using the multivariate analysis, logistic regression.

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**Part 1: General characteristics of disabled personal**

The total number of the disabled person in this study is 169. The general characteristics of the sample, as shown in table 1, are as follows:

1.1 There are more males than females (75.7 % and 24.3 % respectively). Most people of the sample group are in the working age i.e. between 23-59 years. The youngest is 9 years old and the oldest is 82 years old. The average of the age for this group is 42.3 years. Most disabled persons in this group (68.3%) are married. Regarding the educational attainment, most people (55.6%) completed only the primary-school level. The smallest group is the group of disabled person who graduated with a Bachelor degree. For occupation, most people (32.5%) work in the agricultural field. For the living areas, most of the sample (62.7%) live outside the municipal areas. The duration of disability most people (47.3%) is 9 years or more. The shortest duration of disability is 1 year and the longest is 82 years. The average duration of disability is 12.0 years. For the causes of disability, it is found that the main cause (43.2%) of disability is a transportation accident and workplace accident respectively (26.0%). These accidents affect the level of amputation of the disabled person. Most people (62.1%) had to amputate at the level below the knees. The second rank in numbers is the level of above knee amputation. When asked about how often they come for the prosthesis services, 36.6% of the sample have never come for the services.

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**Table 1: Numbers and percentages of the sample categorized by the personal socia- demographic characteristic**

| Characteristic | | Number | Percentage |
|---|---|---|---|
| **Gender** | | | |
| | Male | 128 | 75.7 |
| | Female | 41 | 24.3 |
| | Total | 169 | 100.0 |
| **Age (year)** | | | |
| | < 23 | 14 | 8.3 |
| | 23-59 | 130 | 76.9 |
| | 60 years old or more | 25 | 14.8 |
| | Total | 169 | 100.0 |
| The average age: 42.3 years, Standard deviation: 15.8 years, Minimum age: 9 years, Maximum age: 82 years | | | |
| **Marital status** | | | |
| | Single | 46 | 27.2 |
| | Married | 107 | 68.3 |
| | Divorced | 7 | 4.1 |
| | Widow/Widower | 8 | 4.7 |
| | Separated | 1 | 0.7 |
| | Total | 169 | 100.0 |

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**Table 1: (continued)**

| Characteristics | Number | Percentage |
|---|---|---|
| **Education** | | |
| No study | 19 | 11.2 |
| Primary | 94 | 55.6 |
| Secondary | 39 | 23.1 |
| Diploma | 12 | 7.1 |
| Bachelor | 5 | 3.0 |
| Total | 169 | 100.0 |
| **Living areas** | | |
| Within municipal areas | 63 | 37.3 |
| Outside municipal areas | 106 | 62.7 |
| Total | 169 | 100.0 |
| **Occupation** | | |
| Agricultural field/farmer | 55 | 32.5 |
| Labour | 50 | 29.5 |
| Student | 22 | 13.1 |
| Government official | 18 | 10.7 |
| Merchant | 12 | 7.1 |
| No occupation | 12 | 7.1 |
| Total | 169 | 100.0 |

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**Table 1: (continued)**

| Characteristics | Number | Percentage |
|---|---|---|
| **Duration of disability** (year) | | |
| 1-3 | 31 | 18.3 |
| 4-8 | 58 | 34.4 |
| 9 years or more | 80 | 47.3 |
| Total | 169 | 100.0 |

The average duration of disability: 12.0 years, Standard deviation: 11.9 years, Minimum disability: 1 year, Maximum disability: 82 years

| | | |
|---|---|---|
| **Causes of disability:** | | |
| Road accident | 73 | 43.2 |
| Workplace accident | 44 | 26.0 |
| Illness | 26 | 15.4 |
| Disabled since birth | 12 | 7.1 |
| Snake bite | 10 | 5.9 |
| Other | 4 | 2.4 |
| Total | 169 | 100.0 |
| **level of amputation** | | |
| Ankle level | 3 | 1.8 |
| Below knee level | 105 | 62.1 |
| Through knee level | 14 | 8.3 |
| Above knee level | 47 | 27.8 |
| Total | 169 | 100.0 |

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**Table 1: (continued)**

| Characteristics | Number | Percentage |
|---|---|---|
| **Number of timer of servicing prothesis:** | | |
| 1 time | 50 | 29.6 |
| 2 times | 29 | 17.2 |
| 3 times or more | 28 | 16.6 |
| Has never come for the service | 62 | 36.6 |
| Total | 169 | 100.0 |

**1.2 Information about the prosthesis currently received**

The information about the currently received prosthesis of the study group of disabled person who came for the services is explained below (table 2):

**Purposes of coming for prosthesis services(can provide more than 1 answer)**

Most disabled people (81.1%) requested for prosthesis in order to wear them at work. The second rank in percentages (62.1%) is the group of people who want prosthesis to wear at home. Those who want to wear prosthesis for cosmetic contribute to only 16.0%.

**Feelings after receiving prosthesis**

It is found that most disabled person (78.1%) feel happy after receiving their prosthesis. However, some people (14.2%) get worried and some people (7.7%) are indifferent to the prosthesis received.

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**Feelings while wearing prosthesis**

This refers to the feelings they have or used to have while wearing prosthesis, even if they are not wearing one right now. It is found that most disabled persons (53.8%) feel comfortable while wearing prosthesis. The second group (27.0%) said wearing prosthesis is painful. Those who do not wear prosthesis contribute to 11.8%, and those who are not painful when wearing prosthesis but do like to wear them contribute to 6.5%.

**Adjustment of workplace environment**

It is found that 81.3 % of the disabled person have not adjusted their workplace environment. On the contrary 18.7% have adjusted their workplace environment.

**Convenient workplace environment for walking**

It is found that most disabled persons said their workplace environment is convenient for walking while wearing prosthesis (77.5%), and 22.5 % said their workplace environment is inconvenient for walking while wearing prosthesis.

**Adjustment of home environment**

It is found that 77.5% of the disabled persons (who came for prosthesis services) have not adjusted their home environment, and 21.9% have adjusted their home environment.

**Convenient home environment for walking**

It is found that most disabled persons said their home environment is convenient for walking while wearing prosthesis (83.1%), and 16.9 % said their home environment is inconvenient for walking while wearing prosthesis.

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**Control of emotions and changes**

It is found that 94.1% of the disabled persons, who come for the prosthesis services, state that the can control their emotions and their physical changes. Those who cannot control themselves contribute to 5.9%

**Acceptance of physical condition**

It is found that 95.9% of the disabled persons, who come for the prosthesis services, can accept their disabled condition, and 4.1% cannot accept it.

**Family support**

It is found that 89.9% of the disabled persons, who come for the prosthesis services, are satisfied with their family support, and 10.1% of these people are not satisfied with their family support.

**Sympathy**

It is found that 84.0% of the disabled persons, who come for the prosthesis services, feel that other people look at them with sympathy, and 16.0% do not think so.

**Period of walking practice**

It is found that 88.8% of the disabled persons, who come for the prosthesis services, said they have had enough walking practice using their prosthesis, and 10.7% said they have not had enough walking practice with their prosthesis.

**Maintenance**

It is found that 70.4% of the disabled persons, who come for the prosthesis services, use the maintenance service for prosthesis, and 29.6% have not used this kind of service.

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**Convenience in maintenance service**

It is found that 97.4% of the disabled persons, who come for the prosthesis services, think that the maintenance service for prosthesis is convenient, and 2.6% of these people think the service is inconvenient as shown in table 2

**Table 2:** Numbers and percentages distribution of the sample by information regarding currently prosthesis

| Information regarding the prosthesis currently received | Number | Percentage |
|---|---|---|
| **Purposes of coming for prosthesis services (can provide more than 1 answer)** | | |
| For walking at home | 105 | 62.1 |
| For wearing at work | 137 | 81.1 |
| For beauty | 27 | 16.0 |
| **Feelings after receiving prosthesis** | | |
| Glad | 132 | 78.1 |
| Indifferent | 13 | 7.7 |
| Worried | 24 | 14.2 |
| Total | 169 | 100.0 |

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**Table 2** (continued)

| Information regarding the prosthesis currently received | Number | Percentage |
|---|---|---|
| **Feelings while wearing prosthesis** | | |
| Painful | 47 | 27.0 |
| Comfortably | 91 | 53.8 |
| Not painful but do not like to wear | 11 | 6.5 |
| Non-use | 20 | 11.8 |
| Total | 169 | 100.0 |
| **Adjustment of workplace environment** | | |
| Not adjusted | 87 | 81.3 |
| Adjusted | 20 | 18.7 |
| Total | 107 | 100.0 |
| **Convenient workplace for walking with prosthesis** | | |
| Inconvenient | 25 | 22.5 |
| Convenient | 86 | 77.5 |
| Total | 111 | 100.0 |
| **Adjustment of home environment** | | |
| Not adjusted | 131 | 77.5 |
| Adjusted | 37 | 21.9 |
| Total | 168 | 100.0 |

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**Table 2** (continued)

| Information regarding the prosthesis currently received | Number | Percentage |
|---|---|---|
| **Convenient home environment for walking with prosthesis** | | |
| Inconvenient | 27 | 16.9 |
| Convenient | 133 | 83.1 |
| Total | 160 | 100.0 |
| **Control of emotions and changes** | | |
| Able to control | 10 | 5.9 |
| Unable to control | 159 | 94.1 |
| Total | 169 | 100.0 |
| **Acceptance of disable condition** | | |
| Able to accept | 7 | 4.1 |
| Unable to accept | 162 | 95.9 |
| Total | 169 | 100.0 |
| **Satisfaction of family treatment** | | |
| Unsatisfied | 17 | 10.1 |
| Satisfied | 152 | 89.9 |
| Total | 169 | 100.0 |

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**Table 2** (continued)

| Information regarding the prosthesis currently received | Number | Percentage |
|---|---|---|
| **Feelings that other people look at them with sympathy** | | |
| No | 27 | 16.0 |
| Yes | 142 | 84.0 |
| Total | 169 | 100.0 |
| **Period of walking practice** | | |
| Insufficient | 18 | 10.7 |
| Sufficient | 150 | 88.7 |
| No answer | 1 | 0.6 |
| Total | 169 | 100.0 |
| **Maintenance Service** | | |
| Use this service | 119 | 70.4 |
| Not using this service | 50 | 29.6 |
| Total | 169 | 100.0 |
| **Convenience in maintenance service** | | |
| Convenient | 113 | 97.4 |
| Inconvenient | 3 | 2.6 |
| Total | 116 | 100.0 |

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**Use of prosthesis**

When considering the use prosthesis, we look at the disabled person who have received prosthesis and wear them when performing their routine activities. Each disabled person would use the prosthesis in his/her daily life for different purposes. Some people wear prosthesis to work and some people use them for walking around their houses. Based on the information obtained from this research regarding the prosthesis being used, it is found that most disabled person use prosthesis. The uses of prosthesis are more than non-use as 75.1% and 24.9% respectively. For non-use are disable persons who came for prosthesis services but did not used them in their daily lives. They would only keep them at home without making use of them (as shown in table 3).

**Table 3:** Numbers and percentages of disabled person based on their behaviors in using prosthesis

| Use of prosthesis | Number | Percentage |
|---|---|---|
| Use of prosthesis | 127 | 75.1 |
| Non-use prosthesis | 42 | 24.9 |
| Total | 169 | 100.0 |

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**1.3 Factors associated with the use of prosthesis**

The information regarding the factors associated with the use of prosthesis can be categorized into different groups of factors: (as shown in table 4)

**1.3.1 Environmental Factors**

The information regarding the environmental factors is obtained from the opinions of the disabled person (who came for prosthesis services) on various kinds of environments. These environments can be categorized as follows:

**Workplace Environment** – The disabled person were asked to give their opinions regarding the convenience in going to contact different workplaces, the traveling problems, and the adjustment of the environment. From the research results, it is found that most of disabled persons (33.2%) quite agree that there are still inconveniences when going to many workplaces, 28.6% of the disabled person very much agree that they always have problems in getting on and off the buses, and 47.9% very much agree that they would walk with their prosthesis better if there is some adjustment in the workplace environment.

**Home Environment** – The disabled person were asked to give their opinions regarding the effect of the weather condition, the houses, and the surrounding environment on the use of prosthesis. From the research results, it is shown that 33.3% of the disabled person very much agree with the statement, which says 'the weather that is very hot or very rainy affects the use of prosthesis', 34.3% of these people quite agree that types of the house affect the use of prosthesis and 39.1% disagree with the surrounding environment which does not allow them to use prosthesis.

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**Social Environment** – The disabled person were asked to give their opinions about the support from their family members or relatives. From the study, it is found that most disabled person (46.7%) very much agree that their families support and encourage them to use prosthesis, And 38.6% think that foully members force disabled person to were. While 29.2% think that it is a requirement of hospital staff. 38.5% of disabled persons disagree with the statement that the family does not support the ides. of wearing prosthesis. 49.1% very much agree that it is their family's requirement for them to wear prosthesis, and 48.2% very much agree that closed individuals have supported and encouraged them to use prosthesis.

**Psychological Environment** – The disabled person were asked to give their opinions about feelings and self-confidence. From the research results, it is found that 40.8% of the disabled person very much agree that prosthesis help them to maintain their social status as normal, 33.1% very much agree that prosthesis help them to perform their work as previously, 41.7% disagree with the lack of readiness in prosthesis usage, 48.5% strongly agree with the self-confidence for prosthesis usage. 43.1% very much agree that wearing prosthesis helps them improving their independence, 44.4% strongly agree with the belief that will not be burdens for others if they wear prosthesis, 36.7% agree and strongly agree with the belief that they will not be burdens in their physical changes. 41.7% very much agree with the acceptance in their physical changes, 34.3% disagree with the statement that wearing prosthesis makes you look like a handicapped person, 42.5% quite agree with the feelings that others look at them with sympathy (as shown in table 4).

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**Table 4:** Numbers and percentages of disabled person based on their opinions about environmental factors

| Environmental Factors | Opinions | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly Agree No.(%) | Very much Agree No.(%) | Some what No.(%) | Disagree Agree No.(%) | Strongly Disagree No.(%) | No.(%) |
| **Office environment** | | | | | | |
| 1.Not convenient when going to contact many offices | 30(17.8) | 44(26.0) | 56(33.2) | 32(18.9) | 7(4.1) | 169(100.0) |
| 2.Problems in getting on and off the buses | 26(15.5) | 48(28.6) | 39(23.2) | 43(25.6) | 12(7.1) | 168(100.0) |
| 3. Adjusted environment helps them walk better | 50(29.6) | 81(47.9) | 31(18.3) | 5(3.0) | 2(1.2) | 169(100.0) |
| **Home environment** | | | | | | |
| 4.Hot weather or rains affect the use of prosthesis | 29(17.3) | 56(33.3) | 43(25.6) | 23(13.7) | 17(10.1) | 168(100.0) |
| 5.Living places affect the use of prosthesis | 27(16.2) | 40(23.7) | 58(34.3) | 32(18.9) | 10(5.9) | 167(100.0) |
| 6.Surronding environment discourages the use of prosthesis | 12(7.2) | 11(6.5) | 26(15.4) | 66(39.1) | 52(30.8) | 167(100.0) |
| **Social environment** | | | | | | |
| 7.Family members always support and encourage you | 62(36.7) | 79(46.7) | 24(14.2) | 2(1.2) | 2(1.2) | 169(100.0) |

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**Table 4:** (continued)

| Environmental Factors | Opinions | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly Agree No.(%) | Very much Agree No.(%) | Some what No.(%) | Disagree Agree No.(%) | Strongly Disagree No.(%) | No.(%) |
| 8. Family members forced you to get prosthesis | 19(11.4) | 28(16.9) | 16(9.6) | 64(38.6) | 39(23.5) | 166(100.0) |
| 9. Hospital staff asked you to wear prosthesis | 23(13.7) | 35(20.8) | 49(29.2) | 47(28.0) | 14(8.3) | 168(100.0) |
| 10.Family members disagree with prosthesis usage | 16(9.5) | 21(12.4) | 5(3.0) | 62(36.6) | 65(38.5) | 169(100.0) |
| 11.Family members asked you to wear prosthesis | 60(35.5) | 83(49.1) | 15(8.9) | 6(3.5) | 5(3.0) | 169(100.0) |
| 12.Closed ones support and encourage the use of prosthesis | 62(36.9) | 81(48.2) | 18(10.7) | 3(1.8) | 4(2.4) | 168(100.0) |
| **Psychological environment** | | | | | | |
| 13.prosthesis help you live in the society nearly normally | 66(39.1) | 69(40.8) | 24(14.2) | 8(4.7) | 2(1.2) | 169(100.0) |
| 14. prosthesis help you performing your work same as before | 44(26.6) | 55(33.1) | 48(28.9) | 16(9.6) | 3(1.8) | 166(100.0) |
| 15.You are not ready to use any prosthesis | 5(3.0) | 12(7.1) | 15(8.9) | 70(41.7) | 66(39.3) | 168(100.0) |
| 16. You yourself want to wear prosthesis | 81(48.5) | 60(35.9) | 15(9.0) | 7(4.2) | 4(2.4) | 167(100.0) |

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**Table 4** (continued)

| Environmental Factors | Opinions | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly Agree | Very much Agree | Some what | Disagree Agree | Strongly Disagree | |
| | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) |
| 17.Wearing prosthesis improves your self-confidence | 61(36.5) | 72(43.1) | 20(12.0) | 12(7.2) | 2(1.2) | 167(100.0) |
| 18. Believe that wearing prosthesis makes you become a self-supporter | 75(44.4) | 68(40.2) | 15(8.9) | 10(5.9) | 1(0.6) | 169(100.0) |
| 19.Believe that wearing prosthesis reduces burdens for others | 62(36.7) | 62(36.7) | 19(11.2) | 21(12.4) | 5(3.0) | 169(100.0) |
| 20. You can accept your physical changes. | 61(36.3) | 70(41.7) | 25(14.9) | 11(6.5) | 1(0.6) | 168(100.0) |
| 21.Wearing prosthesis makes you look like a handicapped person | 13(7.8) | 25(15.1) | 41(24.7) | 57(34.3) | 30(18.1) | 166(100.0) |
| 22. You feel that others look at you with sympathy | 15(9.0) | 51(30.5) | 71(42.5) | 20(12.0) | 10(6.0) | 167(100.0) |

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### 1.3.2 Prosthesis Factors

The information regarding the prosthesis factors is obtained from the opinions of the disabled person (who came for prosthesis services) on various aspects of physical equipments. These factors can be categorized as follows:

**Safety** – It is found that 40.9% of the disabled persons, who come for the prosthesis services, quite agree with the statement, which says 'they are satisfied with safety of their prosthesis'.

**Comfortably** – It is found that 37.1 % of the disabled persons, who come for the prosthesis services, very much agrees that the prosthesis work very well. 31.4% disagree and strongly disagree that the prosthesis creates more burdens rather than being useful. 40.2% disagree with the use of prosthesis, which are difficult to wear. 47.3% are very satisfied with the size of them. 45.0% are very satisfied with the shape of the prosthesis. 38.4% are very satisfied with the weight of the prosthesis. 42.9% are very satisfied with the prosthesis' convenience of use. 45.6% are very satisfied with materials used in producing the prosthesis. 46.1% are very satisfied with the use of their prosthesis. 40.7% are very satisfied with the prosthesis which look good according to their requirements.

**Maintenance** – It is found that 42.9% of the disabled persons are quite satisfied with the durability of the prosthesis, and 40.1% are quite satisfied with the period of use for the prosthesis. 43.2% disagree with the use of prosthesis, which require difficult maintenance.

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**Table 5:** Numbers and percentages of disabled person based on their opinions about the prosthesis factors

| Prosthesis Factors | Opinions | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly Satisfied | Very Satisfied | Quite Satisfied | Dissatisfied | Strongly Dissatisfied | |
| | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) |
| **Safety** | | | | | | |
| 23. Satisfied with the safety of their prosthesis | 29(17.5) | 65(39.2) | 68(40.9) | 4(2.4) | 0(0.0) | 166(100.0) |
| **Comfortably** | | | | | | |
| 24. The prosthesis received work very well | 35(21.0) | 62(37.1) | 48(28.7) | 15(9.0) | 7(4.2) | 167(100.0) |
| 25.The prosthesis Creates more burdens than being useful | 18(10.6) | 19(11.2) | 26(15.4) | 53(31.4) | 53(31.4) | 169(100.0) |
| 26Wearing prosthesis is very difficult. | 6(3.6) | 14(8.3) | 31(18.3) | 68(40.2) | 50(29.6) | 169(100.0) |
| 27. Satisfied with size of prosthesis | 29(17.2) | 80(47.3) | 47(27.8) | 13(7.7) | 0(0.0) | 169(100.0) |
| 28. Satisfied with shape of prosthesis | 32(18.9) | 76(45.0) | 50(29.6) | 11(6.5) | 0(0.0) | 169(100.0) |
| 29. Satisfied with weight of prosthesis | 26(15.4) | 65(38.4) | 53(31.4) | 21(12.4) | 4(2.4) | 169(100.0) |
| 30. Satisfied with convenience of the use of prosthesis | 36(21.4) | 72(42.9) | 49(29.2) | 11(6.5) | 0(0.0) | 168(100.0) |
| 31. Satisfied with materials used in producing prosthesis | 38(22.5) | 77(45.6) | 46(27.2) | 8(4.7) | 0(0.0) | 169(100.0) |

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**Table 5** (continued)

| prosthesis Factors | Opinions | | | | | Total |
|---|---|---|---|---|---|---|
| | Strongly Satisfied | Very Satisfied | Quite Satisfied | Dissatisfied | Strongly Dissatisfied | |
| | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) | No.(%) |
| 32. Satisfied with the use of prosthesis | 29(17.2) | 78(46.1) | 52(30.8) | 10(5.9) | 0(0.0) | 169(100.0) |
| 33. prosthesis look good according to your needs | 29(17.4) | 68(40.7) | 57(34.1) | 12(7.2) | 1(0.6) | 167(100.0) |
| **Maintenance** | | | | | | |
| 34. prosthesis are durable. | 29(17.3) | 60(35.7) | 72(42.9) | 7(4.1) | 0(0.0) | 168(100.0) |
| 35. Satisfied with the period of the use of prosthesis | 25(15.0) | 66(39.5) | 67(40.1) | 9(5.4) | 0(0.0) | 167(100.0) |
| 36. Maintenance of prosthesis is very difficult | 5(3.0) | 10(5.9) | 35(20.7) | 73(43.2) | 46(27.2) | 169(100.0) |

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## Part 2: Comparison of factors based on the behaviors of the use and non-use of the Prosthesis

In this part; personal factors, environmental factors, and prosthesis factors are compared based on the behaviors of disabled person, who have used and have not used prosthesis. Using bivariate analysis with Chi-square statistics tests the relationships of these factors. In this research, the total numbers are 169 disabled persons. There are 127 disable persons who have used prosthesis, and 42 disable persons are non-use (table 3). The analysis results are presented below (table 6):

### 2.1 personal factors based on the behaviors in using prosthesis

**Gender** of the disabled person – Gender is associated with the use of prosthesis with statistical significance at the level of 0.05 (P-value = 0.016). There are 2 groups of disabled person who came for prosthesis services: male and female. For females, 61.0% have used prosthesis while 39.0% non-used. For males, 79.7% have used prosthesis while 20.3% non-used.

**Age** of the disabled person – Age is associated with the use of prosthesis with statistical significance at the level of 0.01 (P-value = 0.003). The age of the disabled person can be categorized into 3 groups: younger than 23 years old, 23-59 years old, and 60 years old or more. For those younger than 23 years old, 78.6% of people in this age group have used prosthesis and 21.4% non-used. For those with the age from 23-59 years old, 80.0% of people in this age group have used prosthesis and 20.0% non-used. For those who are 60years old or older, 48.0% of people in this age group have used prosthesis and 52.0% non-used.

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**Marital status** of the disabled person – Marital status has no statistical significance in terms of its associated with the use of prosthesis (P-value>0.05). Marital status of the disabled person can be categorized into 2 groups: married, and single/divorced/or widow. 76.6% of the married have used prosthesis and 23.4% non-used. For those who are single, divorced, or widows; 72.6% of these people have used prosthesis and 27.4% non-used.

**Education** of the disabled persons – Educational level has no statistical significance in terms of its associated with the use of prosthesis. Educational level of the disabled person can be categorized into 2 groups: primary level or lower, and higher than primary level. For those with education at primary level or lower, 71.7% of these people have used prosthesis and 28.3% non-used. For those with education at higher level, 82.1% of these people have used prosthesis and 17.9% non-used.

**Occupation** of the disabled person – Occupation has no statistical significance in terms of its associated with the use of prosthesis. Occupation of the disabled person can be categorized into 3 groups: no occupation, farmers, and other occupations. For those who have no occupation, 73.5% of these people have used their prosthesis and 26.5% non-used. For those who are farmers, 85.5% of these people have used their prosthesis and 14.5% non-used. For those who have other occupations apart from farming, 68.7% of these people have used their prosthesis and 31.3% non-used.

**Duration of disability** – The duration of disability is associated with the use of prosthesis with statistical significance at the level of 0.05 (P–value = 0.027). The duration of disability can be categorized into 3 groups: 1-3 years, 4-8 years and 9 years or more. For those who have been disabled for 1-3 years, 58.1% of these people have used their prosthesis and 41.9% non-used. For those who have been disabled for

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4-8 years, 74.1% of these people have used their prosthesis and 25.9% non-used. For those who have been disabled for 9 years or more, 82.5% of these people have used their prosthesis and 17.5% non-used.

**Causes of disability** – The causes of disability is associated with the use of prosthesis with statistical significance at the level of 0.01(P-value=<0.001). The causes of disability can be categorized into 2 groups: non-accidental causes, and accidental cause. For those in disabled state due to other reasons apart from accidents, 57.6% of these people have used their prosthesis and 42.4% non-used. For those in disabled state because of accidents, 82.9% of these people have used their prosthesis and 17.1 % no- used.

**Level of amputation**– Level of amputation has no statistical significance in terms of its associated with the use of prosthesis. Level of lower limb amputation can be categorized into 2 groups: below knees, and above knees. For those who have amputation below knee level, 76.8% of these people have used their prosthesis and 23.2% non-used. For those who have amputation above knee level, 72.1% of these people have used their prosthesis and 27.9% non-used.

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**Table 6:** Numbers and percentages of personal factors of disabled person based on their behaviors in using prosthesis

| Personal Factore | Prosthesis usage Yes | Prosthesis usage No | Total | $\chi^2$ | df | P-value |
|---|---|---|---|---|---|---|
| **Gender** | | | | **5.822** | **1** | **0.016*** |
| Female | 25(61.0) | 16(39.0) | 41(100.0) | | | |
| Male | 102(79.7) | 26(20.3) | 128(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Age (year)** | | | | **11.592** | **2** | **0.003**** |
| Below 23 | 11(78.6) | 3(21.4) | 14(100.0) | | | |
| 23-59 | 104(80.0) | 26(20.0) | 130(100.0) | | | |
| 60 or more | 12(48.0) | 13(52.0) | 25(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Marital status** | | | | **0.346** | **1** | **0.557** |
| Married | 82(76.6) | 25(23.4) | 107(100.0) | | | |
| Single/Widow | 45(72.6) | 17(27.4) | 62(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Education** | | | | **2.194** | **1** | **0.139** |
| Primary and lower | 81(71.7) | 32(28.3) | 113(100.0) | | | |
| Higher than primary | 46(82.1) | 10(17.9) | 56(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |

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**Table 6:** (continued)

| Personal Factore | Prosthesis usage Yes | No | Total | $\chi^2$ | df | P-value |
|---|---|---|---|---|---|---|
| **Occupation** | | | | **4.929** | **2** | **0.085** |
| Non occupation | 25(73.5) | 9(26.5) | 34(100.0) | | | |
| Farmers | 47(85.5) | 8(14.5) | 55(100.0) | | | |
| Other occupations | 55(68.7) | 25(31.3) | 80(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Duration of disability (year)** | | | | **7.191** | **2** | **0.027*** |
| 1-3 | 18(58.1) | 13(41.9) | 31(100.0) | | | |
| 4-8 | 43(74.1) | 15(25.9) | 58(100.0) | | | |
| 9 or more | 66(82.5) | 14(17.5) | 80(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Causes of disability** | | | | **12.254** | **1** | **<0.001**** |
| Non-accident | 30(57.6) | 22(42.4) | 52(100.0) | | | |
| Accidents | 97(82.9) | 20(17.1) | 117(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| **Level of amputation** | | | | **0.462** | **1** | **0.495** |
| Below knee level | 83(76.8) | 25(23.5) | 108(100.0) | | | |
| Above knee level | 44(72.1) | 17(27.9) | 61(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |

* Statistical significance level at 0.05 ** Statistical significance level at 0.001

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**Information of various factors based on the behaviors in using prosthesis**

In this research, we studied various factors based on the behaviors of the disabled person in using their prosthesis. The environmental factors are workplace environment, home environment, social environment, and mental environment. The prosthesis factors are safety, comfortably, and maintenance. The variables used in the analysis are categorized into 2 groups using the criterion of comparison with the average value i.e. lower than mean , and mean or more. The whose score is lower than means are those with less positive opinions/feelings about the use of prosthesis. The whose score is means or more those with are positive opinions/feelings about the use of prosthesis. Details as follows:

(1) Workplace environment

- Group whose score is lower than means are those who think that workplace environment is inconvenient for them or they do not believe in prosthesis usage.
- Group whose score is mean or more are those who think that workplace environment had less the use of prosthesis.

(2) Home environment

- Group whose score is lower than mean are those who think that adjustment of home environment are not that useful for prosthesis usage.
- Group whose score is means or more are those who think that adjustment of home environment are very useful for prosthesis usage.

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(3) Social environment

- Group whose score is lower than means are those who think that adjustment of social environment are not that useful for prosthesis usage.
- Group whose score is means or more are those who think that adjustment of social environment are very useful for prosthesis usage.

(4) Psychological environment

- Group whose score is lower than means are those who think that there is little psychological support
- Group whose score is means or more are those who think there is a lot of psychological support

(5) Safety

- Group whose score is lower than means are those who think that the safety level of prosthesis usage is low.
- Group whose score is means or more are those who think that the safety level of prosthesis usage is high.

(6) Comfortably

- Group whose score is lower than means are those who think that prosthesis usage are inconvenient.
- Group whose score is means or more are those who think that prosthesis are very convenient.

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(7) Maintenance

- Group whose score is lower than means are those who think maintenance of prosthesis are difficult.
- Group whose score is means or more are those who think maintenance of prosthesis are easy and convenient.

**2.2 Environmental factors based on the behaviors in using prosthesis**

The environments of the disabled person based on their behaviors in using prosthesis have been analyzed. The environmental factors studied are workplace environment, home environment, social environment, and psychological environment. See details in table 7.

**Workplace environment**: Workplace environment is not significantly associated with the use of prosthesis (P-value>0.05). Workplace environment of the disabled persons, who come for prosthesis services, can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the adjustment of workplace environment) lower than mean, 80.5% have used their prosthesis and 19.5% non-used. Out of the group with numbers of agreement (regarding the adjustment of workplace environment) mean or more, 70.1% have used their prosthesis and 29.9% non-used.

When considering the workplace environment as a whole, the average value is equal to 8.52 and the standard deviation is equal to 2.11.

**Home environment**: Home environment is not significantly associated with the use of prosthesis. Home environment of the disabled persons, who come for prosthesis services, can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the adjustment of home environment) lower than mean,

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71.0% have used their prosthesis and 29.0% non-used. Out of the group with numbers of agreement (regarding the adjustment of home environment) mean or more, 80.3% have used their prosthesis and 19.7% non-used.

When considering the home environment as a whole, the average value is equal to 10.38 and the standard deviation is equal to 2.35.

**Social environment**: Social environment is not significantly associated with the use of prosthesis. Social environment of the disabled persons, who come for prosthesis services, can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the adjustment of social environment) lower than mean, 68.7% have used their prosthesis and 31.3% non-use. Out of the group with numbers of agreement (regarding the adjustment of social environment) mean or more, 80.3% have used their prosthesis and 19.7% non-used.

When considering the social environment as a whole, the average value is equal to 22.69 and the standard deviation is equal to 3.26.

**Psychological environment:** Psychological environment is associated with the use of prosthesis. The statistical significance at the level of 0.05 (P-value=0.014). Psychological environment of the disabled persons, who come for prosthesis services, can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the psychological support) lower than mean, 67.10% have used their prosthesis and 32.9% non-used. Out of the group with numbers of agreement (regarding the psychological support) mean or more, 83.3% have used their prosthesis and 16.7% non-used.

When considering the mental environment as a whole, the average value is equal to 38.19 and the standard deviation is equal to 6.01.

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**Table 7:** Numbers and percentages of environmental factors of disabled person based on their behaviors in using prosthesis

| Environmental Factors | prosthesis usage Yes | No | Total | $\chi^2$ | df | P-value |
|---|---|---|---|---|---|---|
| **Workplace Environment** | | | | **2.432** | **1** | **0.119** |
| - Lower than mean | 66(80.5) | 16(19.5) | 82(100.0) | | | |
| - Mean or more | 61(70.1) | 26(29.9) | 87(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 8.52, standard deviation = 2.11, minimum value = 3, maximum value = 13 | | | | | | |
| **Home environment** | | | | **1.935** | **1** | **0.164** |
| - Lower than mean | 66(71.0) | 27(29.0) | 93(100.0) | | | |
| - Mean or more | 61(80.3) | 15(19.7) | 76(100.0) | | | |
| Total | 127 (75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 10.38, standard deviation = 2.35, minimum value = 4, maximum value = 15 | | | | | | |
| **Social environment** | | | | **3.660** | **1** | **0.056** |
| - Lower than mean | 57(68.7) | 26(31.3) | 83(100.0) | | | |
| - Mean or more | 70(81.4) | 16(18.6) | 86(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 22.69, standard deviation = 3.26, minimum value = 15, maximum value = 30 | | | | | | |

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**Table 7:** (continued)

| Environmental Factors | prosthesis usage Yes | prosthesis usage No | Total | $\chi^2$ | df | P-value |
|---|---|---|---|---|---|---|
| **Psychological environment** | | | | **5.992** | **1** | **0.014*** |
| - Lower than mean | 60(67.4) | 29(32.6) | 89(100.0) | | | |
| - Mean or more | 67(83.8) | 13(16.2) | 80(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |

* Statistical significance level at 0.05

**2.3 Prosthesis factors based on the behaviors in using**

Information of prosthesis factors derived from the analysis of various aspects of prosthesis factors based on the behaviors of the disabled person in using prosthesis. The factors studied are safety, comfortably, and maintenance. See details in table 8.

**Safety:** Safety is associated with the use of prosthesis. the statistical significance at the level of 0.01 (P-value=0.004). Safety in the use of prosthesis can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the safety in the use of prosthesis) lower than mean, 63.9% have used their prosthesis and 36.1% non-used. Out of the group with numbers of agreement (regarding the safety) mean or more, 83.9% have used their prosthesis and 16.1% non-used.

When considering the safety issue as a whole, the average value is equal to 3.72 and the standard deviation is equal to 0.77.

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**Comfortably:** Comfortably is associated with the use of prosthesis with statistical significance at the level of 0.01(P-value<0.001) Comfortable can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the comfortable) lower than mean, 59.0% have used their prosthesis and 41.0% non-used. Out of the group with numbers of agreement (regarding the comfortably) mean or more, 90.7% have used their prosthesis and 9.3% non-used.

When considering comfortably as a whole, the average value is equal to 37.36 and the standard deviation is equal to 6.14.

**Maintenance:** Maintenance is associated with the use of prosthesis (the statistical significance at the level of 0.05(P-value=0.014)). Maintenance can be categorized into 2 groups. Out of the group with numbers of agreement (regarding the difficulty in maintenance of prosthesis) lower than mean, 67.4% have used their prosthesis and 32.6% non-used. Out of the group with numbers of agreement (regarding the easy and convenient maintenance of prosthesis) mean or more, 83.8% have used their prosthesis and 16.2% non-used.

When considering the maintenance as a whole, the average value is equal to 11.06 and the standard deviation is equal to 2.11.

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**Table 8:** Numbers and percentages of Prosthesis factors for disabled person based on their behaviors in using prosthesis

| prosthesis Factors | prosthesis usage Yes | prosthesis usage No | Total | $\chi^2$ | df | P-value |
|---|---|---|---|---|---|---|
| **Safety** | | | | **8.515** | **1** | **0.004**** |
| - Lower than mean | 46(63.9) | 26(36.1) | 72(100.0) | | | |
| - Mean or more | 81(83.5) | 16(16.5) | 97(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 3.72, standard deviation = 0.77, minimum value = 2, maximum value = 5 | | | | | | |
| **Comfortably** | | | | **22.671** | **1** | **<0.001**** |
| - Lower than mean | 49(61.3) | 31(38.8) | 80(100.0) | | | |
| - Mean or more | 78(87.6) | 11(12.4) | 89(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 37.36, standard deviation = 6.14, minimum value = 22, maximum value = 50 | | | | | | |
| **Maintenance** | | | | **6.019** | **1** | **0.014*** |
| - Lower than mean | 56(62.2) | 34(37.8) | 90(100.0) | | | |
| - Mean or more | 71(89.9) | 8(10.1) | 79(100.0) | | | |
| Total | 127(75.1) | 42(24.9) | 169(100.0) | | | |
| Average = 11.01, standard deviation = 2.11, minimum value = 6, maximum value = 15 | | | | | | |

**Statistical significance level at 0.01 * Statistical significance level at 0.05

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In conclusion, the variables of personal factors, environmental factors, and prosthesis factors have been analyzed to find out their associated with the behaviors in using prosthesis.

Using the Chi-square test; it is found that the variables associated with the behaviors in using prosthesis are gender, age, duration of disability, causes of disability, mental environment, safety, comfortably, and maintenance. The variables which are not associated with the behaviors in using prosthesis are marriage status, educational, occupation, level of amputation, workplace environment, home environment, and social environment; as mentioned earlier.

## Part 3: Analysis of factors associated with behaviors in used and non-used Prosthesis

By using Chi-square statistics, the relationships between each independent variable and the dependent variables have been analyzed. It is found that only some independent variables are statistically associated with the behaviors in using prosthesis (as show in table 6).

**Personal factors** (as shown in table 6): The variables associated with the use of prosthesis are: gender, age, duration of disability, and causes of disability (P-value 0.016, 0.018, 0.027 and <0.001 respectively). The variables that are not associated with the use of prosthesis are marriage status, educational, occupation, and level of amputation.

**Environmental factors** (as shown in table 7): The variable associated with the use of prosthesis is psychological environment (P-value 0.014). The variables that

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are not associated with the use of prosthesis are workplace environment, home environment, and social environment.

**Prosthesis factors** (as shown in table 8): The variables associated with the use of prosthesis are safety, comfortably, and maintenance (P-value = 0.004, <0.001, <0.001 respectively).

From the relationships explained above, it is seen that some variables are associated with the use of prosthesis with statistical significance. However, the relationship between each independent variable and the dependent variable could be misleading as a result of influences from other independent variables. Therefore, the researcher has analyzed all the relating independent variables once more by using multivariate analysis with logistic regression statistics. With this method, when one independent variable is being analyzed, other variables will be controlled. (Tawatchai Vorapongsatorn, 2539: 121). By using this method, an influencing variable will be seen easily as it will be more outstanding than other variables. This is because when finding the independent variables, which influence a dependent variable, it is specified that all independent variables must be independent from each other.

In the specified analysis model, the dependent variable is the behavior of used or non-used prosthesis, which was 2 values: 1 and 0 (dichotomous variable) respectively . There are 3 groups of factors for independent variables (as shown in conceptual framework) as follows:

1. Personal factors i.e. gender (males are the reference group), age (those with the age of 59 years or more are the reference group), duration of disability (those who have been disabled for 9 years or more are the

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reference group), and causes of disability (those in disabled state due to accidents are the reference group).

2. Environmental factors i.e.psychological environment (those with value higher than average are the reference group)
3. Prosthesis factors i.e. safety (those with value higher than average are the reference group), comfortably (those with value higher than average are the reference group), and maintenance (those with value higher than average are the reference group).

From the analysis results, it is found that only some of the independent variable were associated with the use of prosthesis with different statistical levels of significance i.e. at the level 0.01 or 0.05 (as shown in table 9). Moreover, when considering the influences of various independent variables on dependent variables, as specified in the analysis model; it is found that various factors have an influence on the use of prosthesis differently as follows:

**Age:** Age of the disabled person in this research is categorized into 3 groups: younger than 23 years, between 23-59 years, and 60 years or older. The result from the Logistic Regression analysis shown that the P-value is less than 0.05, the Coefficient is positive and the Odds Ratio is equal to 8.9254. It means that the groups of the disabled persons, who are younger than 23 years old, are 8.9 times more likely to use prosthesis as compare with those who are 60 years old or older. It also means that those with the age between 23-59 years are 6.3 times more likely to use prosthesis as compare with those who are 60 years old or older. Therefore, it is accepted that age is significantly associated with the use of prosthesis at the 0.05 level. This finding is in line with the research of Vanida Ooprasert and associated (2538: 39-45). This might

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be because the disabled persons in studying age are able to adapt themselves quickly and that leads to the efficient use of prosthesis.

**Duration of disability:** The duration of disability in this research is categorized into 3 groups: 1-3 years, 4-8 years, and 9 years or more. The research from the Logistic Regression analysis is shown that the P-value is less than 0.05, the coefficient is negative, and odds ratio is equal to 0.1789 which is lower than 1. This means that the people who have been disabled for 1-3 years were 82% less likely to use prosthesis as compare with those who had been disabled with disability for 9 years or more. Therefore, the hypothesis, which states that 'duration of disability is associated with the use of prosthesis ' is accepted. This finding is in lined with the study of Damrong Kijkusol (2526: 152) who mentioned that 'time is the best medicine' for those who have lost their arms or legs. This is because time will help them learn how to adjust them selves both physically and mentally so that they can look after themselves better. The longer it is, the better for the disabled to develop their abilities to look after themselves and the more self-confidence they would have in performing various activities. All these things would affect their relationships with others, and the participation in the activities of the society.

**Cause of disability:** The causes of disability in this research are categorized into 2 groups: accident and non-accident causes. The research from the Logistic Regression analysis is shown that the P-value is less than 0.05, the coefficient is negative, and the odds ratio is equal to 0.3207 which is lower than 1. This means that the disabled persons, who have lost their lower limbs due to other reasons were 68% less likely to used prosthesis as compare with those who have lost their lower limbs from accidents. Therefore, the hypothesis, which states that 'the cause of disability is

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associated with the use of prosthesis ', is accepted. This finding is in lined with the study of Taworn Butsomta (2525), who found that the cause of disability affects the psychological condition of each patient, and it is related to his/her behaviors shown to others.

**Comfortably:** The comfortable usage in this research is categorized into 2 groups: lower than average and higher than average. The research from the Logistic Regression analysis is shown that the P-value is less than 0.05, the coefficient is negative, and the odds ratio is equal to 0.1125 which is lower than 1. This means that the disabled person who are less comfortable with their prosthesis (score lower than mean) were 88% less likely to use prosthesis as comparison with those who feel comfortable when wearing prosthesis (score mean or more). Therefore the hypothesis, which states that 'the convenience of use is associated with the use of prosthesis ' is accepted. This finding is in lined with the study of Scherer, Marcia J. (1994), who has studied the available technologies of facilities and the convenience of prosthesis usage for the disabled persons, who have been using technologies/facilities in their daily activities very well.

Other factors not significantly associated with the use of prosthesis are gender, mental environment, safety, and maintenance (as shown in table 9). This finding is different from the set hypothesis regarding these factors. When using bivariate analysis, it is found that all the mentioned variables are associated with the use of prosthesis with statistical significance. This finding may result from the influences of other variables. Therefore, the relationship found is just a superious relationship. When using multivariate analysis instead, these independent variables are, therefore, not associated with the behaviors of the disabled person in using prosthesis.

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From bivariate analysis, the variables which have no effect on the behaviors of the disabled persons in using their prosthesis are marital status, education, occupation, level of amputation, workplace environment, home environment, and social environment. Therefore, these variables are not included in the multivariate analysis.

**Table 9:** Analysis of factors associated with the use of prosthesis by logistic regression statistics

| Variables | B | Prob. | Exp (B) |
|---|---|---|---|
| Gender (male) ++ | | | |
| - Female | -0.6150 | 0.2589 | 0.5407 |
| Age (60 years or more) ++ | | | |
| - Younger than 23 years | 2.1889 | 0.0282* | 8.9254 |
| - 23-59 years | 1.8438 | 0.0069* | 6.3207 |
| Duration of disability (9 years or more)++ | | | |
| -1-3 years | -1.7207 | 0.0040** | 0.1789 |
| - 4-8 years | -0.7592 | 0.1517 | 0.4680 |
| Cause of disability (accidents) ++ | | | |
| - non-accidental causes | -1.1371 | 0.0259* | 0.3207 |
| Psycological environment (mean or more) ++ | | | |
| -Lower than mean | -0.5608 | 0.2574 | 0.5707 |
| Safety (mean or more) ++ | | | |
| -Lower than mean | -0.4801 | 0.4023 | 0.6187 |

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**Table 9:** (continued)

| Variables | B | Prob. | Exp (B) |
|---|---|---|---|
| Comfortably (mean or more) ++ | | | |
| -Lower than mean | -2.1846 | 0.0005** | 0.1125 |
| Maintenance (mean or more) ++ | | | |
| -Lower than mean | 0.0285 | 0.9632 | 1.0289 |

* Statistical significance level 0.05 ** Statistical significance level 0.01

++ Group in the bracket means the reference group

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# CHAPTER V

# CONCLUSIONS, DISCUSSIONS AND RECOMMENDATIONS

This is a study on factors associated with the use of prosthesis. The studied group of people is the group of disabled patients who have received local-material prostheses from Trang Hospital. The focuses of this study are on the behaviors of disabled persons in using the prosthesis, and the factors associated with the use of local-material prosthesis.

This is a survey research with cross sectional study. In this research, questionnaires were used to collect the data. The studied group is the disabled persons who have received local-material prostheses from Trang Hospital. According to the hospital records from 2540-2543 B.E., there are 287 patients who had met eriteria those who had been fitted with prosthesis for at least 3 months and came for the services for the first time. These people are the targeted population for this study. The length of time used for data collection is 3 months. The questionnaires created for this research were based on the MPT framework proposed by Scherer Marcia. J. (1994) . From the targeted population, The research were able to collect the information from 169 persons. This the sample of this study consists of 169 persons in which 127 persons (75.1%) stated that they used the prosthesis and 42 persons (24.9%) did not use their device.

The data were evaluated and analyzed by using statistic package program. The data regarding general characteristics of disabled persons were then presented using the descriptive statistics. The comparison of the use and non-use disabled persons were also discussed by using the bivariate analysis and the Chi-Square test. Finally,

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the data derived from the analysis of factors related to the use of prosthesis were presented using the logistic regression.

## Conclusions and Discussions

In general, it is found that the ratio of male: female = 3:1, the average age = 42.3 years old and 63.3% are married. Most of them are farmers and most were educated up to primary school level. The average duration of disability is 12 years, with transportation accidents as the main causes of disability (43.2%). Below-Knee amputation is most common. By asking the studied group to rate their environmental factors, the average score for Workplace Environment = 8.52 (minimum score = 3, maximum score = 13); for Home Environment = 10.38 (min = 4, max = 15); for Social Environment = 22.69 (min = 15, max = 30); and for Psychological Environment = 38.1866 (min = 17, max = 50). Regarding the prosthetic factors; the scores were also given for each of the factors. The average score for Safety = 3.72 (min = 2, max = 5), for Convenience = 37.36 (min = 22, max = 50); and for Maintenance = 10.01 (min = 6, max = 15).

1. **Results from Bivariate Analysis :**

By using the Chi-square test, it is found that: gender, age, duration of disability, cause of disability, environmental factor (Psychological), and prosthetic factors (safety, convenience, and maintenance); are significantly associated with the use of prosthesis at the statistical level of 0.01 and 0.05; with the exception of some variables i.e. marriage status, occupation, education, level of amputation, workplace

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environment, home environment and social environment; (as shown in Table 6, 7 and 8).

Nevertheless, when considering the factors related to the use of prosthesis ; it is found that the rates of prosthesis usage in male and female are not much different i.e. 79.7% for male and 61.0% for female.

As indicated by the "age" parameter, there are differences in age of the disabled persons, which could have an effect on the use of prosthesis. From the case study, it is found that age is significantly related to the use of prosthesis.

As indicated by the "duration of disability" parameter, there are differences in duration of disability of the disabled persons, which could have an effect on the use of prosthesis. From this study, it is found that the rate of prosthesis usage changes in the same direction as the duration of disability i.e. the longer the duration of disability, the higher the rate of prosthesis usage .

As indicated by the "cause of disability" parameter, there are many different causes of disabilities, which could have an effect on the use of prosthesis. From this study, it is found that causes of disability are associated with the use of prosthesis i.e. those disabled as a result of accidents are more likely to use prosthesis than others.

When considering the "psychological environment" parameter, it is found that this factor is associated with the use of prosthesis as it is related to the acceptance of disabled persons. If disabled persons can accept the reality and have positive attitudes towards themselves, they would have more confidence in using the prosthesis and be able to help themselves without assistance from others

When considering the "safety" parameters, it is found that Safety is related to the use of prosthesis i.e. those satisfied with the safety of their prosthesis (satisfaction

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level higher than average) are more likely to use prosthesis than those dissatisfied with the safety of their prosthesis (satisfaction level lower than mean).

When considering the "convenience" parameter, it is found that Convenience is associated with the use of prosthesis i.e. those satisfied with the convenience of their prosthesis (satisfaction level higher than average) are more likely to use prosthesis than those dissatisfied with the convenience of their prosthesis (satisfaction level lower than average).

When considering the "maintenance" parameter, it is found that Maintenance is associated with the use of prosthesis i.e. those satisfied with the maintenance of their prosthesis (satisfaction level mean or more) are more likely to use prosthesis than those dissatisfied with the maintenance of their prosthesis (satisfaction level lower than mean).

The overall results of this bivariate analysis of relations show that the differences in each of the studied parameters affect the use of prosthesis. These findings are in accordance with the hypothesis of this study.

**2. Result from Multivariate Analysis:**

Only some parameters are associated with the use of prosthesis where Logistic Regression was applied as described below:

**Age:** Disabled persons who are younger than 23 years old are 8-9 times more likely to use the prosthesis than geriatric persons who are 60 years old or older. Those with the age between 23 - 59 years are 6.3 times more likely to use the prosthesis than geriatric persons who are 60 years old or older.

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**Duration of disability:** Disabled persons with average period of disability from 1-3 years are 82% less likely to use for prosthesis usage than those with the period of disability 9 years or more.

**Cause of disability:** Those who had become disabled as a result of accidents are 68 % less likely to use prosthesis. than those disabled due to other causes.

**Convenience:** Disabled persons who have satisfaction level (in terms of convenience of usage) were 88% less likely to use prosthesis than those with satisfaction level lower than mean.

## 3. Discussions

From the case study, it can be concluded (according to M.P.T. of Scherer, Marcia. J., 1994) that there are only 2 types of factors which are associated with the use of prosthesis i.e. the personal factors (in terms of: age, duration of disability and cause of disability); and prosthetic factors (in terms of: convenience). Therefore, in distributing prosthesis to disabled persons, one should realize how prosthesis could be used so that it would be beneficial for their daily activities.

There are also other parameters (according to M.P.T. of Scherer, Marcia. J., 1994) that are not significantly related to the use of prosthesis. These parameters are: Personal factors (in terms of: gender, marital status, occupation, education, and level of amputation); Environmental factors (in terms of: workplace environment, home environment, social environment, and psychological environment); and Prosthetic factors (in terms of: safety and maintenance). These parameters, therefore, do not support the hypothesis of this study. It may be because there is no cost involved in getting the prosthesis (welfare according to Disability Act: 2534 B.E). Disabled

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persons can ask for free prosthesis from the Prosthetic Foundation or any State Hospitals all over Thailand. Regarding the environmental factors, there is no adjustment of workplace and home environment for disabled persons in Thailand, unlike in other developed countries where there are supportive facilities and certain budgets have been allocated to assist these people. Regarding the prosthetic factors (in terms of: safety, durability, and maintenance), there is not much difference in the needs for safety and durability of the prosthesis. In general, safety is one of the criteria for making the prosthesis; and the durability varies according to the usage of each person who uses it for different kinds of work. In developed countries (Otto Bock: 45-2001), the consideration about safety starts from the stage of material-selection. Suitable materials are chosen according to the body weight. Regarding maintenance, it is not that complicated and disabled persons are able to handle it themselves. From this point of view, it is obvious that there is no difference in the use of prosthesis in Thailand and other countries, because we all want our prosthesis to be safe and durable.

## 4. Recommendations

4.1. Recommendations from this research

We found that the parameters related to the use of prosthesis are: duration of disability, cause of disability, and convenience. To plan or improve the quality of prosthesis, the following recommendations are to be considered:

- The government should take part in adjusting the public environment to assist disabled persons; and arrange for occupational training programs for them so that they could be independent.

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- The relevant departments in charge of the rehabilitation services must cooperate with each other in encouraging disabled persons to use their prosthesis. For example, more disabled persons might use their prosthesis if they had received counseling get right information.

4.2. Suggestions for future research

1. There should be a long-term research on this topic to confirm the effects of factors associated with the use of prosthesis in daily life.
2. There should be a research on other factors to find out whether or not they are associated with the use of prosthesis e.g. factor of imported materials.
3. There should be a research on the knowledge and understanding of prosthesis usage in groups of people with different economical and social status.

4.3. Suggestions for application of results

1. According to the results from this research, disabled persons who are younger than 22 years old are those who use prosthesis the most. Thus, disabled persons of all ages should be encouraged to use prosthesis.
2. According to the results from this research, those disabled as a result of accidents use prosthesis more than others. Thus, more counseling training & information about prosthesis should be provided to those with disabilities from other causes.
3. According to the results from this research, prosthetic factors are associated with the use of prosthesis. Thus, patients should be trained and advised how to use prosthesis in order to increase their satisfaction.
4. The results from this research could be used as preliminary data for the assessment of disabled persons; and for future studies of prosthesis usage.

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# Appendix

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**แบบสอบถาม**

**เรื่อง ปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียม**
**: ศึกษาเฉพาะคนพิการที่มารับขาเทียมที่ผลิตจากวัสดุภายในประเทศ**
**ในโรงพยาบาลตรัง**

คำชี้แจง แบบสอบถามนี้เพื่อสำรวจปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียมที่ผลิตจากวัสดุภายในประเทศ ในโรงพยาบาลตรัง ซึ่งจะเป็นข้อมูลสนับสนุนสำหรับผู้บริหาร ในการกำหนดนโยบายเพื่อปรับปรุง พัฒนา คุณภาพวัสดุในการผลิตขาเทียมให้มีมาตรฐาน จึงขอความร่วมมือจากท่านในการตอบแบบสอบถามฉบับนี้ ซึ่งคำถามชุดนี้แบ่งเป็น 4 ส่วน คือ

ส่วนที่ 1 ข้อมูลลักษณะประชากรทั่วไปของผู้ตอบแบบสอบถาม
ส่วนที่ 2 ข้อมูลเกี่ยวกับขาเทียมที่ได้รับในปัจจุบัน
ส่วนที่ 3 แบบสอบถามเกี่ยวกับปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียม
ส่วนที่ 4 ข้อเสนอแนะในการบริการ

โปรดกรุณาตอบแบบสอบถามให้ครบทุกข้อ คำตอบของท่านจะถูกเก็บเป็นความลับ และจะไม่มีผลต่อการรับบริการฟื้นฟูสมรรถภาพ ที่ท่านจะได้รับแต่อย่างใด ซึ่งความเห็นของท่านมีคุณค่ายิ่งในงานวิจัยนี้

ขอขอบพระคุณทุกท่านที่ให้ความร่วมมือ
นัทธี บุญจันทร์
ผู้วิจัย

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**ส่วนที่ 1 ข้อมูลลักษณะประชากรทั่วไปของผู้ตอบแบบสอบถาม**

โปรดเขียนเครื่องหมาย / ลงใน ( ) หน้าข้อความที่ท่านเลือกและ/หรือกรอกข้อความที่ตรงกับความเป็นจริงเกี่ยวกับตัวท่านในช่องว่างต่อไปนี้

1. เพศ

   ( ) 1. ชาย ( ) 2. หญิง

2. ปัจจุบัน อายุของท่าน.....ปี บริบูรณ์

3. สถานภาพสมรส

   ( ) 1. โสด ( ) 2. สมรส ( ) 3. หย่า

   ( ) 4. หม้าย ( ) 5. แยกกันอยู่

4. ท่านเรียนหนังสือจบสูงสุดในระดับใด

   ( ) ไม่ได้เรียน ( )กำลังเรียนอยู่ชั้น.....( ) จบการศึกษาชั้น.....

5. ที่อยู่ปัจจุบันของท่าน

   ( ) 1. ในเขตเทศบาล ( ) 2. นอกเขตเทศบาล

6. ขณะนี้ท่านอาศัยอยู่กับใคร ( ตอบได้มากกว่า 1 ข้อ )

   ( ) คนเดียว ( ) คู่สมรส ( ) ลูก ๆ ( ) ญาติ ๆ ( ) อื่นๆระบุ.....

7. สถานภาพในบ้านท่านอยู่ในฐานะอะไร

   ( ) หัวหน้าครอบครัว ( ) ผู้อาศัย

8. อาชีพหลังสุดก่อนสูญเสียขาท่านประกอบอาชีพใด.....ระยะเวลาที่ท่านประกอบอาชีพหลังสุดประมาณ.....ปี

9. หลังจากสูญเสียขาท่านประกอบอาชีพใด

   ( ) 1.ยังประกอบอาชีพเดิม เพราะ.....

   ( ) 2.เปลี่ยนอาชีพ เพราะ.....

   ( ) 3.ไม่ได้ประกอบอาชีพ เพราะ.....

10. ปัจจุบันตัวท่านมีรายได้ต่อเดือนโดยประมาณ.....บาท

11. ก่อนสูญเสียขาท่านมีรายได้ต่อเดือนโดยประมาณ.....บาท

12. ปัจจุบันรายได้หลักของครอบครัวมาจากใคร

   ( ) ตัวท่าน ( ) คู่สมรส ( ) บุตร ( ) อื่น ๆระบุ .....

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13.ปัจจุบันใครเป็นคนรับผิดชอบค่าใช้จ่ายต่างๆ ในครอบครัว

( ) ตัวท่าน ( ) คู่สมรส ( ) บุตร ( ) อื่น ๆระบุ .....

14.ท่านสูญเสียขาข้างใด

( ) 1. ข้างซ้าย ( ) 2. ข้างขวา ( ) 3. ทั้ง 2 ข้าง

15.ท่านสูญเสียขาในระดับใด

( ) 1.ขาข้างซ้ายสูญเสียในระดับใด.....

( ) 2.ขาข้างขวาสูญเสียในระดับใด.....

16.ระยะเวลาที่ท่านสูญเสียขาจนถึงปัจจุบัน

( ) 1. ขาข้างซ้ายเป็นเวลา.....ปี

( ) 2. ขาข้างขวาเป็นเวลา.....ปี

17.สาเหตุของการสูญเสียขาเนื่องจาก

( ) อุบัติเหตุทางคมนาคม คือ .....

( ) อุบัติเหตุจากการทำงาน คือ.....

( ) ภาวะเจ็บป่วย ระบุ.....

( ) อื่น ๆ ระบุ .....

18.ก่อนที่จะมารับขาเทียมที่นี้ท่านเคยได้รับขาเทียมมาบ้างหรือไม่

( ) เคย ( ) ไม่เคย (ให้ข้ามไปตอบส่วนที่ 2)

19.ท่านได้รับขาเทียมมาแล้วทั้งหมดกี่ครั้ง.....ครั้ง รวมครั้งนี้เป็นครั้งที่.....เมื่อปี.....

ครั้งที่ 1 เมื่อ พ.ศ.....

ครั้งที่ 2 เมื่อ พ.ศ.....

อื่นๆ ระบุ.....

20.สาเหตุที่ท่านเปลี่ยนขาเทียม ( ถ้าข้อ 19 ตอบครั้งที่ 1 ให้ข้ามไปตอบส่วนที่ 2. )

ครั้งที1.เพราะ.....

ครั้งที่2.เพราะ.....

อื่น ๆ ระบุ.....

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**ส่วนที่ 2.ข้อความต่อไปนี้เป็นข้อมูลเกี่ยวกับขาเทียมที่ได้รับในปัจจุบัน**

1. วัตถุประสงค์ที่ท่านมารับบริการขาเทียมเพื่ออะไร ( ตอบได้มากกว่า 1 ข้อ )
   ( ). เพื่อใช้ใส่เดินไปมาภายในบ้าน / สถานที่ใกล้ ๆ เท่านั้น
   ( ). เพื่อใช้ใส่ในการทำงาน / ไปเรียนหนังสือ
   ( ). เพื่อความสวยงาม
   ( ). อื่น ๆ ระบุ.....
2. หลังจากที่ท่านได้รับขาเทียมแล้วท่านมีความรู้สึกอย่างไร
   ( ). ดีใจ ( ). เฉย ๆ
   ( ) วิตกกังวล เพราะ..... ( ). อื่นๆ ระบุ.....
3. ท่านได้ใส่ขาเทียมเป็นประจำหรือไม่
   ( ) ใส่ทุกวัน ( ) ใส่เฉพาะเมื่อต้องการทำกิจกรรมตามที่ระบุในข้อ 1
   ( ) ไม่ใส่ (ให้ข้ามไปตอบข้อ 6 )
4. ในแต่ละวันท่านใส่ขาเทียมประมาณกี่ชั่วโมง.....
5. ในแต่ละวันท่านใส่ขาเทียมเดินประมาณกี่ชั่วโมง.....
6. ในขณะที่ท่านใส่ขาเทียมนั้นท่านมีความรู้สึกอย่างไรบ้าง
   ( ). ใส่ขาเทียมแล้วเจ็บ บริเวณที่เจ็บ.....
   ( ). ใส่แล้วรู้สึกสบายเดินได้ดี
   ( ). ใส่แล้วไม่เจ็บ แต่ไม่ชอบใส่
   ( ). ไม่ใส่เพราะ.....
   ( ). อื่น ๆ ระบุ .....
7. ท่านได้ปรับสภาพแวดล้อมที่บ้านของท่านให้สะดวกต่อการเดินโดยใส่ขาเทียมหรือไม่
   ( ) ไม่ได้ปรับ เพราะ..... ( ) ได้ปรับระบุ.....
8. ลักษณะของบ้านที่ท่านอาศัยอยู่มีบันไดหรือไม่
   ( ) ไม่มี (ให้ข้ามไปตอบข้อ 10 ) ( ) มี ท่านนอนที่ชั้นใด.....

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9.ท่านขึ้นบันไดบ้านได้อย่างไร

( ) เกาะราวบันไดขึ้นเอง ( ) มีคนช่วยพยุง ( ) อื่นๆ ระบุ.....

10.สภาพแวดล้อมในบริเวณที่อยู่อาศัยของท่านได้มีการปรับให้เหมาะที่คนขาพิการสามารถใช้ประโยชน์ได้หรือไม่

( ) ไม่ได้ปรับ ( ) ได้ปรับ ระบุ.....

11. สภาพแวดล้อมในสถานที่ทำงานหรือโรงเรียน ได้มีการปรับให้สะดวกในการเดิน โดยใส่ขาเทียมหรือไม่ ( ถ้าไม่ได้ทำงานให้ข้ามไปตอบข้อ 13 )

( ) ไม่ได้ปรับ ( ) ได้ปรับ มีอะไรบ้าง.....

12. ท่านคิดว่าสภาพแวดล้อมที่ทำงานหรือโรงเรียนสะดวกต่อการเดินโดยใช้ขาเทียมหรือไม่

( ) ไม่สะดวก เพราะ..... ( ) สะดวก

13. ท่านคิดว่าสภาพแวดล้อมที่บ้านของท่านสะดวกต่อการเดินโดยใช้ขาเทียมหรือไม่

( ) ไม่สะดวก เพราะ..... ( ) สะดวก

14. ท่านต้องการให้คนในครอบครัว หรือเพื่อนช่วยเหลือเวลาเดินโดยใช้ขาเทียมหรือไม่

( ) ไม่ต้องการ เพราะ..... ( ) ต้องการ เพราะ.....

15. ท่านมีความพร้อมที่จะใช้ขาเทียมหรือไม่

( ) ไม่พร้อม เพราะ..... ( ) พร้อม

16. ท่านสามารถควบคุมอารมณ์และการเปลี่ยนแปลงที่เกิดขึ้นจากการสูญเสียขาได้หรือไม่

( ) ไม่ได้ ( ) ได้

17. ท่านยอมรับกับสภาพของร่างกายที่เปลี่ยนไปได้หรือไม่

( ) ไม่ได้ ( ) ได้

18. ท่านมีความรู้สึกพอใจในการปฏิบัติที่ได้รับจากบุคคลในครอบครัวหรือไม่

( ) ไม่มี ( ) มี

19. ท่านมีความรู้สึกว่าบุคคลภายนอกจะมองท่านด้วยความสงสารหรือไม่

( ) ไม่มี ( ) มี

20. ท่านได้รับการฝึกเดินด้วยขาเทียมจากเจ้าหน้าที่อย่างเพียงพอหรือไม่

( ) ไม่เพียงพอ ( ) เพียงพอ

21. ท่านได้ใช้บริการซ่อมบำรุงขาเทียมหรือไม่

( ) ไม่ใช้ ( ข้ามไปตอบส่วนที่ 3 ) ( ) ใช้ สถานที่.....

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22. ท่านได้รับความสะดวกในการบริการซ่อมบำรุงรักษาขาเทียมหรือไม่

( ) ไม่สะดวก ( ) สะดวก

**ส่วนที่ 3 แบบสอบถามเกี่ยวกับปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียม**

คำชี้แจง แบบสอบถามส่วนนี้เป็นแบบสอบถามเกี่ยวกับปัจจัยที่มีความสัมพันธ์กับการใช้ขาเทียม โดยให้ท่านขีดเครื่องหมาย / ลงในช่องที่ตรงกับคำตอบของท่านมากที่สุด

| ข้อความ | เห็นด้วยอย่างยิ่ง | เห็นด้วยมาก | เห็นด้วยปานกลาง | ไม่เห็นด้วย | ไม่เห็นด้วยอย่างยิ่ง |
|---|---|---|---|---|---|
| 1.การไปติดต่อสถานที่ต่างๆท่านยังมีความไม่สะดวก | | | | | |
| 2.ท่านพบกับปัญหาในการขึ้นหรือลงรถประจำทางอยู่เสมอ | | | | | |
| 3. การปรับสภาพแวดล้อมช่วยให้ท่านเดินด้วยขาเทียมได้ดีขึ้น | | | | | |
| 4. ลักษณะของสภาพอากาศที่ร้อนมากหรือฝนตกมากมีผลกับการใช้ขาเทียม | | | | | |
| 5. ลักษณะของที่อยู่อาศัยมีผลกับการใช้ขาเทียม | | | | | |
| 6. สภาพแวดล้อมรอบๆตัวท่านทำให้ท่านไม่ต้องการใช้ขาเทียม | | | | | |
| 7.บุคคลในครอบครัวให้กำลังใจและกระตุ้นตัวท่านเสมอ | | | | | |
| 8. บุคคลในครอบครัวบังคับให้ท่านไปทำขาเทียม | | | | | |
| 9. เป็นความต้องการของเจ้าหน้าที่ในโรงพยาบาลให้ท่านใส่ขาเทียม | | | | | |

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| ข้อความ | เห็นด้วยอย่างยิ่ง | เห็นด้วยมาก | เห็นด้วยปานกลาง | ไม่เห็นด้วย | ไม่เห็นด้วยอย่างยิ่ง |
|---|---|---|---|---|---|
| 10. บุคคลในครอบครัวไม่เห็นด้วยกับการใส่ขาเทียม | | | | | |
| 11. เป็นความต้องการของครอบครัวที่ให้ใส่ขาเทียม | | | | | |
| 12. . ท่านมีคนใกล้ชิดคอยให้กำลังใจ และสนับสนุนให้ท่านใช้ขาเทียม | | | | | |
| 13. ท่านรู้สึกว่าขาเทียมช่วยให้ท่านดำรงชีวิตในสังคมได้เกือบปกติ | | | | | |
| 14. ขาเทียมทำให้ท่านสามารถประกอบอาชีพได้เหมือนเดิม | | | | | |
| 15. ท่านยังไม่พร้อมที่จะใช้ขาเทียม | | | | | |
| 16. ท่านมีความต้องการใส่ขาเทียมเอง | | | | | |
| 17. การใส่ขาเทียมช่วยให้ท่านมั่นใจในตนเองมากขึ้น | | | | | |
| 18. ท่านเชื่อว่าการใส่ขาเทียมช่วยให้ท่านสามารถพึ่งพาตนเองได้มากขึ้น | | | | | |
| 19. ท่านเชื่อว่าการใส่ขาทำให้ไม่เป็นภาระของผู้อื่น | | | | | |
| 20. ท่านทำใจยอมรับการเปลี่ยนแปลงที่เกิดขึ้นกับร่างกายของท่านได้. | | | | | |
| 21. การใส่ขาเทียมทำให้ท่านดูเป็นคนพิการ | | | | | |
| 22. ท่านรู้สึกว่าคนอื่นมองดูท่านด้วยความสงสาร | | | | | |
| 23. ท่านมีความพอใจในความปลอดภัยจากการใช้ขาเทียม | | | | | |
| 24. ขาเทียมที่ท่านได้รับนั้นใช้งานได้ดี | | | | | |
| 25. ขาเทียมที่ใช้เป็นภาระต่อตัวท่านมากกว่ามีประโยชน์ | | | | | |
| 26.การใส่ขาเทียมมีความยุ่งยากมาก | | | | | |

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| ข้อความ | พอใจอย่างยิ่ง | พอใจมาก | พอใจปานกลาง | ไม่พอใจ | ไม่พอใจอย่างยิ่ง |
|---|---|---|---|---|---|
| 27.ท่านมีความพอใจกับขนาดของขาเทียม | | | | | |
| 28.ท่านมีความพอใจกับรูปร่างของขาเทียม | | | | | |
| 29.ท่านมีความพอใจกับน้ำหนักของขาเทียม | | | | | |
| 30.ท่านพอใจกับความสะดวกสบายต่อการใช้ขเทียม | | | | | |
| 31.ท่านพอใจกัวัสดุที่ใช้ในการทำขาเทียม | | | | | |
| 32.ท่านพอใจกับการใช้งานของขาเทียม | | | | | |
| 33.ขาเทียมมีความทนทานต่อการใช้งาน | | | | | |
| 34. ท่านมีความพอใจกับอายุการใช้งานของขาเทียม | | | | | |
| 35.การดูแลขาเทียมมีความยุ่งยาก | | | | | |
| 36.าเทียมมีความสวยงามตามที่ท่านต้องการ | | | | | |
| | | | | | |

**ส่วนที่ 4 ข้อเสนอแนะเพื่อการปรับปรุงและพัฒนาการให้บริการ**

1.ท่านคิดว่าควรปรับปรุงขาเทียมตรงส่วนใด.....

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2.ท่านคิดว่าควรปรับปรุงด้านเจ้าหน้าที่ให้บริการอย่างไรบ้าง.....

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3.อื่น.....

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# BIOGRAPHY

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