JÖNKÖPING UNIVERSITY
School of Health and Welfare

Donation of used assistive devices

A Qualitative Study

PAPER WITHIN *Prosthetics and Orthotics*
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Sammenfatning

Målet med dette studie var at undersøge interessenternes holdninger til og oplevelser med donation af brugte hjælpemidler fra lande med høj indkomst til udviklingslande. Dette vil blive gjort ved at undersøge holdningerne og oplevelserne fra de forskellige interessenter, om donation af brugte hjælpemidler, og ved at udforske hvilke brugte hjælpemidler der er passende at donere.

Studiet inkluderede otte deltagende interessenter, som blev rekrutteret gennem formålsrettet og snowball sampling. Ud af de otte deltagere var fem deltagere afsender interessenter fra Skandinavien og tre deltagere var modtager interessenter fra lande med middellav indkomst i Afrika og et land i Europa med middelhøj indkomst. Interviewerne var udført ved at bruge semistrukturerede spørgsmål for at udforske deltagernes egne meninger og oplevelser omkring donation. Kvalitativ indholdsanalyse var brugt til at analysere de transskriberede interviews induktivt og med manifest indholdsforståelse.

Resultaterne bestående af fire hovedkategorier: Praktiske problemer, Interessenters meninger og samarbejde, Der er behov for donationer og Overvejelser ved at donere. Hovedresultaterne af studies var; vigtigheden af kvalitetskontrol for at sikre at der ikke bliver sendt skrald, vigtigheden af kommunikation mellem afsender og modtager angående behov, vigtigheden af viden omkring modtagerens forudsætninger og kontekst, og sidst, vigtigheden af at overveje ansvaret for affald, når donationerne er udtjente. Som konklusion har de inkluderede interessenter haft en positiv attitude omkring donation og udtrykt et behov for mere viden.

Nøgleord:

Bæredygtighed, Donation vejledninger, Hjælpeorganisationer, Protese og Ortose komponenter,

Udviklingslande

Summary

The aim of the thesis was to explore the stakeholders' opinions on and experiences with donation of used assistive devices from high-income countries to developing countries. Which was done by investigating the opinions and experiences of the different stakeholders, with donation of used assistive devices, and by exploring what used assistive devices are appropriate to donate.

The study included eight participating stakeholders, requited through purposive and snowball sampling. Of the eight participants, five participants were sending stakeholders from Scandinavia and three participants were receiving stakeholders from lower-middle-income countries in Africa and an upper-middle-income country in Europe. The interviews were conducted using semi-structured questions to explore the participants' own opinions and experiences with donations. Qualitative content analysis was used to analyze the transcribed interviews inductively and with manifest content.

The results consisted of 4 main categories: Practical issues, Stakeholders opinions and cooperation, Donations are needed, and Considerations when donating. The main findings of the study were; the importance of quality control to ensure waste is not sent, the importance of communication between sender and receiver about needs, the importance of knowledge of the prerequisites and context of the receiver, and lastly, the importance of considering the responsibility of waste when the donations are worn out. In conclusion, the included stakeholders have a positive attitude towards donations and expressed a need for more knowledge.

Keywords:

Developing countries, Donation guidelines, Helping organizations, Prosthetic and Orthotic components, Sustainability

Table of content

Glossary of Terms

Developing country	Low-, Lower-middle-, and Upper-middle-income countries, as defined by the World Bank (2020)
Lower-middle-income country	Country with gross national income (GNI) per capita between $1,046 and $4,095 USD (the World Bank, 2020).
Upper-middle-income country	Country with GNI per capita between $4,096 and $12,695 USD (the World Bank, 2020).
High-income country	Country with GNI per capita of $12,696 USD or more (the World Bank, 2020).
Assistive device	Any device that is designed, made, or adapted to assist or facilitate the physical mobility. For example, crutches, prosthetics, or wheelchairs.
Sending stakeholder or sender	An individual or organization, from a high-income country, who are sending donations.
Receiving stakeholder or receiver	An individual, organization, hospital, or clinic, in a developing country, who are receiving and/or distributing the donations.
In-between stakeholder	An individual or organization from a high-income country who are working temporarily in a developing country.
Prerequisites	Adequate education, infrastructure, personnel to manage the donated devices.
Context	The conditions in which the donated devices need to function. For example, weather and electricity conditions.
Donation process	Figure 2 on page 4 is a visual tool to understand the vocabulary used and the cooperation between the many parties in the donation process described in the thesis.

1 | Introduction

The United Nations state people with disability to be the largest minority in the world, with estimated 1 billion people living with disability, where eighty percent lives in developing countries (United Nations, n.d.). The World Health Organization (WHO) predict this number to increase due to for example population growth and medical advances (WHO, 2021c). For many with disabilities, it is not possible to get an education or employment and individuals with disabilities have a higher risk of being subjected to violence, especially for women (United Nations, n.d.). According to United Nations (2006), the convention on the rights of persons with disabilities affirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms on an equal basis. The WHO state that only 1 out of 10 people with a need for assistive technology have access to it (WHO, 2018b). Assistive technology is an umbrella term for all assistive products and services (WHO, 2018b), this study will focus on assistive devices, which aid the physical mobility, such as a prosthesis, orthosis or a wheelchair.

The low accessible to assistive devices in developing countries makes donations from high-income countries, as defined by the World Bank (2020), a need. In this study developing countries are defined as: low-, lower-middle-, and upper-middle-income countries, as defined by the World Bank (2020). Many countries donate money and devices to help and assist the developing countries, but within the past 10 years there has been a rising awareness of the possible bad effects of donations. The article by describe most donated medical equipment to end as waste in Africa because the receiver does not have the training to take care of it. Another article by gives examples of when donations are misplaced and not helpful, despite the best of intentions. The authors experienced many similar questions and considerations in their clinical placements at prosthetic and orthotic clinics, where the certified prosthetist and orthotists (CPOs) were hesitant of donating used assistive devices. In 2021 the Pan-pacific ISPO published a guideline on *how* to donate used prosthetic and orthotic components (Sheehan et al., 2021). However, the guideline does not clarify what can and should be donated, which might keep CPOs from donating, if they need to determine whether a component is appropriate to be donated or not.

The thesis project aims to explore the stakeholders' opinions on and experiences with donation of used assistive devices from high-income countries to developing countries, by investigating the opinions and experiences of the different stakeholders, when donating used assistive devices, and by exploring what used assistive devices are appropriate to donate. Three different stakeholders were included in the study, to have different perspectives on the donation process: sending, receiving and in-between stakeholders.

2 | Background

2.1 | Need for assistive devices and global initiatives

Many activities in daily living require physical mobility; getting out of the bed in the morning and getting dressed, making breakfast, eating breakfast, and so it continues the rest of the day. People with physical disabilities are dependent on assistive devices to live a life of quality - with dignity, productivity, and independence. In developing counties, people who do not have access to assistive devices, easily become a burden to their family, the WHO (2018b) explains, they "are often excluded, isolated and locked into poverty". According to the WHO (2021b), poverty can impair the ability to reach basic human rights. Therefor it is even more valuable for the disabled individual, the family, and the society when they have access to assistive devices. Due to the great need of assistive devices, combined with the low-income of the country, donations from high-income countries are needed. According to the article by Hawthorne (2017) it is not enough just to send assistive devices, there are also a need for education so the assistive devices can be handled correctly, repaired, and thereby last longer. The WHO (2018b) explains the lack of assistive devices to be "due to high costs and a lack of awareness, availability, trained personnel, policy and financing".

In the authors experiences from the prosthetics and orthotics clinics, the certified prosthetists and orthotists are hesitant to donate used devices and components to a developing country, due to the ethical considerations regarding sending items which are disregarded in a high-income country. There are also concerns regarding provision, and the ethical dilemma on not being able to provide all with equally technological advanced devices; who should then be prioritized? And is it okay to hand out a device when it is uncertain whether the receiver can get a similar device when there is a need for a new device?

In 2014 WHO initiated the Global Cooperation on Assistive Technology (GATE) initiative, to globally honor the rights of persons with disabilities, by making high-quality assistive products more accessible (WHO, 2018a). The GATE initiative focuses on people, policy, products, provision, and personnel. As described by the World Health Organization (2018a) *people* are to keep a user-centered approach, to involve the user in understanding what the needs are, not only physical needs but also cultural appropriate needs. The *policy* is to support the nations in developing programs for health and welfare, and implementation of sustainable service provisions. The *products* are a list made by WHO in 2016 where the needs for assistive products are prioritized, and countries are encouraged to prioritize their needs. *Provision* is a model developed by WHO to include assistive products provision into the health system globally. Lastly the *personnel* are a training package developed by the WHO, to educate on how to prescribe and take care of assistive products.

To illustrate this a recent article by the WHO (2021b) describes how a young girl with a physical disability had a wrong assistive device which harmed her. Due to the guide for assistive technology made by the WHO (2021a), she was provided with a wheelchair which suited her needs and enabled her to better participate in class and with her peers.

2.2 | Donation methods

Charity Approach	Needs Approach	Rights-Based Approach
Focus on input not outcome	Focus on input and outcome	Focus on process and outcome
Emphasizes increasing charity	Emphasizes meeting needs	Emphasizes realizing rights
Recognizes moral responsibility of rich towards poor	Recognizes needs as valid claims	Recognizes individual and group rights as claims toward legal and moral duty-bearers
Individuals are seen as victims	Individuals are objects of development interventions	Individuals and groups are empowered to claim their rights
Individuals deserve assistance	Individuals deserve assistance	Individuals are entitled to assistance
Focuses on manifestation of problems	Focuses on immediate causes of problems	Focuses on structural causes and their manifestations

Figure 1) The three approaches to donation, described by Boesen & Martin (2007, p. 10)

In the GATE initiative by the WHO (2018a) donations of assistive devices would aid in the provision of assistive devices in countries where the state or the citizens cannot afford to buy the devices themselves. As described in the article by Hawthorne (2017), donations can have many outcomes, of which not all are wanted. The typical donation process consists of communication about the receiver's needs, a gathering process, quality control, a sending process, and a distribution process at the receiver. According to Boesen & Martin (2007, p. 10) there are three ways to donate: charity-, needs-, or rights-based donations. The different approaches are visible on figure 1 on page 3 above and described further below.

The charity-based approach recognizes the moral responsibility of the rich towards the poor and focuses on the input rather than the outcome (Boesen & Martin, 2007, p. 10). As an example, a high-income country might donate used assistive devices to a low-income country without taking the actual needs or context of the location into consideration. Which could be wheelchairs that are only appropriate for even surfaces, as might not be the case for all developing countries. In this case, the sending stakeholder are donating with good intentions, but for their own benefit of feel-good, which might bring unintended bad consequences at the receiver.

In contrast, the needs-based approach emphasizes meeting the needs of the receiving persons and focuses on the input as well as the outcome (Boesen & Martin, 2007, p. 10). Compared to the previous example, the high-income country will, in this case, investigate the needs of the area through collaboration with the receivers and make their donations with a goal to fulfill these exact needs.

Lastly, the rights-based approach emphasizes realizing the rights of individuals and groups and focuses on the process as well as the outcome (Boesen & Martin, 2007, p. 10). This is typically done in collaboration with the government of the country, to attain equal human rights for the disabled persons in their Country, which is both the most sustainable but also cost- and time-consuming approach of the three. The GATE initiative (WHO, 2018a) is following the rights-based approach since they are aiming to reach the convention of human rights for disabled people by involving the governments in the process.

The donation process and the many parties involved, which are presented in the thesis are visualized below on figure 2.

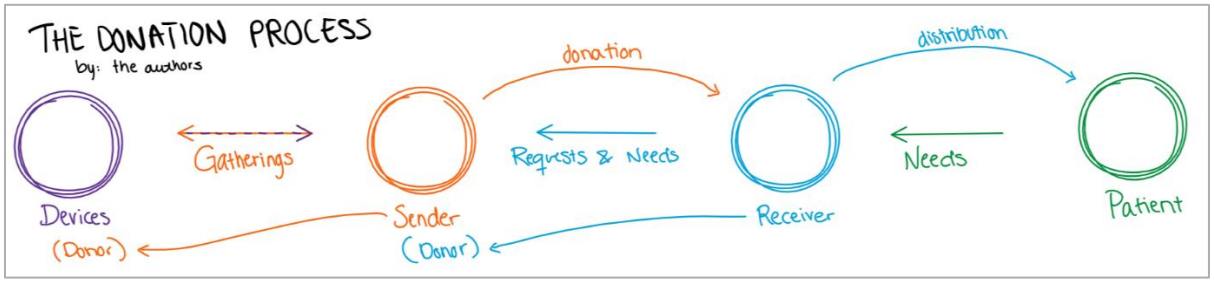

Figure 2) The donation process, visualized by the authors

2.3 | Different stakeholders

In the study three groups of stakeholders are recognized: sending, receiving, and in-between stakeholders. The sending stakeholder are all the different organizations from high-income countries, defined by the World Bank (2020), which donate everything from money, food, farming equipment to wheelchairs. This study will focus on assistive devices, which improve the physical mobility of the user. The perspective of the sending stakeholders is inevitable privileged since the sending stakeholders never will be able to truly know the receiver's context and culture.

The receiving stakeholder are all who receive donations from high-income countries. The study has defined developing countries as low-, lower-middle- and upper-middle-income countries according to the World Bank (2020). The perspective on donation of used assistive devices in the developing countries will vary

greatly depending on the local culture, government, and context. In general, it is common for the receiving stakeholder to become dependent on the donations, and sometimes afraid to criticize the process from fear that the donations will end.

The in-between stakeholder is, in this study, defined as organizations where people from high-income countries for a period work in developing countries. In the work period they may have experience with donation and what effect it has. The perspective of the in-between stakeholders would be more critical to the donation process since they are not reliant on the donations and able to set higher standards since they have the privileged mind-set from a high-income country. Due to lack of participants the in-between stakeholders were excluded from the study.

2.4 | Current literature and debates

The Australian National Member Society of the International Society for Prosthetics and Orthotics (ANMS ISPO) has created a guidance document on: "donating orthotic and prosthetic components to low income and low to middle income countries" (Sheehan et al., 2021).The ANMS ISPO guidelines (Sheehan et al., 2021), describes multiple principles to observe in the donated orthotic and prosthetic components market, which includes the topics: Do not harm, Respond to unmet need, Sustainability, Appropriateness, Do not disrupt markets, and Transparency. By following these guidelines, the donations can be made without having a bad influence on local initiatives relevant to the market.

The ANMS ISPO guidelines (Sheehan et al., 2021) also describe several considerations regarding clinical risks, which includes the topics: Quality, Sustainability and ability to access replacement components, Local capacity to fit/ service/ maintain components, Local capacity to provide clinical services, suitability to local needs and environment, Safety for use, and certainty of business arrangements to ensure transparency and integrity. By following these guidelines, the clinical risks for poor treatment, of the ones receiving the donations, are minimized.

The ANMS ISPO guideline can be used as a guideline on *how* to donate prosthetic and orthotic components. In their clinical experience, the authors of this thesis have found a need for knowing *what* can be donated. The authors of this thesis assess the ANMS ISPO guideline can be used as a guideline for donating assistive devices in general, when considering the different markets for different assistive devices.

According to Perry & Malkin (2011) an average of 38,3% of medical equipment in developing countries were out of service both due to broken or missing spare parts and due to lack of training, health technology management, and infrastructure. Whether this is the case with assistive devices as well is unclear, but the quality of donations, in general, is a current debate. As an example, an article from Svt Nyheter & Ripås (2022) says "About 40% of the clothes send to Ghana are in so bad condition, they are disposed of directly, much is burned." (Translated from Swedish by the authors).

3 | Research Question and Aim

The research question was formulated after investigating what was available in academic literature on the topic of donating used assistive devices. Very little was found on the topic, therefor was the research question made descriptive, to best encompass new knowledge to the topic. The authors also chose to include two stakeholders, the sender and the receiver of used assistive devices, to best encompass the different perspectives on the topic.

Research question: "How is the donation of used assistive devices perceived by different stakeholders?"

To investigate the research question, the following overall aim, as well as two specific aims, were formulated. The overall aim of the study is: "to explore the stakeholders' opinions on and experiences with donation of used assistive devices from high-income countries to developing countries." An additional aim is: "to explore what used assistive devices are appropriate to donate".

4 | Methods

4.1 | Qualitative approach and research paradigm

The body of literature is very slim on the topic: "donation of used assistive devices", therefor the authors chose to conduct a qualitative study with an inductive approach. By using the inductive approach, which is aiming to develop a theory instead of testing an existing theory, the result is less likely to be affected by the authors' possible assumptions prior to the study, as described by Bingham (n.d.). The empirical data have been collected through semi-structured interviews and after that transcribed verbatim and analyzed with the qualitative content analysis described by Graneheim & Lundman (2004). With this method the risk of missing unexpected angles or perspectives on the subject are minimized. Manifest content analysis, as defined by Graneheim & Lundman (2004) was used in the coding process, where the codes could be assigned to multiple meaning units. If the opposite content, latent, had been chosen the interviews had been analyzed for the unsaid meanings and how the participants formulated themselves. Therefor the manifest content was chosen because, the authors do not seek to find a meaning besides what the participants express, but to know their opinions and experiences in the words of their choice. An example of the analysis process, from meaning unit to category, can be found in appendix 11.1.

4.2 | Researcher reflexivity

The authors are studying Prosthetics and Orthotics in Sweden and are born and raised in Denmark. Meaning, a baseline of knowledge regarding assistive devices are present, but also that the western culture and the privilege of living in a high-income country inevitably will influence the study and the questions asked. The interview questions have been constructed in cooperation with an extern supervisor with experience in ethics, to ensure the questions were not unexpectedly offensive. The extern supervisor is also from a high-income country. In the analysis process the manifest content was chosen, which lessen the risk of bias when interpreting the results.

The native language of the authors is Danish. The interviews have been conducted in the best shared language, which is why the interviews with Danish stakeholders have been conducted in Danish. The rest of the interviews have been conducted in English.

4.3 | Sampling strategy

The participants were found with purposeful searching (Aarhus Universitet, n.d.-a) and snowball sampling strategy (Aarhus Universitet, n.d.-b). The larger P&O clinics in Scandinavia were contacted by phone and then e-mail, if relevant. An internet search was conducted, where the different countries list of nationally recognized donating organizations was searched through for organizations donating used assistive devices; Svensk Insamlingskontroll (n.d.), Innsamlingskontrollen i Norge (n.d.) and Genbrug til Syd (n.d.).The relevant organizations were contacted by mail. All who have returned to the requests, and donated used assistive devices, have been included, also if the donation of used assistive devices were not their main focus.

4.4 | Participants

The inclusion criteria for the sending participants were: they need to be from Scandinavia, and for both groups they should have experience with minimum 1 sending of used assistive devices. To best cover the aspects of donation, the authors of the study wanted to interview three different groups of stakeholders with different perspectives on the topic; sending stakeholder, receiving stakeholder, or in-between; when someone from a high-income country work in a developing country, for example while working for the International Committee of the Red Cross (2013). Only one participant was found for the group of in-between stakeholders therefore, and due to limited time, this interview was excluded from the thesis. When the participants expressed interest to participate, the authors sent an "information document" with a detailed description of the project, information on how their data is handled, and their participation is voluntary. This document can be found in appendix 11.2.

For the sending stakeholders five participated in total; two from Denmark, two from Sweden and one from Norway. The interview questions for the sending stakeholders can be found in appendix 11.3.1.

For the receiving stakeholders three participated in total; two from lower-middle-income countries in Africa and one from an upper-middle-income country in Europe. To minimize lack of participants, the authors choose to keep the inclusion criteria for the receiving stakeholders relatively open. The interview questions for the receiving stakeholders can be found in appendix 11.3.2.

Two of the three receiving stakeholders were in cooperation with two of the sending stakeholders, who put us in contact with the receiving stakeholders. This connection might influence the opinion and experience of the receiving stakeholders, since two out of three had a good contact with their sending stakeholder.

None of the participants had English as their first language, which have an influence on the freedom of formulating one's experience and opinions precisely. The two Danish stakeholders were interviewed in Danish, since it is the first language of the authors.

4.5 | Data collection methods and instruments

The interviews were conducted by one of the authors, with the other author listening and, in the end, asking follow-up questions, to make sure most information possible were gathered. The interviews were transcribed verbatim by one author and re-read by the other author to ensure the best understanding, since the accent of the participants combined with inconsistent internet connection made certain passages difficult to understand.

The interview questions were developed from different perspectives on donations of used assistive devices obtained by the authors through the clinical placement and a lecture by an experienced CPO with expertise on the topic.

The interviews were conducted on Zoom (Version 5.10.1; Zoom Video Communications, Inc, 2022), and recorded on a phone, and then transferred to the authors university Microsoft One-drive account (2022).

4.6 | Data analysis

The qualitative content analysis (Graneheim & Lundman, 2004), the inductive approach, and the manifest content, were chosen to find and explore new perspectives and experiences. First the transcribed interviews were read through several times by the authors for them to be familiar with the data, then meaning units, condensed meaning units, when needed, and codes were made by both authors for the first interview. Then the codes were discussed and agreed on and the authors decided how to proceed. For time optimization, one author found the meaning units, and the other author did the condensed meaning units and coding. Lastly, they discussed all codes and agreed on subcategories and categories. The entire analysis process has been in close contact with the supervisors of the study.

4.7 | Confidentiality

The authors aimed to keep the individuals' participation confidential to facilitate an interview environment where the participants were able to speak freely, without worrying about offending someone. To ensure confidentiality of the participants, names of all individuals, organizations, areas, and countries have been censored throughout this thesis.

The censorship allows the authors of this thesis to better compare the included countries, and allows the reader of this thesis, to understand the results of the study without unintended prejudges.

4.8 | Techniques to enhance trustworthiness

In addition to the supervisor from the university, another supervisor has been involved in the study, due to greater experience with ethics and qualitative study methods. The extern supervisor, as well as the main supervisor, have been involved with the formulation of the aims and interview questions, and in the discussion about the coding process.

In the analysis, the authors have both transcribed verbatim the interviews, re-read the transcriptions to ensure the quality of the understanding. Both authors have been involved in finding and sorting what meaning units were relevant for the study. Both authors have discussed the codes for the meaning units and re-read the meaning units to match new codes to previous meaning units. Both authors, in discussion with both supervisors, have categorized the codes into subcategories and categories.

If further time was available, the authors would like to include an extern expert for triangulation (Aarhus Universitet, n.d.-d). Where the expert on the topic would read all meaning units and codes to provide the authors with a further discussion about the codes and the categories, to further ensure the credibility of the analysis.

5 | Ethics

A major ethical concern in this study, is for the authors to unknowingly have prejudges about developing countries, race, and ethnicity. Because the authors are from a high-income country, it is a concern to unintentionally make false assumptions about the receiving countries. These concerns have been accommodated for by including an extern supervisor with expertise on ethics when formulating the interview questions.

Due to the knowledge the authors have acquired in the research on this topic, the authors have an opinion on the topic. To hinder a biased study, the authors use the inductive approach (Bingham, n.d.), a qualitative content analysis (Graneheim & Lundman, 2004), with the manifest content (Graneheim & Lundman, 2004); which will ensure the results of the study are the opinions and experiences of the participants, rather than the opinions of the authors.

The University of Health and Welfare in Jönköping have an ethical template (Student Web - Jönköping University, n.d.) which the authors filled and signed, together with their supervisor, to ensure all the major ethical aspects of a study have been considered. No issues with the ethical considerations for the study was encountered on the ethical form.

Before the interview all participants were sent a document with more information about the study and the terms of their participation. In the beginning of the interview, the authors remined the participants that their participation is voluntary and confidential. All participants gave verbal consent before the interview proceeded. By discussion with the supervisors a written consent was not deemed necessary, since none of the participants was sharing personal information, but only their experiences.

To create an interview where the participants were able to speak freely, even if there should be negative response connected to a country or organization, the authors of this thesis made a great effort to keep the participants confidential. This was done by censoring the names of all participants, countries, and organizations which might be mentioned during the interviews and used in the thesis.

6 | Results

Five Scandinavian sending participants were included: two from Denmark, two from Sweden, and one from Norway.

Three receiving participants from developing countries were included: two from a lower-middle-income country in Africa and one from an upper-middle-income country in Europe.

One in-between participant, from a high-income country with experience of receiving donations in a developing country, were interviewed, and later excluded from the study, due to lack of participants in this group and time resources to analyze and combine with other data. The in-between interview was conducted first, so the experiences and critical opinion of the in-between participant have influenced the follow-up questions for all the other interviews.

6.1 | Sending results

The results of the content analysis of the sending stakeholders' interviews are shown on table 1 below, including codes, subcategories, and categories. The subcategories and categories will be described in the following section.

Table 1. Result of sending stakeholders

Codes	Subcategories	Categories
Sorts usable and unusable gatherings	Gathering process	Practical issues
Quality control		
Gathering devices		
Cooperation between sending organizations		
They repair valuable gatherings		
Laws and regulations	Sending process	
Devices are prioritized when sent		
Transportation process		
Cooperates with receiving government		
Security of donations		
It is difficult to get fundings	Economic aspects	
Increased taxes, fees, and bribery at borders		
Transportation is expensive		
Financial difficulties		
Donations are not worn out	Donations	
Sends surpluses		
Reuse disposed devices in Scandinavia		
Receivers wants EU quality		
What devices is sent		
What cannot be sent		
Scandinavian quality is better than what is available		
Wants better communication with the government	Sender	Stakeholders
Wants to send education		
Visiting the receiver to understand the needs		
Positive attitude towards donation		
Consistent cooperations are easier	Cooperation with receiver	
New corperations are difficult		
Cultural differences		
Communication about requests		
Prerequisites are considered	Contexts	Considerations when donating
Education and instructions are provided		
Climate conditions are considered		
Electricity conditions are considered		
Local conditions are considered		
Local initiatives are considered		
Local community is considered		
Environmental benefits due to less production	Sustainability	
Environmental benefits due to reuse		
Economic benefits of reuse		
Receiving part pays some amount		
The goal is to make receiver independent		
Only sends what is needed	Needs	
Unrealistic requests from receiver		
The need for sending is huge		
There is a need for low-tech devices		
The receiver is responsible for disposing	Waste considerations	
Assists in disposing the donations		
Repair of donations is considered		
Risk of creating dependency	Challenges	
Increased documentation on donations		
Higher awareness on what enters the country		
Transportation time is long		

6.1.1 | Practical issues

Within this category, the practical issues, and aspects of sending donations, are described by the sending participants.

6.1.1.1 | Gathering process

The sending participants had consistent agreements with their donors, where the majority of the participant choose what specific devices and componentry they wanted from the different donors. Depending on the value of the devices, repairs could be done by the sending organization. All the sending participants did quality control on all the devices before sending.

We go through all equipment to make sure it is functioning. We - you know, we test, or we repair, we sort, we make sure we have manuals etc. that we can supply to the different - for the machinery, for the equipment, so that it is useful when it comes to whatever hospital it lands at in the - in a distant country. (Sending 5)

6.1.1.2 | Sending process

Both the sending and the receiving countries, as well as the United Nations, have laws and regulations concerning donations and how to go about it. The sending organizations evaluate the needs and prerequisites of each receiving location and prioritize the devices accordingly. The donations are usually transported in containers or by truck, which is packed by the sending organization, and unloaded and distributed by the receiver. To increase the security of the donations, during transportation and to avoid damage, unloading during transport is minimized.

6.1.1.3 | Economic aspects

Most sending organizations expressed experiences of financial difficulties both because of the current Covid-19 situation and limited fundings from either the government, individuals or private organizations. The high expenses of transportation, as well as experiences of increased taxes, fees, and bribery at the borders, were a challenge.

I struggle with the budgets every year. With getting our budgets to align with the fundings from the state, regions, and municipalities. And the ones who sit up there, they do not look at it the same way [as we do]. So, it is a challenge, here locally. That we need to make the ends meet in our budget. (Sending 1, translated by authors)

6.1.1.4 | Donations

According to several sending participants, devices in Scandinavian countries are often replaced with new or more technological devices before the previous devices are worn out. It is also stated in the interviews, that it is often cheaper for the Scandinavian hospitals to throw out old and buy new devices when the device is needed, rather than storing the devices in a storage unit for later use. By donating, and thereby reusing these used devices as well as surpluses, the amount of waste in Scandinavia is reduced. In general, the donations from Scandinavia are of higher quality than what is available locally for the receiver. It has become common for receivers to want documentation on the devices being suitable for EU.

We are not solving this by - like, we have a lot of equipment, and I see that when I come picking up. And I see all the things that are thrown away. This is our problem. … This is really our [in Scandinavia] problem. It is good that we can send it. But someone needs to take the political view. How do we renew the system? How do you make a sustainable system of things? Because that's a larger question. So, sometimes that feels really frustrating because I'm a part of a system that is running, and my consciousness is, like, okay,

but it is going to people that need it and they will have to need it for many years. But as in all things I do, I'm concerned about sustainability.
(Sending 4)

If we send a container, which costs 50.000 [Scandinavian valuta] to Congo, then it is worth more than 1 million [Scandinavian valuta] in equipment, which would otherwise have been disregarded. ... And then the 50.000 they [the government of the participant's country] took from the governmental foreign aid, to send it, plus some for maintenance. Let's then say 20.000 for each container for maintenance and salaries. Then Africa, South America, and the other places we donate to, get much more value than what amount of money it costs [the equipment].
(Sending 1, translated by the authors)

The results on what devices are appropriate to donate, as identified by both the sending and the receiving participants, are shown on table 3 on page 19.

6.1.2 | Stakeholders

Within this category, the opinions and experiences of both categories of stakeholders are described by the sending participants.

6.1.2.1 | Sender

All sending participants expressed positive attitudes towards donations. Several also expressed a wish for better communication with the receiving government and authorities, and a wish for sending more education. Most of the sending participants also expressed the importance of visiting the receiver to understand the context, the prerequisites, and the needs.

We help the [country of the participant] government to make sure not everything is thrown away. I see that my volunteers are really respectful and feel a lot of gratitude for doing this. So, it's contributing to their lives. And they are speaking of it to other people, so people get to know about that this is really something happening. We are helping. That's a benefit. Because I think it goes straight for our hearts. Everyone can see that, if you get a wheelchair, you can do something else in your life.
(Sending 4)

6.1.2.2 | Cooperation with receiver

Due to cultural differences, the actual needs and the perception of need are different in Scandinavian and developing countries. To align the expectations, all sending participants, communicate with their receivers about the requests and needs. New cooperation's demands more work to align the expectations, compared to consistent cooperation's where the stakeholders know each other's expectations.

It is always annoying to start up somewhere new, because - there are all these expectations to each other. ... They need to be aligned and it takes some time. ... So, it is often, not every time, but often it is a negotiation process which starts with: "This do not work, you need to send me a more realistic wish list on what devices you need." And then the process starts with all this. They ask someone else at the hospital and they send me some data on their generators and so on.
(Sending 1, translated by the authors)

6.1.3 | Considerations when donating

Within this category, the considerations when sending used assistive devices, are described by the sending participants.

6.1.3.1 | Contexts

When sending devices to developing countries the sending participants consider the local conditions at the receiver; climate conditions, electricity conditions, and prerequisites, as well as considering the local community and local initiatives. Education and instructions are provided with most devices.

We always take the conditions into consideration. No matter where we send to. If it is low-technological devices or what it is. Or low-value. It doesn't matter. It is always in consideration.
(Sending 1, translated by the authors)

We should not send something with electricity out to a clinic on the countryside, where they do not have electricity.
(Sending 2, translated by the authors)

It doesn't help to send wheelchairs to the desert [in an African country], because they cannot drive down there.
(Sending 1, translated by the authors)

6.1.3.2 | Sustainability

The goal with the donations is to make the receiver independent. Most of the sending participants pointed out the environmental benefits of donating devices from Scandinavia to developing countries. The benefits included less carbon dioxide emission, due to less production, and less waste because of reuse. The donations have economic benefits for the hospitals, both in Scandinavia and the receiving countries, due to disposal costs in Scandinavia and the receiving countries get higher quality for less expense. One sending participant had experience with the receiver becoming more involved and taking better care of the donated devices, when the receiver paid some amount for the donations.

My doubts are about the [country of the participant] system. How we treat… how we like… all the things we throw away. Because we have some measure for what's okay or not. That's my really concern. Because I know when I have collected things… [The place the participant gathers devices from] gets a machine that comes and collects the rest that they are just throwing away.
(Sending 4)

The awareness of the time, the climate, effects of production and so on is huge. Which means that the fact that we are reusing equipment that has been produced and is still functional, from the point of view of – in our case, [the country of the participant] – that's good. And globally, yes that's good.
(Sending 5)

6.1.3.3 | Needs

Based on the requests by the receiver, the sending participants only send what is needed, and state there is a large need for donations. The large need is seen by the many requests, but several sending participants experienced receiving unrealistic requests. One sending participant expressed a large need for low-tech devices, which are more durable and easier to clean than most high-tech devices.

The needs are enormous. We are a small organization. Sweden is a small country. … If we took up the whole, the entire, healthcare system in Sweden and held the ratio and dropped it down, you would go on and say "What? What happened? Where did it disappear?" I mean, they are 100 million people, we are 10

million people. The needs are enormous.
(Sending 5)

6.1.3.4 | Waste considerations

One sending participant expressed that they assist to dispose the donations in the receiving country when they break down, while another sending participant stated that the receiver themselves were responsible for the disposing. A third participant agreed that the receiver was responsible for disposing of the donations, but that they educated the technicians in proper disposing of the devices. Most of the sending participants consider repair of the donations, either by sending spare parts, multiple devices of the same brand to function as spare parts, or by paying the costs of the repairs.

So, if they [the receiver] need 1 equipment, maybe send 3 equipment, so they [the receiver] have spare parts.
(Sending 3)

. . . I have traveled around Africa to see if I could build a network with Chinese people, that they buy all the trash. … And in West Africa there it has started little by little. With the Chinese coming and buying all the electronic waste. So it is not a problem down there.
(Sending 1, translated by the authors)

6.1.3.5 | Challenges

Most of the sending participants had experienced an increase in the administrative work due to an increased demand for documentations from both the sending and receiving countries, because of a higher awareness from the receiver of what enters the country. Several sending participants expressed the long transportation time, due to both the traveled distance and customs, as a challenge.

One sending participant expressed the risk of creating dependency in the receiving area as a challenge.

Almost every container we send to [an African country], we have the [participant's country] embassy out and negotiate with the custom authorities about all this [content of the container]. Because, such 76,7 cubic meters of hospital equipment, within a container. If they find just a very small package of band-aids with an expiring date within six months. Then we must pay - first they start with 25.000 dollars and then we negotiate some. And in that way - it is a large challenge.
(Sending 1)

6.2 | Receiving results

The results of the content analysis of the receiving stakeholders' interviews are shown on table 2 below including codes, subcategories, and categories. The subcategories and categories will be described in the following section.

Table 2. Results of receiving stakeholders

Codes	Subcategories	Categories
The need exceeds what is donated	The needs are many	Donations are needed
Outlying areas do not receive government help		
Patients have low income		
Many have a list with needs		
Dependent on donations		
Sent devices meets the needs	Devices	
What devices are received		
Devices are not available locally		
Quality of donations is better than what is available		
Used components have less quality than new		
Donations help develop the area	Effect of donations	
Donations enables receiver to meet the patients' needs		
Transportation process	Logistics	Practical issues
Administrative work		
Gathering process		
Distribution process		
Patients are prioritized		
Customs are a challenge		
Patients need to pay for individual adjusted donations	Financial	
Non-individual donations are free for patients		
Applies for fundings		
Taxes are a challenge		
Used prosthetic components can last for years	Limits waste	
Waste is considered		
Broken devices are reused for spare parts		
Repair is provided		
Communication about requests	Communication	Stakeholders
Consistent cooperation		
Donations meets the prerequisites present		
Influences what is donated		
Important for senders to visit	Receiver	
Wish for education and knowledge exchange		
Has the prerequisites to handle used components		
Wish for more donations		
Wishes for less taxes, to get more donations		
Only wants what is needed		
Positive attitude towards donations		
Sender is visiting	Sender	
Education and instruction are provided		
Prerequisites are considered by sender		

6.2.1 | Donations are needed

Within this category, the need for donated devices and the effects of the donations, are described by the receiving participant.

6.2.1.1 | The needs are many

All the receiving participants stated the need for donations to be large in developing countries. All expressed the receiving patients have low income and would not be able to get proper help if it was not for the donations. Especially the outlying areas of the lower-middle-income country in Africa did not receive government help. Much of the donated devices were not available locally, so the donations were the only option to get assistive devices. The need at the receiving areas exceeds what is donated. One participant also mentioned getting requests for assistive devices from around-laying countries.

The challenge is that maybe you can have a list of things, maybe ten lists, ten things in your list then unfortunately you didn't get your ten things which you need. You get four, three, or five because of shortage of things which you need. So that's one challenge.
(Receiver 1)

It's not like we say: "We need 5" and then they bring 5. You know. It's like they are doing whatever they can.
(Receiving 3)

6.2.1.2 | Devices

All receiving participants expressed the devices they receive meet their needs, since the devices are not available locally or are of bad quality, compared to the Scandinavian devices. One receiving participant received both used and new components for assistive devices and stated both the used and new component were of good quality, but the new components were better.

The results on what devices are appropriate to donate, as identified by both the sending and the receiving participants, are shown on table 3 on page 19.

6.2.1.3 | Effect of donations

Most of the receiving participants mentioned that donations benefited and developed the area. The donations enable the receiver to meet the patients' needs, which allows the patients to work and live their daily lives.

I say that: "Our town, our county, will not be the same if that was not for support we get from [the sending organization] to make [the participant's town] different". I think we are a pioneer in all our region, in Balkans, that have changed the stigma towards the disabled people, because before the disabled people . . . they were hiding inside the houses because they were ashamed to get out and they were, like, not having any facilities as well. But now, today, they are fully respected . . . I see them serving themselves, serving their families sometimes. I mean, many of them going to the market. They buy, they bring things, they go out, they have good friendship with friend, they go for fishing, whatever they do.
(Receiver 3)

The benefits actually are to meet my patient needs. Yeah. I am meeting my patient's needs. That is very, very, very benefit to me.
(Receiving 2)

6.2.2 | Practical issues

Within this category, the practical issues, and aspects of receiving and distributing donations, are described by the receiving participants.

6.2.2.1 | Logistics

The receiving participants described the sending and gathering process of the sending organizations they were collaborating with, and explained their own distribution process as well as the administrative work, including communication with the sending organizations, and documentation on the patients receiving the devices in case of custom-checks etc.

One participant expressed that they had a waiting list of patients who needed a device, and how the list was prioritized according to the time they applied and how much they needed the device.

It depends on the… how critical is the situation. Sometimes we overpass the list when we have to face with somebody who is really in a bad shape and living alone or etc.
(Receiver 3)

6.2.2.2 | Financial

One receiving participant received mostly non-individual donations, such as wheelchairs, and giving them to the patients for free. Another receiving participant mostly received components for individual adjusted devices, stated that the patients had to pay some amount for the service. In the cases where patients could not pay for the service, the receivers applied for funding.

One participant also expressed the challenge of high taxes at the boarders.

6.2.2.3 | Limits waste

One receiving participant stated that they collect the devices after use or when they break, to give the device for a new patient or take the broken device apart to use it for spare parts and dispose the rest according to EU standards. The receiving participant also stated that repairs and checkups were available for the patients. Another receiving participant stated that used prosthetic components can last for years after being donated.

What's sustainability for me? … Medical engineering to come to our center to make repair every sixth week in one year. They come to. They check and to repair it [the devices].
(Receiver 1)

At the same time, regarding the equipment being left over after the death or maybe broken, there are some recycling shops – if we can call them shops – they collect old metal. So, always we make sure, for things we get from the people. We send it there. So, it's not thrown in the nature.
(Receiver 3)

6.2.3 | Stakeholders

Within this category, the opinions and experiences of both stakeholders are described by the receiving participants.

6.2.3.1 | Communication

The receiving participants expressed the importance of having good communication with the sending organizations and felt they had an influence on what is donated to them. The receiving participants all had consistent cooperation with one or more sending organizations and did not experience receiving devices which they did not have the prerequisites to handle, without getting the proper education sent along with the devices.

6.2.3.2 | Receiver

All receiving participants had a positive attitude towards donations and have a strong wish for receiving more donations, to meet their needs. One receiving participant had an idea about they would be able to get more donations if the boarder taxes were lower. One receiving participant pointed out that their education gave them the prerequisites to handle the used components in a correct and useful manner. Several participants stated the importance of the sending organizations visiting the destination of their donations to understand the context and how the devices are used.

All receiving participants expressed a strong wish for more education and knowledge exchange, either by the receiver visiting Scandinavia or vice versa.

I've been thinking for quite number of days and months . . . we are receiving these components from donors, and also it is very very really important even doners to visit. To visit. To visit the destination, to see the realistic of where they are sending the components. And how really are used.
(Receiving 2)

6.2.3.3 | Sender

Most of the receiving participants got education and instructions provided from the sender when receiving devices, and experienced visits from the sending organization. One receiving participant pointed out that the sending organization made sure that the people receiving the donations had the prerequisites to manage them.

6.3 | Devices which are appropriate to donate

Below, table 3 is showing the results of what devices are appropriate to be sent. The table is constructed by all the devices mentioned throughout all the interviews. The devices mentioned are the words of the interviewees, and are not following the terminology used in the WHO's assistive product specification (WHO, 2021a).

Table 3) Results on what devices are appropriate to donate

What is sent
Non-individual devices
Manual wheelchairs of good quality
Crutches
Walking frames
Electric scooters
Electric wheelchairs
Heel pads
Non-individual leg splints
Individual devices
Orthopedic shoes
Orthotic joint component
Prosthetic components:
Aluminum pylons
Silicone liner
Adapters
Socket adapters
SACH foot adapters
Aluminum adapters
Tube/pylon adapters
Prosthetic knees
Single axis
Polycentric axis
knee joints
Knee components
Prosthetic feet
SACH foot
Single axis foot
Multi axis foot
What is not sent
Rollators
Low quality wheelchairs

7 | Discussion

This thesis aimed to explore the sending and receiving stakeholders' opinions on and experiences with donation of used assistive devices from high-income countries to developing countries.

The thesis generated findings on the topic through five sending and three receiving interviews, which were analyzed by the authors using qualitative content analysis. The summarized results of the study are: Firstly, the process of donations comprehends multiple *practical issues* including logistic and economic aspects. Secondly, the donation process requires good cooperation between the sending and the receiving *stakeholders,* who both have opinions on the subject, including a wish for more knowledge exchange. Thirdly, the study clearly showed that *there is a large need* for donations and the need currently exceeds the amount of donations. Finally, multiple aspects, which are *important to consider* before donating used assistive devices. These results confirm the considerations stated in the ANMS ISPO guideline on donations of orthotic and prosthetic components (Sheehan et al., 2021) regarding considerations of the context, prerequisites at the receiver, the local market and quality control of the donated devices.

These results will be discussed further in Section 7.1. The strengths and limitations of this thesis project will be discussed in Section 7.2. The implications of the thesis project will be discussed in Section 7.3.

7.1 | Discussion of results

7.1.1 Practical issues

Throughout the interviews with the Scandinavian sending stakeholders, it was made clear that the people and hospitals of Scandinavia are very privileged and generally get devices exchanged for newer models or other brands before the previous device is worn out. In general, the sending organizations also expressed receiving surpluses and devices which were more expensive to have in storage for the hospitals, than to buy in new condition when needed. This means the infrastructure in Scandinavia prevents reuse of devices due to increased costs of the administration needed to do so. Therefor all the sending participants were aware of and grateful to be a part of reusing some of the abundance of high-quality devices. One sending participant explained how the temptation of sending all the high-quality devices, which otherwise would be disregarded, were pulling, but the close communication with the receiver, about the needs, prevented the participant from using the charity approach (Boesen & Martin, 2007). But the inability, due to financial restrictions, to make use of all the high-quality devices was frustrating to the sending participant.

Both groups of stakeholders agreed that the quality of the devices donated from Scandinavia generally is very good, especially compared to the otherwise available devices in the area, which are produced in China. The sending stakeholders pointed out that developing countries previously have received a lot of waste from high-income countries, but currently there is a high awareness of what enters the countries - from both the sending and the receiving countries. All sending participants did quality control of the devices, and confirmed the receivers had the appropriate context and prerequisites to handle the donated devices; either through previous knowledge, or by supplying the receivers with education and instructions on the device.

According to Perry & Malkin (2011) an average of 38,3% of donated hospital equipment in developing countries was out of service mainly due to lack of training, health technology management, and considerations of the context. When compared to the results of this thesis, there is an indication that the number of unused devices in the developing countries have been decreased, since the article was written. The indication is based on the fact that the majority of the sending stakeholders were using either a needs or rights-based approach (Boesen & Martin, 2007, p. 10), according to the authors of this thesis. Following this indication from the results it is important to keep in mind that people probably are more likely to participate in a study,

when they are feeling good about their work, compared to the people who are experiencing problems. Multiple organizations never responded to the authors request of wanting to include them in the study. Without certainty it can be assumed that the organizations, who did not respond, might be experiencing more problems in their donation process, than those included in this thesis.

The authors of this thesis also acknowledge that some sending organizations still mainly use the charity approach when donating, which has an increased risk of unintentionally sending waste. The authors conclude one of the sending participants was using the charity-approach. All participants were aware that donation of used assistive devices brought a risk of creating waste in the receiving developing country, but most of the sending stakeholders did not take responsibility for the waste once it arrived. Most of the sending stakeholders were helping, for example, by supporting repairs financially or sending spare parts, but did not consider the disposing of the devices. One stakeholder even sent additional fully functioning devices along with the donations to functions as spare parts. Which unavoidably must create more waste than only sending the necessary spare part.

To prevent the risk of receiving waste even further, receiving countries have increased taxes and custom authorities at the borders to make sure the donations are covering a need of the country and are of high enough quality to be used in European countries as well, without disturbing local initiatives. The higher taxes and awareness have brought an increased amount of administrative work and logistic considerations along for both stakeholders, regarding gathering, transporting, and distributing among other things. The costs of taxes, transport, repairs etc. are quite high and, in the study, both the sending and receiving stakeholders mentioned the need of applying for fundings. Especially the sending stakeholders expressed a challenge of making ends meet when it comes to the budget. But increased taxes and expensive transport is also currently a necessary tool to ensure sustainability, through decreasing the amount of unnecessary donations being send.

7.1.2 | Stakeholders

The study showed that the sending participants communicated with their receivers about the requests for specific devices, and only sent devices based on these requests. The receiving participants also expressed that the sent donations met their needs and that they had an influence on what is donated. None of the receiving participants expressed an experience of receiving devices that they had not requested. But whether that is the case, or if the receiving participants was afraid of losing their opportunity for receiving donations when criticizing the process, is unclear. According to Boesen & Martin (2007, p. 10) “people are often expected to be grateful when their needs are met”, which could be the reason why some receivers might be afraid of being critical.

A possible solution was suggested by one sending stakeholder who had experienced more independency from their receiving organization once the receiver started to pay some amount for the donations. The sending stakeholder expressed that the receiver was more prone to give a proper response on the donation process after the donations went from being seen as gifts to being seen as something they were buying. According to the sending participant, the fear of not receiving the donations, if the process got criticized, disappeared once the donations was something they bought instead. Additionally, the participant pointed out that the donated devices, which were bought by the receiving country, got registered with an ID number which led to fewer devices disappearing from the hospitals and that the receiver felt more responsible for the devices, took better care of it, and asked more frequently to get the broken devices repaired. By including the receiver financially, even if it is just a symbolic amount, the approach of the donation is transferred to the rights-based approach. Suddenly the receivers are seen as equals, who are empowered to claim their rights, instead of being a victim in need, which are the difference on the needs- and rights-based approach (Boesen & Martin, 2007, p. 10).

All receiving and sending organizations had consistent cooperation with the organizations they are working with, and some were in cooperation with the government of the receiver. The sending organizations

expressed that consistent cooperation was easier, since there would be good knowledge of the border control, and the expectations of both parties would be better aligned, compared to new cooperation's. According to Boesen & Martin (2007, p. 10) the government of the country is the main duty-bearer to honor the human rights for all, which means the organizations working with the government are moving towards a rights-based approach. It is more sustainable for the receiving area when the donations are consistent, because then they can rely on the provision of devices and get assistance in building a good infra-structure with the goal of becoming independent, rather than getting a one-time donation.

The thesis showed that there generally was a positive attitude towards donations from both the sending and the receiving stakeholders. Besides environmental benefits due to less production and less waste, the donations seemed to improve the quality of life both for the patients receiving the devices, but also for all involved stakeholders, since they felt good about making a difference in the world. The results also show some sending participants were not aware of the end goal with their donations. This might be due to the feeling of doing good and making a difference in the world are dominating, rather than donating with the purpose of helping the receiver to become independent. Boesen & Martin (2007, p. 10) says the charity- and the needs-based approach have focus on the input rather than the outcome, whereas the rights-based approach has focus on outcome and the process, which is also shown on figure 1 (page 3).

The results of the study showed no current negative opinions regarding donations, but once again there is a chance that the small number of participants might have created a bias in the results. To accommodate for this in the future, more participants, as well as a third group of stakeholders, should be included. Despite the lack of negative opinions, the study showed a wish for further improvements, in both the sending and receiving interviews. The improvements included wishes for more funding, wishes for less taxes, wishes for more donations, and wishes for more education and knowledge exchange. It was stated from both stakeholders, that it is important for the senders to visit the receivers, but the receivers also had a wish for visiting the sending country and get further education.

7.1.3 | There is a need

A general result of the study is that the needs are much greater than what is currently being donated. Both the sending and the receiving participants pointed out, that the people who received the donations have a low income and that they would not be able to afford it themselves, even if the devices were available locally, which they are not in most cases. The same applies to hospitals and clinics. In most cases, they do not have the budget to buy devices and even if the devices are available locally, then they are often of bad quality. When being realistic, then all the donations in all the world would never be enough to meet the needs in the world, because new need will always arise, due to war and natural catastrophes. And because, in the end, the need is not for devices, but for a sustainable and independent health care system in all countries. Which is what the GATE initiative (WHO, 2018a) are working towards; a consistent provision of assistive products. Not just to meet the current needs with some donations, but to enable the countries to meet the needs by themselves, consistently for the future.

From the results of this study, it is clear to see the donations make a difference, even if the needs currently exceed what is donated. All the receiving participants expressed that the donation help them treat patients who, most likely, wouldn't have been able to get treated otherwise. This allows the patients to work, support their families economically, and live their daily lives, instead of staying home. This means the donations are a part of honoring the convention on the rights for people with disabilities (United Nations, 2006). The receiving participant in the European country even experienced a difference in the local stigma towards people with disabilities, and other initiatives done to accommodate for disabilities. People who previously were ashamed and hiding in their houses, are now taking part in the community, and contributing to their families. A change like this was also described in the article by the World Health Organization (2018b), to be an effect of having assistive devices available.

The majority of the sending participants agreed that the goal of donating is to make the receivers independent, but the results of the participants showed no indications of expected independence in the near future. The receivers are currently dependent on donations to treat the patients properly. Whether the donations are helping in the long run or hindering local initiatives in improving the quality of devices locally are unclear. Despite the fact that all sending participants were aware of not disturbing local initiatives. Two of the major sending organizations participating both had sunshine stories of how the area around the hospital, which they provided with donations for several years, now were thriving and independent. Which would not have been possible without their donations. The examples indicate that donations in some cases do help developing countries to reach independence, but once again it's unclear whether it is the most efficient approach.

7.1.4 | Important to consider

Throughout the study, multiple topics, to consider when donating, were expressed. These topics generally confirmed the considerations and principles described by the ANMS ISPO guideline (Sheehan et al., 2021).

According to the ANMS ISPO guideline (Sheehan et al., 2021) it is important to consider the appropriateness and suitability of the components when donating. A similar result was found in this study, where the sending participants expressed the importance of ensuring that the devices and components were relevant to the context and the prerequisites present. The environmental factors vary between the Scandinavian countries and the developing countries, and not all Scandinavia devices and components are equally suitable to fit the environmental factors in a desert or a humid environment, for example. Therefore, it is important to understand the context to which the devices are sent, including weather, climate, and electricity conditions. The prerequisites of the receiver should also be considered, to ensure that the staff is adequately trained to manage the devices they are receiving, in order to both distribute, adjust, and maintain the devices properly.

The study shows the importance of checking the quality of the devices, before sending them, to ensure the safety of the receiving patients, which is also stated in the ANMS ISPO guideline (Sheehan et al., 2021). Additionally, the guideline expresses the importance of the ability to access replacement of the donated components. The study did not contain enough information on this topic regarding the donation of assistive devices and must be investigated further.

The ANMS ISPO guideline states that it is important to only respond to unmet needs of the developing countries and to only donate things, which are produced locally, if there is a supply gap. In this way, the organizations should support the local market, rather than compete with it. Most of the sending participants were aware of this consideration, and none of the sending stakeholders were sending devices which were available locally.

In addition to the ANMS ISPO guideline (Sheehan et al., 2021), this study found that non-individual devices demand fewer prerequisites to manage than individual adjusted devices. Meaning, the devices, which demand individual adjustments, easier become waste in the receiving country, due to lack of prerequisites, such as it is also described by Perry & Malkin (2011).

In contrast to the ANMS ISPO guideline (Sheehan et al., 2021), where disposing of unused devices only is mentioned shortly as a part of ensuring transparency and integrity, this study found waste considerations to be a separated, free-standing consideration. In this study, the sending participants had different opinions on who was responsible for disposing of unused or broken devices in the receiving countries. Most of the sending stakeholders agreed that the donations should be disposed of properly and not end up damaging the environment. Although most of the sending participants claimed responsibility of handling the donations when they become waste, there are no clear guidelines on how to do this. The difficulties about handling the waste in the receiving country is also due to the local attitude and culture to waste management.

7.2 | Strengths and limitations

All research methodologies have different strengths and limits. The qualitative research method was used in this study, to best explore the complex experiences and opinions of the participants. Since there is little information on the topic in academic literature, the inductive approach was chosen. To further accommodate unexpected perspectives and angles on the topic, the interview was semi-structured, which allowed the authors to ask follow-up questions and for the participants to explain and elaborate on their experiences freely. The analysis of the data was done according to the qualitative content analysis, described by Graneheim & Lundman (2004), by using the manifest content to only present the experiences of the participants and decrease the risk of the authors' Scandinavian mindset affecting the results.

Even when following a certain method of analysis, the authors were still the tool of conducting the analysis, which consequently will affect the results. To accommodate for this limit, the authors consulted each other and their supervisors during the analysis process, to lessen their influence on the results.

A strength of the study is the sending group is restricted to Scandinavia, which allowed the authors to do a thorough search, although not all responded to the request for an interview. Five sending stakeholders participated in the interview, and saturation, as described by Aarhus Universitet (n.d.-c), was almost, but not entirely reached. A challenge with the saturation process was the lack of common terminology.

A limit of the study is the group of receiving stakeholders. Due to the small number of receiving participants, saturation of the data could not be reached (Aarhus Universitet, n.d.-c). The contact with two of the three participants was made through their respective donors, which means it can be assumed, that two of the three receiving participants have good cooperation with their donors. It might have been a strength to the study, if more receiving participants were included, without getting in contact with them through their donors. On the other hand, it is also a strength of the study to have two donation processes described by both the sending and receiving stakeholders.

An unexpected limit to the study, after the in-between stakeholder was excluded was the lack of negative experiences with donations. The authors reason there may be several reasons why no negative donation process was described. Firstly, receivers who are not financially involved become uncritical and submissive, meaning they do not dare to criticize the donation process due to fear of not receiving more donations. Secondly, there was too few receiving participants where the contact was not made through the sending part. Thirdly, there are no longer bad donation processes as previous in the history, due to the many rules and regulations from both receiving and sending countries - perhaps new communication methods enable better communication and cooperation.

The study shows the experiences with donation from each end of the donation process: the sending and receiving stakeholders. It was attempted to include a third stakeholder; in-between, which is a stakeholder from a high-income country working in a developing country and who has experience with donation or has witnessed the effect of donation. A in-between stakeholder can be critical to the donation process in another way than a receiving stakeholder. They are not dependent on the donations since they are most likely only in the area temporarily, and they have another, perhaps more privileged, perspective on the donation process. Therefore, the authors see the lack of the third group as a limit to the study. The in-between group was included in the beginning and one interview was conducted before the group was excluded from the study. The one interview with the in-between participant was the first interview conducted by the authors, and the experiences and critical opinions of the in-between participant influenced the authors' follow-up questions for the rest of the interviews. Which the authors see as a strength of the data collection.

Six of the eight interviews were conducted in English, which is not the native language of either the participants or the authors. The language difficulties may have resulted in the participants did not have the vocabulary to formulate their opinions and experiences with as many nuances and perspectives, as they might have in their native language. Miscommunication both due to language difficulties, but also cultural

differences have influenced the interviews. The authors found a decrease in miscommunication when the camera was on compared to when it had to be turned off due to an unstable internet connection. In the transcription process, the authors found some accents more difficult to understand compared to when they did the interview, and the camera was on. Therefore, the authors consider the zoom context with the camera on as a strength of the data collection, compared with the interviews conducted without a camera.

7.3 | Implications for the future

The results imply a positive attitude towards the current donation process, by both the sending stakeholder and receiving stakeholders. What is described to be a key component within the donation process is communication between the sending and receiving stakeholder. Communication about the requests from the receiver, the local context, and the prerequisites preset at the receiver. To further study the donation process, research is needed on the in-between stakeholders for better understanding of the effects of the donations. More research is also needed for both the sending and receiving stakeholder, so saturation can be reached (Aarhus Universitet, n.d.-c).

The study may enable clinical practitioners who are in doubt on what are appropriate to donate and how to choose what organization to donate the used assistive devices. Table 3 (page 19) with the list of assistive devices and components, can help guide clinical practitioners with doubts on what are appropriate to donate. The results of the study may guide the clinical practitioner on what to consider and ask the organizations, when choosing what organization to cooperate with. The result can also help raise awareness on the need for donation if there are doubts on whether it is beneficial or not to donate used assistive devices.

7.3.1 | Future research

The study shows the sending organizations vary in how they consider the donations when it becomes waste at the receiver. One sending participant thought it his responsibility to send the donations, whereafter the receiver had full responsibility of the donations. Several other sending participants thought it to be their responsibility to take care of the donations when it became waste, but also expressed how difficult it is, somewhat due to the different cultural mentality about the importance of handling waste properly. Several sending participants were taking initiative to take care of the donations when it becomes waste. One sending participant mentioned new regulations on the topic. Donating organizations should not create electronic waste in developing countries. More research is needed on the topic of how the waste is being handled, and how to make awareness in developing countries about the importance of correct waste disposal.

The study implied a difference in the perception of the donation process depending on whether the receiver was financially involved or not. One sending participant, who had involved some receivers financially in the donation process, had experienced the receivers becoming more responsible of the donations and more involved in the process, such as mentioning what could be done better. When sending donations and involving the receiver financially they took more ownership of the donations and took more initiative in the process to becoming un-dependent of the donations. Further research is needed to further explore this phenomenon before a conclusion of the phenomenon can be found.

The Danish Ministry of Foreign Affairs is lancing a new donation strategy in 2022 called GLOBUS, where there is more focus on education as a part of the donation process (Udenrigsministeriet, n.d.). Whether this process better facilitates independency in developing countries, has to be investigated.

8 | Conclusion

There is currently low accessibility of assistive devices in developing countries, which is creating a need for donations. For this reason, it is crucial for all stakeholders connected to donation to know what to consider before starting the donation process, to decrease the risk of unintentionally damaging the area, instead of helping. Previous literature and the results of this study indicate multiple considerations, such as: quality control, disposing of unused or broken devices, communication between stakeholders, context and prerequisites of the receivers, and the local market.

The results of the study showed non-individual adjusted devices demands fewer prerequisites to manage than individual adjusted devices, meaning they are more likely to be used and not end up as waste. For individual adjusted devices it is crucial for a useful donation that the receiver has the prerequisites to handle the devices.

The study found all participating stakeholders perceived the donation process with a positive attitude. They all had a wish for more education and knowledge exchange between the stakeholders to improve the process and reach the goal of helping developing countries to become independent. An important finding of this study is that the receiving stakeholders currently are dependent on donations from high-income countries, but further studies are needed to investigate how high-income countries most efficiently can assist developing countries in becoming independent.

9 | Acknowledgement

We wish to give thanks to all our participants, who have enabled this thesis project by taking the time out of their busy schedules to share their valuable opinions and experiences. We wish to thank every person who has shown an interest in the project and helped us to get in contact with more participants. A special thanks for access to the lecture by Greg Halford where he shares his experiences with working in developing countries through the International Committee of the Red Cross. Which has had a great influence on our understanding of the many aspects and effects of donation, which assisted in the foundation for this study.

We want to give special thanks to our external supervisor, Jennifer Viberg Johansson, who has generously shared her time, insights, and experiences with ethics and qualitative studies with us. And lastly, a special thanks to our thesis supervisor, Louise Bæk Larsen, who has given her time and support to critically shape this thesis project. We could not have done it without each and every one of you.

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11 | Appendix

11.1 | Example of the Qualitative Content Analysis

Meaning Units	Condensed meaning units	Codes	Subcategories	Categories
Næsten alle containere vi sender til Tanzania, der har vi den danske ambassade ude og forhandle med toldere om at det her. Fordi, sådan en 76,6 kubikmeter hospitalsgods, indeni sådan en container. Finder de sådan en lille bitte pakke af plaster med en udløbsdato indenfor 6 måneder. Så skal vi af med... Først starter de med 25.000 dollars og så bliver det forhandlet lidt. Og på den måde der... Det er udfordringer, så det gør noget. (Sending 1)	In Tanzania there are many challenges with bribery and authorities making it difficult for the container to enter the country	Increased taxes, fees, and bribery at borders	Economic aspects	Practical
It's a small organization, that's an advantage, because we know them. We know them all well, almost all doctors there (Sending 3)	They trust the receiver, due to the close contact	Consistent cooperations are easier	Cooperation with receiver	Stakeholders
When we have trained our technicians we had a course in describing the importance of handling the redundant equipment in the correct way. But the systems needs to be in place in order for that to happen and that is not the case in most African countries. So, that's a big issue. (Sending 5)	Tries to prevent waste at receiver by educating technicians, but cultural differences and the infrastructure makes it difficult	Assists in disposing the donations	Waste considerations	Considerations when donating

11.2 | Information document

The email address' and phone numbers of the investigators have been censured with black markings.

JÖNKÖPING UNIVERSITY
School of Health and Welfare

Information about the bachelor thesis for participants

Project title: Understanding sustainable donations of used assistive devices from high-income countries to developing countries.

Investigator:

Maria Leth Friis, [redacted], Student at Jönköping University.

Nadja Kvistgaard Andersen, [redacted] Student at Jönköping University.

Supervisor: Louise Bæk Larsen, [redacted], Assistant Professor Health and Care Sciences at Jönköping University.

Jennifer Viberg Johansson, [redacted] Researcher at Uppsala University.

You are invited to take part in a scientific project leading to a bachelor thesis in the Prosthetic and Orthotic Program. This form contains information that will help you decide whether to join the project.

1. **Key Information**
   - The purpose of the study is to increase the knowledge on what used assistive devices can be donated, in a sustainable way, to developing countries.
   - If you choose to participate, you will be asked to participate in an interview regarding your relation to, and experiences of, donations.
     This will take approximately 1 hour.
   - The participation in the study will be confidential. The results will be presented in a way, where the statements cannot be traced back to the participant.

Taking part in this project is voluntary. You do not have to participate, and you can stop at any time. Please take time to read this entire information and ask questions before deciding whether to take part in this project.

2. Purpose of this study

Last year, the Australian National Member Society of the International Society for Prosthetics and Orthotics (ANMS ISPO) created a guideline on how to donate orthotic and prosthetic devices and components to low-income and middle-low income countries (Sheehan et al., 2021). However, the guideline does not clarify what assistive devices to donate. Earlier research has indicated that about 40% of donated medical equipment is broken or out of service, but studies are yet to be done regarding donated used assistive devices.

Due to the lack of knowledge, on the area of donating used assistive devices, there is a need to investigate the different stakeholders' experiences and perspectives on sending and receiving used assistive devices from high-income countries to developing countries.

The overall aim of the study is to increase the knowledge on what used assistive devices can be donated, in a sustainable way, to developing countries.

3. Who can participate in the study?

Participants in the study can include all individuals with a relation to donating used assistive devices from a Nordic country to a developing country.

Including:

- Organizations or individuals sending used assistive devices to developing countries.
- Organizations, clinics, hospitals, or individuals receiving used assistive devices in a developing country.
- Organizations or individuals who have seen or experienced the effect of donations of used assistive devices in a developing country.

4. Information about study participation

Participation in the study will consist of an interview. The interview will be done either on location or through a Zoom meeting, which both will be audio-recorded and later transcribed verbatim and analyzed with qualitative content analysis.

The length of the meeting will be approximately 1 hour.

If you have agreed to participate and later change your mind you are free to leave the study at any time. If you leave the study before it is finished, please tell one of the investigators listed at the top of the document. If you choose to tell the investigators why you are leaving the study, your reasons may be kept as a part of the study record. The investigators will keep the information collected about you for the length of the project unless you ask us to delete it from our records. If the investigators have already used your information in a research analysis it will not be possible to remove your information.

5. Risks and data protection

Because this project collects information about you or your organization, the primary risk of this research is a loss of confidentiality. However, be aware you do not have to answer questions you do not want to answer.

The recorded audio of the interview, as well as the transcript, will be stored on the secure university OneDrive until the project is done, whereafter it will be deleted. Your data will not be shared with people not involved in the project.

Quotations written in the bachelor thesis will be confidential, meaning the statements cannot be traced directly back to any individuals or organizations.

All the information collected about you during the research will be deleted once the project is finished.

6. Contact

If you want more information or to ask any questions about the project, please contact the persons listed at the top of the document. Moreover, if you would like to withdraw from the study you are free to do so by contacting us.

7. References

Perry, L., & Malkin, R. (2011). Effectiveness of medical equipment donations to improve health systems: how much medical equipment is broken in the developing world? *Medical & biological engineering & computing*, *49*(7), 719-722.

Sheehan, B., Dyson-Holland, R., Jolly, A., & Cavenett, S. (2021). Donating orthotic and prosthetic components to low income and low to middle income countries.

11.3 | Interview questions

11.3.1 | Sending stakeholders interview questions

Interview questions for sending stakeholders

Introduction of us and our project

- Students writing a bachelor thesis, the final thesis will not be published.
- Experience at clinics: Many questions and opinions on what is ethical to donate

Informed consent

- Voluntary, through the entire process
- The audio of the interview will be recorded, saved on the secure university one-drive, transcribed, and then deleted. (data protection)
- Confidential (e.g., when making quotes we will be careful not to make the statement point directly to back to the individual)
- Possibility to read the final article - but no possibility to change the article due to the limits of the bachelor thesis
- Any questions?

Introducing the interviewee

- Would you like to introduce yourself, what are your work-experience?
- What is your relation to the subject of gathering and sending used assistive devices to developing countries?

Process of gathering and sending used assistive devices

- What is your process of gathering and sending used assistive devices (UAD)?
    - *(How do you gather the devices to send / do you get fundings to send from the government / how do you send / do you ensure it has arrived and is of use)*

Needs at the receiving place

- How do you find out what the need is at a specific location / in general?
    - *Devices, education, continuity, etc.*
- What are your experiences with expectations from the receiving stakeholders?
    - *Is it possible to meet their expectations? Do you communicate about expectations with them, when looking for what their needs are?*

Gathering devices to send

- How do you gather UAD?
    - How do you communicate what you can send? (e.g., with CPO clinics?)
- What specific UAD can you send? *(or components, or materials)*
    - What considerations are there when sending specific devices?
        - How do you experience the quality of the UAD which you receive? *(Is something broken, or can it be fixed if it breaks?)*
        - The local context? *(e.g., terrain, weather conditions, educational level, and access to electricity)*
            - Have you experiences receiving devices too advanced to be send to a developing country?
- What are your thoughts on sending devices, which is not appropriate to be used in the Nordic countries, to developing countries?
    - Do you experience any trouble with the firms which make the devices? (Mechanical knees, etc.)
        - Do they set boundaries on what you can send?

Sustainability

- In the context of sending used assistive devices to developing countries: What is sustainability to you?
- What are your thoughts on how sending's of UAD can become more able to continue over a long time *(definition of sustainable).*
    - *(If silent, give examples: no negative effect on the local clinics, more continuity, more education, more local sourcing, etc.)*

Final questions – more a step back

- Have you experienced any development or changes with the method of sending UAD through your experience on the area?
- What benefits have you experienced with sending UAD?
- What challenges have you experiences about sending UAD?
- What do you wish were taken more into consideration in your gathering and sending process?
    - *(Things you wish were done differently…)*
- Do you have any ideas on how the gathering and sending process should be?
    - *(If silent, examples: better communication with the receiving stakeholder? More fundings? More devices to be send?)*
- What is your current opinion on sending UAD?
    - *(Can the best of intentions turn into a burden?)*

Thank you for the interview

- We have now discussed what we though would be valuable to our thesis, do you have any final thoughts?
- Do you think there are anything we have not discussed yet? *(Which are valuable perspectives to our thesis area?)*

11.3.2 | Receiving stakeholders interview questions

Interview questions for receiving stakeholders

Introduction of us and our project

- Students writing a bachelor thesis, the final thesis will not be published.
- Experience at clinics: Many questions and opinions on what is ethical to donate

Informed consent

- Voluntary, through the entire process
- The audio of the interview will be recorded, transcribed, saved on the secure university one-drive, and then deleted. (Data protection)
- Confidential (e.g., when making quotes we will be careful not to make the statement point directly to back to the individual)
- Possibility to read the final article - but no possibility to change the article due to the limits of the bachelor thesis
- Any questions?

Introducing the interviewee

- Would you like to introduce yourself, what are your work-experience?
- What is your relation to the subject of receiving used assistive devices from high-income countries?

Process of receiving used assistive devices

- What is your process of receiving used assistive devices (UAD)?

Needs

- Are you asked about what you need before receiving UAD?

If yes

- How do you find out and formulate what your need is?
    - *Devices, education, continuity, etc.*
- Do you feel you have influence on what UAD you are receiving?
    - Are your expectations to the UAD being met?

If no

- Would you like to explain what communication is present with the sending part?
- Are your expectations to the UAD, which you receive, being met?

Devices

- What specific UAD, that you receive, are of most use for you? *(materials or components)*
    - How do you experience the quality of the UAD you have received?
        - If broken, do you have the possibility to repair the broken UAD? *(both before and after receiving the device)*
    - Is your local context taken into consideration by the sending stakeholders? *(Terrain, weather conditions, educational level, and access to electricity)*
    - Do you ever experience to receive devices, which you don't have the prerequisites to hand out or maintain?
- Do you experience the UAD, which you receive, meets the needs?
    - *(Specific devices, education, continuity, etc.)*

Effect of receiving UAD

- Do the sending's of UAD effect the local community? And in what way?
    - How are the UAD being used? *(Are the donations helpful?)*
    - Are the UAD prescribed to patients for free?
        - *(Is it affecting local companies or clinics badly when someone offers the same help, but for free…)*

Sustainability

- In the context of receiving UAD from high-income countries: What is sustainability to you?
- What are your thoughts on how sending's of UAD can become more able to continue over a long time *(definition of sustainable)*.
    - *(If silent, give examples: no negative effect on the local clinics, more continuity, more education, more local sourcing, etc.)*

Final questions – more a step back

- Have you experienced any development or changes with the method of receiving UAD through your experience on the area?
- What benefits have you experienced with receiving UAD?
- What challenges have you experiences about receiving UAD?
- What do you wish were taken more into consideration in the process of receiving UAD?
    - *(Things you wish were done differently…)*
- Do you have any ideas on how the process of receiving UAD should be?
    - *(If silent, examples: better communication with the sending stakeholder? More education? More devices to be send? More consistent sending's?)*
- What is your current opinion on receiving UAD?
    - *(Can the best of intentions turn into a burden?)*

Thank you for the interview

- We have now discussed what we though would be valuable to our thesis, do you have any final thoughts?
- Do you think there are anything we have not discussed yet? *(Which are valuable perspectives to our thesis area?)*