Factors that Affect the Stroke Care in a Developing

*With the Swedish National Guidelines for Stroke as a Reference*

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Factors that affect the stroke care in a developing country - with the Swedish national guidelines for stroke as a reference

Faktorer som påverkar strokevården i ett utvecklingsland - med de Svenska nationella riktlinjerna för stroke som referens

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A special thank you to...

The health care professionals at the public hospital, for your warm welcoming and your kindness and support throughout our stay in Liberia.

The participants of the study, for sharing your experiences about the stroke care in Liberia with us.

Our tutor during this experience, Jenny Röding. Thank you for your patience and support during this project.

Those who took their time to read and leave feedback on our essay.
Abstract

**Background:** The stroke rates in developing countries are increasing due to the underdeveloped health care system. Traditional medicine is common in Africa and many turn to alternative methods instead of seeking health care. In Sweden, the stroke care is based on national guidelines developed by the government. Today there are no national guidelines or recommendations on stroke care in Liberia and there is only one licensed physiotherapist in the country. **Aim:** The aim of this study was to examine what factors affect the stroke care in a developing country, with the Swedish national guidelines as a reference. **Method:** Data was collected through observations and interviews in form of field notes. Open observations was used during a period of eight weeks. Interviews were conducted with three health care professionals working within different professions. The field notes were open coded and categorized. Themes were formed from the categories and a model was formed. **Result:** There are two main factors that affect the rehabilitation of stroke patients in a developing country. These are individual- and societal factors. The individual factors contains of three categories; economic, support and belief. The societal factors contains of two categories; resource and treatment. **Conclusion:** Education and cultural beliefs are two obstacles that obstruct the development of stroke care in Liberia, which will require decades of development to overcome. There are some minor changes that could be done within the stroke care, such as introducing a team based approach, improving the structure and establish daily treatment at the medical ward.

**Keywords:**
Cultural belief, Liberia, physiotherapist, rehabilitation, stroke care.
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Background

Stroke is a global burden and in 2004 the World Health Organisation (WHO) reported worldwide statistics that showed that 39.7 million people had a stroke during that year (1). Out of these, 9 million people had their first stroke.

Stroke is a condition caused by an interruption of blood flow and oxygen to an area of the brain (2). The interruption of blood flow leads to brain cells dying, which causes brain damage. Since different areas of the brain control different abilities, a stroke causing brain damage will lead to variable loss of ability. What ability is lost depends on what area of the brain is damaged. How a stroke patient is affected also depends on the severity of the brain damage. Therefore, a stroke patient’s symptom can differ, from a small stroke leading to minor weakness of a limb, to a large stroke leading to paralysation and a loss of the ability to speak. Common disabilities that are caused by stroke are weakness of the limbs, spasticity, pain, language- and motor impairments (1).

Liberia
The Republic of Liberia in West Africa, with a population just above four million, is located by Africa’s west coast, with its boarders towards Sierra Leone, Guinea and Ivory Coast (3).

<table>
<thead>
<tr>
<th>TABEL 1: Comparison of wealth</th>
<th>Sweden (4)</th>
<th>Liberia (5)</th>
<th>Statistics from year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (km²)</td>
<td>450 295</td>
<td>96 320</td>
<td>2013</td>
</tr>
<tr>
<td>Population</td>
<td>9 453 000</td>
<td>4 128 572</td>
<td>2011</td>
</tr>
<tr>
<td>Population/km²</td>
<td>23</td>
<td>42</td>
<td>2011</td>
</tr>
<tr>
<td>Life expectancy (years)</td>
<td>81</td>
<td>56</td>
<td>2010</td>
</tr>
<tr>
<td>Children that enter elementary school (%)</td>
<td>99,8</td>
<td>46</td>
<td>1999</td>
</tr>
<tr>
<td>Literacy amongst the population (%)</td>
<td>99,0</td>
<td>59,1</td>
<td>2009</td>
</tr>
<tr>
<td>GDP per person ($)</td>
<td>54 476</td>
<td>274</td>
<td>2012</td>
</tr>
<tr>
<td>Health spend per person ($)</td>
<td>4495</td>
<td>22</td>
<td>2007</td>
</tr>
</tbody>
</table>

Source: Landguiden

When the civil war in Liberia ended in 2003, 270 000 people or 7.7% of the population of 3.5 million lost their lives (6). In 2011 Liberia’s population was estimated to just above 4 million (7). After enduring 14 years of conflict, 84% of the population in Liberia live below the international poverty line and the overall life expectancy is 56 years of age (6). There is a high mortality and morbidity rate in Liberia, which is due to the combination of poor living
conditions and a low quality health care. The expense for health care per person in Liberia is estimated to 22 USD per year, compared to Sweden’s 4495 USD (8).

The infrastructure and the health system in Liberia were seriously affected by the civil war and hospitals had been vandalized (6). Before the civil war, there were 550 operational health care facilities in the country. When the war ended in 2003 there was only 354 health care facilities remaining, the rest deemed non-functional because of destruction. With 90% of the doctors having fled the country, there were only 168 physicians left in the country, mostly in the capital city, Monrovia. Ten years after the civil war and there is still a limited availability of access to essential health care services in the country. A study of the availability of essential health care services showed that the average traveling time by foot from a rural part of Liberia to the closest health facility is 136 minutes (9).

Physiotherapy is a new profession in Liberia and according to a health care professional there is only one domestic physiotherapist (personal contact, 20th of August 2013). Since physiotherapy is a new profession in the country, there is no physiotherapy education available in Liberia. This means that you have to study abroad to become a physiotherapist. The domestic physiotherapist had studied to become a physiotherapist assistant and was thereafter contacted by a help organisation that funded the further education needed to become a licensed physiotherapist. It was the help organisation who made it possible for the physiotherapist to attend the physiotherapy education in Kenya.

The physiology of a stroke
The brain is divided into two different hemispheres, where the right hemisphere controls the left side of the body, and vice versa (2). A brain damage caused by a stroke on the right side of the brain will affect the left side of the body. A state, where one side of the body is affected by weakness of the limbs, is called hemiplegia. Psychosocial disabilities developed following a stroke are also common, and the three most common are depression, anxiety and harmful use of alcohol (2,10). A study on the prevalence of psychiatric morbidity amongst stroke patients in Nigeria showed that 19.2% of the stroke patients suffered from depression (10). The findings from the study also showed that depression was associated with greater difficulties with activity of daily life (ADL) and a worse functional condition.
Risk factors for stroke are hypertension, high age, diabetes mellitus, current smoking and established coronary disorders (11). One of the major causes of stroke in Africa is hypertension, where the cause of the hypertension often is prolonged artherosclerosis (12). Studies have shown that African ancestry is a common risk factor for developing hypertension. To prevent a stroke, the potential risk factors for stroke need to be identified and treated. A stroke caused by hypertension could for instant be prevented by treatment of the hypertension.

Approaches for successful stroke care
The Swedish government has developed national guidelines which the stroke care is based on (13). The Swedish national guidelines from 2011 highlight the importance of early diagnosis and treatment to reduce the risk of death caused by stroke or to minimize the need of help after having a stroke. For an optimal rehabilitation process there are different factors that need to be considered. A fast admission to the hospital for early treatment is one of those factors. The second factor is a ward specialized for stroke patients, with staff specialized in stroke treatment. A ward dedicated to stroke patients with instant care and treatment and continued rehabilitation on the ward is preferred. Studies have proven that a ward dedicated to stroke patients have a positive effect on the rehabilitation process compared to treatment on non-specific wards (14). Furthermore, the Swedish recommendations for treatment of stroke patients state that stroke patients should not be treated at a regular ward which lacks staff that is specialized in stroke (13). The recommendations also highlight the importance that the rehabilitation process contains professions with medical-, nursing- and rehabilitation competence and if needed, that it is possible to get access to dietary- and psychological competence based on neuropsychological knowledge. Specialized health care is important to prevent and treat common complications due to stroke. A study about the importance of a team based approach in the stroke rehabilitation showed that a team based approach was beneficial and resulted in a greater coverage of the different areas of the rehabilitation, where the different professions contribute with different skills (15).

Recovery from a stroke usually occurs during the first three to six months after having the stroke, why it is important with early contact with a physiotherapist (11). After having a stroke, it is important that the rehabilitation starts immediately after achieving medical stability and that it consists of a high-quality rehabilitation programme. The rehabilitation programme should have the goal to improve function and minimize disability. The
rehabilitation programme should also include prevention of complications, such as contractures of the joint. The rehabilitation programme must be individualized and adapted after the patient’s condition. The physiotherapist helps the patient regain function and minimize disabilities by working with areas such as motor impairments, spasticity, sensory training, cardiovascular fitness, ADLs and range of motion (16). Statistics from the United States show that 40% of stroke survivors require special care because of moderate to severe impairments that the stroke has caused. Ten percent of the stroke survivors require special care at a facility due to the impairments.

Stroke in developing countries
There has been a steady reduction of stroke incidence in high-income countries during the last decades and between 1970 and 2008 the reduction was reported as high as 42% (17). Compared to the high-income countries, the stroke incidence is increasing in low- and middle-income countries where there was more than a 100% increase reported during the same period of time. The stroke care in high-income countries is advancing, where they strive to address the underlying causes of stroke and to reduce the disability that the stroke causes. In low- and middle-income countries however, the situation is worsening due to an increase in stroke risk factors. The increase of stroke risk factors combined with an underdetection and undertreatment of the risk factors is the primary reason why the developing countries are struggling with high stroke rates. There are multiple factors behind the global increase in stroke risks, such as an unhealthy diet, an aging population and sedentary lifestyles. Other factors that contribute to the increased risk factors for stroke in developing countries is the underdeveloped health care system. This includes bad access to health facilities and a lack of resources, such as pharmacologic treatments and diagnostic equipment, to name a few.

In a review from 2013 the authors discuss the global burden of stroke (1). In this review, the authors present a study from 2004, where the resources for secondary prevention of stroke were examined amongst a group of stroke patients in a rural part of South Africa (18). The findings were compared to statistics from New Zealand. The study showed that there was a low prevalence of stroke in the rural part of South Africa compared to a New Zealand. Despite of the low prevalence of stroke, a high rate of disability was reported amongst the stroke population in South Africa. The authors of the study draw the conclusion that the lack of available post-stroke care in South Africa was the reason for these findings. Another study presented in this review highlighted that the developing countries have causative factors that
can affect the stroke care that differ from those in developed countries (19). Example of these causative factors that was mentioned was the accessibility to health care, limited resources and the cultural beliefs. Traditional medicine is one example of cultural beliefs, and the traditional practitioners can vary from healers working part time to professionals working with different regional medical systems, for an example Chinese medicine (20). Included to this term is faith healers and herbalists, which according to a health care professional in Liberia (personal contact, 26th of September 2013), is common in Liberia. It has been reported that 70%-80% of the Liberian population uses traditional medicine for treating both communicable and noncommunicable diseases, such as hypertension (21). A study with the purpose to investigate the usage of traditional herbal medicine amongst hypertensive people in South Africa showed that 21% of the participants treated their hypertension with traditional herbal medicine. Another study performed in South Africa presented the different kind of healers in the country (22). One that was mentioned was Umthandazi, which is a group of Christian faith healers who belong to the Independent African Church. They use different methods to treat the patients, such as pray and touch. Liberia is a multicultural country and 40%-70% of the population is estimated to be Christians, where the statistics vary between the different sources (23). According to a health care professional in Liberia (personal contact, 26th of September 2013), the methods used by the Umthandazis are similar to those performed by healers in Liberia.

The resources to rehabilitate stroke patients are limited in Liberia and WHOs statistics from 2004 showed that 48.6 out of 1000 people in Liberia died as a result of cerebrovascular diseases that year (24). The health care system in Liberia is underdeveloped and there are no national guidelines for stroke care according to a health care professional in Liberia (personal contact, 12th of September 2013). Routines for follow-ups are non-existing and the knowledge about stroke is limited among the population. There is limited research about stroke in West Africa and it is nearly non-existing in Liberia. Therefore we believe that this research can contribute to an increased knowledge about the subject.

Aim

The aim of this study was to explore what factors that affect the stroke care in a developing country, with the Swedish national guidelines as a reference.
Method

A qualitative research was approached since this method allows exploration and interpretation of different factors of social life (25). A qualitative study generates words as data, rather than statistics in form of numbers as in a quantitative research. Data was collected and later analysed in a real-life setting, where we were a part of the rehabilitation staff at a public hospital in Liberia. The research approach that was used was the grounded theory, which means that a theory is grounded after collecting and analysing data (25). The grounded theory is based on the perception that the main purpose of the study may be revised during the data collection and that the research question may change after the data has been analysed. Most of the research about stroke care is from developed countries and there is a lack of this kind of research in developing countries. Therefore the grounded theory is an appropriate approach since the subject of this study has not been identified in Liberia. The data for this study was collected through observations and from conducted interviews. To gain different point of views and to cover a broad area, purposive sampling was used to select people who could contribute with relevant information within the subject that was being studied. To avoid using subjects with similar perspectives in the study, different health care professions were approached to gain diverse perspectives.

Study context
The choice to study Liberia was made because of its highly reported stroke cases and limited health care resources. The environment that was studied was the medical ward and the rehabilitation centre at the public hospital in the capital city. The environment was chosen because it is where the only domestic physiotherapist works. This research has been conducted as our final essay for the physiotherapy education at Luleå University of technology. This study was made possible through a Minor Field Study scholarship, which we received from the Swedish organisation, SIDA. The preparations needed for entering the country, such as establishing a contact person in Liberia, was gained through contacts at Luleå University of technology.

Treatment of Stroke patient at the hospital in Liberia
Once a stroke patient is admitted to the hospital, the first 24 hours is spent at the medical emergency (ER) where the stroke patient receives thrombolysis. There is no MRI available at the hospital, which means that the stroke patients receive thrombolysis regardless of the cause
of the stroke. The treatment with thrombolysis will either lead to an improvement, which
indicates that the stroke is caused by a thrombosis or embolism, or an unchanged status which
proves that the stroke is caused by a haemorrhage. When the stroke patients’ state is
considered stable, the physiotherapist treats the patients at the medical ER.

After leaving the ER the stroke patients are admitted to the medical ward, where they receive
medical treatment with blood pressure reducing medicine. The reason for this is that the
majority of the stroke patients suffer from hypertension. The medical ward holds 40 patients
and there are 17 nurses working at the ward in shift of four. The ward contains of ten rooms,
which hold four patients per room. In addition to this, there are two VIP rooms, which hold
two patients per room. Between the beds there is a curtain which allows the patients’ privacy.

Before being discharged from the hospital, a nurse at the medical ward informs the relatives
of the stroke patient about the basic meanings of stroke and about the impact that the stroke
will have on their daily lives. They are also informed about the importance of taking the
medication that has been prescribed and the importance of changing position to avoid pressure
wounds. The stroke patients and the relatives are also informed about the post-stroke care at
the rehabilitation centre.

The rehabilitation centre
The staff at the rehabilitation centre consists of one physiotherapist, two physiotherapist
assistants, two WMA technicians and one mobile aid technician. In addition to this there is a
receptionist/registrar and a project manager who works at the rehabilitation centre. The health
professions’ that are involved with the medical care of the stroke patients at the medical ward
is the doctors and nurses. The physiotherapist and the physiotherapist assistants treated eight
to ten patients per week, per person at the rehabilitation centre. Of these patients the majority
was stroke patients, who were encouraged to attend physiotherapy at least two to three times a
week.

The rehabilitation centre is under renovation, meaning that the facilities are currently not
being used (Appendix 1). Instead the team is using temporary facilities that are not designed
to be used for physiotherapy. The waiting room is based on a loading dock, which is divided
into two separate parts by a container (Appendix 2). The lack of privacy is an issue in the
temporary facilities. During the registration which takes place in the waiting room, the
patient’s medical history is documented. The screened part of the waiting room is used for
administration and the weekly meetings takes place in this area. This means that the
discussions between the staff at the rehabilitation centre is done in front of the patients in the waiting room. There is one room where the assessments and treatment is taking place (Appendix 3). In this room there are two treatment beds. Since there is only one treatment room and three staff that perform the treatments, there is often more than one patient being treated in the room at the same time. Because of the lack of space, the treatment room is also used as a changing room, a storage room and for storing food. This means that treatments often are interrupted by staff at the rehabilitation centre that needs to enter the room for different reasons.

The treatment at the rehabilitation centre was free of charge and the centre is funded by aid from help organisations. The facility contains the most basic equipment, which is old equipment that has been donated through fundraisers and by different help organisations.

Interviews
We conducted a total of three in-depth interviews with health care professionals within different professions. The health care professionals that participated in the interviews were the physiotherapist, physiotherapist assistants and the head nurse at the medical ward. The head nurse is not a part of the rehabilitation team, but works daily with the admitted stroke patients. Therefore the nurse provided us with important information about the stroke patients and their admitted time at the medical ward. To avoid leading the interviews, we used an unstructured approach (25). They were based on broad, open questions to ensure that the participant’s point of view was being captured.

The interview consisted of questions about the stroke care in Liberia. According to the grounded theory, the opening question must be a broad question that provides focus to the subject (25). The opening question that was used for all interviews was; Tell us about the stroke care in Liberia?

Examples of other questions that were asked are:
- What treatment does the stroke patients receive?
- What do you believe is the main reason why the stroke patients are admitted late to the hospital?
- What stroke patients seek health care at the hospital?
The Liberian English differ from the official English language that we speak and therefore we chose not to use quotes from the interviews, since it was difficult to understand the exact wording of the statements. Instead we focused on capturing the content of the statements and these were documented in writing in form of field notes.

Observations
The main focus for this study is the health professionals working with stroke patients. The observations were focused on how they conduct the daily work and the care the patients received. We chose to observe stroke patients who were admitted to the hospital, stationed at the medical ward and the stroke patients that attended the rehabilitation center after discharge. Open observations was used and our role was as participating observers (25). The participants were aware of our roles, the study and its purpose. The observation process was divided into two different phases:

1. The purpose of the first phase was to give us an overview through observing and listening. During this phase, we were a passive part of the team of healthcare professionals and the working environment that was being observed, with the aim to get a wider perspective of the rehabilitation process.

2. In the second phase of the study, our participation in the care team increased and allowed us to be more specific in our observations and focus on the subject, by asking questions and collecting information. During this phase we identified and selected sources who could contribute relevant information for the study.

The data collected from the observations was the main source of information for this study since the Liberian English can be difficult to comprehend and therefore may affect the interviews. This means that observations about the participants’ body language become more important to capture, since it a part of the communication between the researchers and the participants. The observations we documented the data by using field notes. These field notes described the observations and summarized our experiences (25).

Data analyses
The field notes that was collected through the observations and interviews was coded in three steps:
1. The first step of this process was by open coding, which means that the collected data is summarized into code words (25). This was done by translating the data from the interviews into Swedish code words.

2. The second step was the categorizing of the code words. The code words from the interviews and the observations was compiled and compared to each other, to find a pattern within the collected data.

3. Themes for the categories were formed and a model evolved from the themes (Figure 1).

Ethical considerations

The qualitative research was based upon three ethical principles:

1. **Informed consent.** The participants were informed about the aim, the process and any eventual risks or benefits from the participation of the study (26). A consent form was signed, with the purpose to protect participants and the researchers (Appendix 4). The consent form included confidentiality factors, the researcher’s rights to publish the result of the study and that if any changes of the project plan would occur during the study, the participants would be informed. The informed consent highlighted that the participation is voluntary, allowing the participants to withdraw from the study anytime.

2. **Confidentiality.** All personal information is held anonymous, so the participants cannot be identified. Only data collected through the interview and the observations was used in the research. The participants were informed that if further information would need to be published, the researcher would seek the participants consent.

3. **Consequences.** The benefits from participating in the research must always be greater than the disadvantage that the participation could cause. The participants were informed about these eventual benefits and disadvantages before the study took place. Thereafter the participant could decide if he/she would like to be a part of the study. For an example, a benefit from the participation of the study could be to contribute to the development of the rehabilitation of stroke patients. Meanwhile
a disadvantage of participating in the study could be that the participation is time consuming.
Result

The following result is based upon the interviews with the health care professionals and our observations during our eight weeks at the public hospital. The data from the interviews and the observations has been compiled and compared. After analysing the collected data we came to the conclusions that there are two key factors that affect the stroke care. We have identified these as individual- and societal factors. The individual factors can be divided into three different themes; belief, economic and support. The societal factors can in turn be divided into two themes; resource and treatment (Figure 1).

Figure 1: The different factors affecting stroke care
Individual factors

Belief
“**You come to the hospital to die or maybe survive**” is a quote that we came across several times during our stay in the country, which can summarize the general opinion the public have towards the health care. This opinion is consistent with the collected data from the interviews and observations, which is that a large part of the Liberian population has low faith in the health care system. This means that even though many patients already have been diagnosed with hypertension before having a stroke, it is not uncommon that the patients’ actively chosen not to treat their hypertension. Although one might argue that they are interrelated, we have identified three types of beliefs which explain why many stroke patients never seek health care, are admitted late to the hospital or never attend the physiotherapy at the rehabilitation centre. The first reason why many stroke patients never seek health care, are admitted late to the hospital or never attend physiotherapy is because of their low faith in the health care system. Secondly, Liberia is a religious country and people often turn to their local church before seeking help at the hospital. Seeking help through the church in the first instance often means that the stroke patient are being admitted so late to the hospital, that the chance for recovery has been reduced, if not completely disappeared. Lastly, many patients turn to alternative methods like herbs and acupuncture because of cultural beliefs.

Many of the stroke patients arrive at the hospital anything from weeks to years after having experienced a stroke, due to the mentioned reasons above. Furthermore, it is not uncommon that once the stroke patients finally seek health care, they require other medical treatment because of complications caused by late admission or resulting from the use of alternative treatments. One example of a complication that was observed amongst the stroke patients was burns. These complications were a result of alternative treatments based on cultural beliefs that heat heals paralysis. The stroke patient’s loss of sensation lead to burn marks as a result of the treatment. Another example of a complication due to a late admission to the hospital is a subluxation of the glenohumeral joint resulting from a lack of knowledge about the restrictions of the affected limb.

**Economic**
Neither medical nor pharmacological treatment in Liberia is free of charge, meaning that a majority of the population cannot afford health care. This means that even though some patients may be aware that they are suffering from hypertension and the increased risk of
having a stroke, they cannot afford the pharmacological treatment that is necessary to prevent a stroke. If they suffer from a stroke, they cannot afford the medical treatment at the hospital. In some cases, the patients cannot even afford the transportation to the hospital.

The rehabilitation centre can offer physiotherapy and walking aid, free of charge. Even though the physiotherapy is free of charge, only approximately 25% of the stroke patients that are admitted to the hospital actually come to the rehabilitation centre once being discharged. The low statistics of stroke patients that attend physiotherapy is considered to be due to the expenses for transportation to the centre.

Support
For a stroke patient in Liberia, it is crucial to have support from their relatives. It is the relatives that will care for the stroke patient in the home environment. For many families the stroke patient is considered to be a burden, which will lead to an economic loss where the care for the stroke patient affects the daily work. Therefore, it is not unusual that relatives abandon the stroke patient. Depression is a common disability due to stroke and it was observed that many of the stroke patients that suffered from depression had been abandoned by their relatives, which affected their rehabilitation. A quote from one interview that shows that depression affects the rehabilitation is “Many of the stroke patients die from depression since they give up”. Our observations confirmed that many of the stroke patients who chose not to actively participate in the rehabilitation, suffered from depression. In some severe cases, the stroke patient has a hard time adapting to society and it is another reason why the patient “gives up” and eventually passes because of starvation.

For those patients in need of daily social support, there is one social worker available at the hospital. The social worker is responsible for the entire hospital, meaning that it is no possibility to visit all patients who require social support. The relatives’ commitment to the stroke patient and their rehabilitation is therefore extremely important for the outcome. We observed that the patients which had relatives that had been briefed on stroke and the importance of physiotherapy before being discharged from the hospital, had a better chance of recovery since they attended physiotherapy at the rehabilitation centre.

Societal factors
The medical ward holds 44 patients and the observations showed that on average five of these were stroke patients. Since there is only four nurses working at the ward at any given time, caring for all the patients at the medical ward, the work load is considered to be heavy. This means that the nurses only have time to provide medical treatment and basic nurturing. Due to the heavy workload many stroke patients suffer from pressure wounds. The observations showed that the heavy workload contributed to irregular change of resting positions for the bedridden stroke patients. The irregular change of resting position combined with the disadvantageous environmental factors, such as high humidity and bad ventilation, is the main cause of pressure wounds. The complications of pressure wounds lead to a further deterioration in the patient’s condition, which has a negative effect on the rehabilitation process. The patient becomes further immobilized and contracture prophylaxis is the only treatment available to the patient during this state.

The physiotherapist and the physiotherapist assistants are the only staff involved in the rehabilitation of the stroke patients. There are no other health care professions that work with rehabilitation, such as occupational therapists and speech therapists. These health care professions do not exist in the country.

The hospital operates with limited resources and is depending on donations of second hand equipment through aid organisations. There is a lack of equipment considered necessary for treating stroke patients. For an example, there is only a few cushions available, meaning that there are not enough for the patients to be placed in a correct resting position. Furthermore, there is no draw sheet, which is used to help to get the patient in a resting position.

Treatment
Every morning the doctors, the attending doctors and the head nurse meet up and discuss new admissions and cases where the patient has deceased. Thereafter the doctors and the attending doctors make their daily round at the ward, known as the ground round. During the ground round they discuss the different cases on the ward and what treatment they require. The physiotherapist and the physiotherapist assistants are not present during the ground round, nor is any other staff from the rehabilitation centre. The physiotherapist and the two physiotherapist assistants are assigned to different wards. The physiotherapist assistants are each responsible for the medical or the surgical ward. The physiotherapist is responsible for the maternity centre and the ER, which in turn is organised as two separate wards; trauma and...
medical. The physiotherapist is also assigned to the more complex cases on the other wards, since he has more advanced medical knowledge than the physiotherapist assistants. The more complex cases are referred to the physiotherapist by the physiotherapist assistants or the nurses on the wards.

In severe cases where the patient is not admitted to the hospital until weeks after the stroke has occurred, it is common that the patient decease during the time in the hospital, mainly due to complications of the immobilization, such as pressure wounds and pneumonia.

The treatment performed by the physiotherapist at the medical ER contains of passive- and respiratory exercises. Depending on the stroke patients condition, the unconscious patients and the patients with paralysis is placed in a resting position with the patient lying on his/her non affected side. The affected lower limb is placed in a flexed position in the hip- and knee joint. Our observations established that no specific position for the upper limb was being used.

Three times a week the physiotherapist assistant makes a round at the medical ward. The reason why there are no daily rounds at the ward is because the physiotherapist assistant is stationed mainly at the rehabilitation centre. Before treating the patient, the physiotherapist assistant consults the patient’s journal. The journals are in paper form and are updated by all health care professionals. The journal contains notes about what treatment has taken place since the patient was admitted to the hospital.

The physiotherapist assistant uses contracture prophylaxis as a form of treatment at the medical ward. After the patient has been treated, they are placed in a resting position. It emerged from the interviews that the main reason for placing the patients in a resting position is to ensure that the patient regularly changes position as a way to prevent pressure wounds. However, there is no formalized routine for this and the change of position is not documented by any of the health care professionals. If the stroke patient is considered to be in good condition, the patient is positioned in a chair as a way to activate and mobilize them and to prevent pressure wounds and respiratory complications. After treating the patient the physiotherapist assistant briefly documents in the journal what treatment has taken place.

The awareness of the rehabilitation centre as a resource for stroke patients are low. Most of the patients at the centre have been referred by the staff at the hospital after receiving their initial medical treatment. The rehabilitation team focuses on gait and analgesic treatment at
the rehabilitation centre. Three different methods were used to treat the stroke patients’ pain. These were: heating pads, massage and anti-inflammatory paste. For those stroke patients that were more independent and regularly visited the rehabilitation centre, there was a stationary bicycle with resistance that could be used for resistance training and for increasing or maintaining the range of motion of the joints. The exercises that were given to the stroke patients were also explained to the relatives so they can be a part of the rehabilitation in the home environment.
Discussion

Method discussion
We collected the data using open observations, where the participants were aware of the purpose of the study. During the last three weeks at the hospital we actively participated in the treatment of stroke patients at the medical ward. We hoped that this participation would increase the bond with the health care professionals at the hospital, and our participation would mean that we would be considered equals as health care professionals and that in turn would give us a chance to exchange knowledge about stroke treatment. We considered how our participation in the treatment of stroke patients could affect the remaining weeks of our observations. Many of the differences we observed during the first five weeks were verbally confirmed through questions about the treatment we performed, and it became clearer to us what the differences are in treatment of stroke patients between Liberia and Sweden.

In retrospect we questioned whether it would have been better if the participants were not aware of the purpose of the study, since there is a possibility that it could affect the participants’ performance during the observations. However, this would be problematic since the interviews reveal the subject area. A solution to this would have been to conduct the interviews during the last two weeks, so that the subject of the study would remain confidential during the time that the observations were made. It is possible that the knowledge about the purpose of our observations could influence the participants’ usual routine for treatment of stroke patients. This may occur both consciously and subconsciously, where the health care professionals become more aware of the execution. Even though it might have been preferable to conduct the interviews during the last two weeks, it would not have been possible in reality. The general attitude towards time is much more relaxed in Africa than in Sweden. This is something you need to have in mind when you book an appointment, since it is not unusual that they arrive late or never show up. If this study had been performed in Sweden, it would have been preferable to conduct the interviews during the last two weeks, but since the study is performed in an African country we would have risked ending up with an incomplete data collection.

The interviews were based upon questions that had been formulated in advance, but in some cases additional questions were asked during the interview. Since the observations involved the same health care professionals’ as the interviews, we had the opportunity to complement
the interviews with additional questions during the remaining weeks of observations. This was an advantage, since it meant that if something was missed during the interviews or if something occurred in retrospect, we had the opportunity to complement with questions during the observations. Initially we had the intention to use direct quotes from the interviewees in the study. This would have been done by recording the interviews. However, when we were going to conduct the first interview we encountered technical problems which meant that it was not possible to record the interviews with our recording equipment. Despite this, we do not believe that it would have been possible to use the quotes, since the Liberian English differ from the official English language we speak and it can be very difficult to comprehend. As an example the content of a statement is understood, but the exact wording of the statement would not make sense. The major obstacle we encountered during our data collection was the language barrier. Since the Liberian English differ from the English we speak, we had difficulties understanding the whole content of the statements, which affected the interviews. Therefore, it was an advantage that we could complement the data collection from the interviews during our observations. The language barrier meant that it became more important to capture the participants’ body language, since the body language is a big part of the communication. With time we learnt to understand the Liberian English better, which meant that we understood the whole content of the statements. Despite this, we still could not use direct quotes in our study since the exact wording was not able to be documented.

Result discussion
Our study has led us to draw the conclusions that there are two different factors that affect the rehabilitation process; individual- and social factors.

Individual factors
With regards to the individual factors, we believe that the patients’ belief in health care is the main reason for why patients are admitted late to the hospital or never seek treatment. The latest statistics showed that only 46.0% of the Liberian children enter elementary school, compared to Sweden’s 99.8% during the same year (27,28). The lack of education amongst the Liberian population may be the main reason for the low belief in health care. If the population lack fundamental knowledge about the human body, how can we expect that they know the importance of seeking health care? Unlike Sweden, all Liberians do not get in contact with the health care system at a young age. Being introduced to the health care system
while growing up, for an example through check-ups, may affect your belief in health care as a grownup. Another thing that may affect your belief in the health system is the people in your surroundings and their experience of health care. Regardless of whether it is a positive or negative experience, it will affect your future trust and belief in health care.

There are patients that seek medical care late, as a result of their religious belief. These patients have initially turned to the church and its assembly where the pastor and the assembly pray for the patient in the hopes that god will heal them. In some cases, stroke patients turn to praying for years before seeking medical care. The majority of the health care workers are Christians and know the importance of proper health care and that it has to be sought immediately. So to state that the religious belief alone affects the belief in medical care is incorrect. Furthermore, there are other countries where the religious belief does not interfere with the belief in health care. Instead we believe that other factors such as lack of education and economic power are the main reasons why people decide to turn to the church. Many of the patients live in a rural part of Liberia, where there is a long distance to the closest health facility. Most communities have a local church, which often is more accessible than the health facilities. Since 84% of the population live below the international poverty line, they cannot afford transportation to or treatment at the public hospital (6). As mentioned before, we do not believe that the religious belief alone is the reason why the patients do not seek medical care or are admitted late to the public hospital. So although the religious beliefs matters, it cannot alone explain why the patients do not seek medical care or why they are admitted late to the hospital. It is instead the combination of the patients’ economic situation and their lack of education that contribute to this problem.

During our time at the hospital a common perception amongst the patients was that you come to the hospital to die because of the insufficient health care. According to us, this statement is unfair towards the hospital and the health care professionals. Even though the health care is underdeveloped by western standards, there are other factors that affect the treatment which the hospital cannot be accountable for. Since many of the stroke patients are admitted late to the hospital, many have already passed the critical recovery phase and therefore the chance of regaining motor function is low. There is a high death rate amongst stroke patients in Liberia. Many of these deaths could be avoided, since the outcome often is not due to the brain damage caused by the stroke, but to the complications following the stroke. There are two main reasons why these complications occur and those are a late admission to the hospital and
long immobilization once admitted to the hospital. Long immobilization often leads to pressure wounds and respiratory complications such as pneumonia. Our observations and interviews showed that the understaffing at the medical ward, mean that the nurses struggle to provide sufficient care to all the patients. This means that the nurses do not have enough time to mobilize the patients as much as they would like. Mobilizing the patients by placing the patient in different positions, would facilitate the transport of mucus from the lungs, which could help preventing pneumonia (29). Mobilizing would also address the effect of environmental factors such as high humidity which contributes to the patients developing pressure wounds. Since many of the complications are due to immobilization, they could be prevented by addressing the understaffing on the ward, which is due to the hospitals finance where they cannot afford employing more nurses.

The Liberian health care system was severely damaged during the civil war. Although it is ten years since the war ended, the health care system has not had time to rebuild, and it is still suffering from the damage caused by the war. Since the majority of the health care workers fled the country, it may affect the populations trust in the health care system and the health care workers. When the population was in most need of help, they were abandoned by the health care workers and as a result the trust in them and the system was damaged.

The post-stroke care in Liberia consists of the treatment at the rehabilitation centre and there is no professional rehabilitation in the home environment. Since only 25% of the admitted stroke patients are estimated to attend the physiotherapy at the rehabilitation centre, it means that 75% of the stroke patients do not receive any post-stroke care. This means that all responsibility rest with the relatives of the stroke patient, who becomes the caregiver once the stroke patient has been discharged from the hospital. When having a stroke, focus is naturally placed upon the stroke patient. However, it is important to remember that a stroke affects the whole family, and all the family members. Our experience from stroke care in Sweden, show the importance of providing the relatives of the stroke patient with information and support and to include them in the planning of the post-stroke care. This is not done in Liberia, meaning that the plights of the relatives are being ignored. Research has shown that caregivers of the stroke patient often experience strong feelings of responsibility, anxiety and that their quality of life is affected (30). It is difficult for us in a developed country to comprehend how a family member of a stroke patient can be so desperate that they abandon their own relative. We live such secure lives in developed countries, where we do not have to face the same
challenges as they do in the developing countries. And even though the rehabilitation at the rehabilitation centre is free of charge, many cannot afford the cost for transportation to the rehabilitation centre. This combined with the loss of income from caring for the stroke patient in the home environment, makes it understandable why it is a big economic burden for the relatives. This helps us understand why some stroke patients are abandoned by their relatives.

In Sweden, a high level of external help and support is available to the relatives of stroke patients; in Liberia not even a basic level of support is available. Research has shown that relatives that receive social support experience it easier to adjust to the role of caregiver and to improve or maintain their quality of life (30). It emerged from one of the interviews that many stroke patients die as a result from depression where they “give up”. There is no psychologist available at the hospital, which means that the social worker is the only one providing social support. Since the social worker do not have enough time to support all the patients at the hospital, it is not surprising that there is no support for the relatives. The obvious solution to the problem would be to hire more personnel to work with social support. However, due to the financial situation, this is not viable. It emerged from one of the interviews that the physiotherapist assistant was aware of this problem and therefore took time to engage in the stroke patient’s social situation during treatment at the ward. This may be a good way to address the problem and hope that this will spread to other health professionals who will take their time to do the same. This would be a simple solution that does not require economic financing.

Societal factors
Because of the war, there are still limited resources available at the hospital. As a result, new techniques cannot be adapted, since there is a lack of equipment and financial resources to implement them. Since many of the health care professionals fled the country, many professions have not had time to establish in the country again. For an example, there are no speech therapists available at the hospital that can help the stroke patients regain their ability to speak. This lack of specific professions, mean that many parts of the rehabilitation process is lost. For an example, since there is no occupational therapist at the hospital, it means that there is no focus on rehabilitation of the patient’s fine motor skills. Instead more focus is put on gross motor skills, such as gait. The lack of certain professions in the rehabilitation process means that there is a higher demand on the physiotherapist and the physiotherapist assistant...
assistant, who is in charge of the whole rehabilitation process.

Contracture prophylaxes of stroke patients are being performed three times a week at the medical ward. In the Swedish stroke care contracture prophylaxis is performed daily to maintain range of motion of the joint. The Swedish national guidelines for stroke care states that another way to prevent contractures of the joint is by maintaining full muscle length. This is done by stretching the muscle and by performing passive movements. Stretching muscles is also used as a way to prevent spasticity in Sweden. We never observed the usage of stretching as a form of treatment, and during the participation phase when we implemented this treatment we were asked what we were doing. However, after further research we discovered that there is limited evidence for using stretching as a treatment to prevent spasticity. This makes us question why it is used as a form of treatment in Sweden.

The health care is generally underdeveloped in Liberia and are decades behind the developing countries when it comes to medical resources. Our observations showed that it would be possible for rehabilitation staff to treat the stroke patients at the medical ward once a day. Since the average number of admitted stroke patients at the medical ward is five, the total time for treatment would be approximately one hour per day. We consider that this is possible to implement as long as the physiotherapist and the physiotherapist assistants takes turns during the week. This would only require approximately one hour per week per person and would be a way to develop the stroke care in Liberia.

Since the physiotherapist and the physiotherapist assistants do not attend the morning meeting with the doctors and the head nurse, they make their own assessment of which patients are in need of physiotherapy. This is done through a quick assessment of all the admitted patients at the ward, where they look for any signs of hemiplegia. This method is time consuming and interferes with the patients’ privacy since it means that you enter every patient’s area, even those who will not be treated. It is also possible that some stroke patients are being overlooked, since not all have the typical signs of hemiplegia and the loss of ability can vary, where some may only have modest symptoms such as weakness of the limbs.

With no ward dedicated to stroke patients and no staff specializing in stroke care, this could also be a factor that contributes to stroke patients being overlooked. We understand that the hospital do not have the resources to devote an entire ward to stroke patients and that financial
factors may play a big part in why there are not staff specialized in stroke. However, according to us it is possible to improve the stroke care at the hospital. Firstly, it could be improved by specializing some of the nurses at the medical ward. This would be done by assigning one nurse per shift to the stroke patients. Due to the financial constrains it might not be a possibility to educate these nurses through courses after work hours. However, literature is available at the library at the hospital where staff can borrow literature to expand their knowledge about stroke care. Secondly, facilitating the identification of stroke patients will lead to an improvement of the stroke care. The structure at the medical ward could be improved by placing the stroke patients in the same room. This would help all the staff to identify the stroke patients and allow them to tailor the care towards their specific needs. Another way to improve the identification of stroke patients at the ward would be by improving the documentation of these patients. This could be done by documenting in which room the patients are placed and every time the nurse changes the patients’ position in bed. These adjustments would lead to improved stroke care without draining the hospitals financial resources. This would also be an effective way to address the problem with the high rate of deaths amongst stroke patients caused by pressure wounds. By improving the documentation, the monitoring of the stroke patients would improve, helping to prevent pressure wounds from developing.

Our observations showed that the doctors and the head nurse at the medical ward are working as a team, they have for instance morning meetings where they discuss the admitted patients. The physiotherapist and the physiotherapist assistant are not present at these meetings, which mean that the information they receive about the patients is only the information they can gather from the patient’s journals. This may have a negative effect on the rehabilitation process, where the lack of communication between the physiotherapist and other staff members means that important information about the rehabilitation process is lost. Since the journals contain limited information about the patients’ medical history, the physiotherapist and the physiotherapist assistant lack essential information about the patient. Since the physiotherapists and the physiotherapist assistants documentation consists of brief notes, the doctors and the nurses lack essential information about the progress of the rehabilitation. Research has proven that a team oriented approach benefits the outcome of the rehabilitation (15). Furthermore, the Swedish recommendations highlight the importance of collaboration between the different professions and we believe it is important to establish this approach in the stroke care in Liberia. During the interview with the head nurse it emerged that the nurses
have a heavy workload and are short of time. However, observations showed that the
physiotherapist and the physiotherapist assistant would have the time to participate in the
existing morning meetings with the doctors and the head nurse at the medical ward. This
solution means that the head nurse do not have to set aside time for these meetings since they
already exist. After the meeting, if important information needs to be forwarded to the other
nurses, this could be done by the head nurse who participated in the meeting.

Clinical implications
The researchers of this study have identified some changes within the stroke care in Liberia
that are viable;
- Establish a team based approach within the health care professionals
- Improve the documentation of the patients medical history
- Dedicate a room for the stroke patients
- Specialize some of the nurses in stroke care
- Establish daily rehabilitation of the stroke patients at the medical ward

Conclusion
There are two main obstacles that obstruct the development of the stroke care in Liberia.
These are the cultural beliefs and Liberia’s economic situation. These obstacles are out of our
reach, since they require a change of the entire nation’s culture and economics. When it comes
to the cultural beliefs, the belief in health care needs to improve, which includes rejecting
alternative treatments that lack scientific evidence. Many of the changes within the stroke care
in Liberia that need to be addressed depend on the country’s finances. Additional resources
such as health care professionals and medical equipment rely on the country’s available
budget spend on health care. Since Liberia is one of the poorest countries in the world, we
understand the limitations this has on the ability to improve the health care to the extent that is
needed. However, there are some changes that would be viable since they would require none
or little funding. It would benefit the stroke care if the different health care professions were
to work using a team based approach, if the structure at the medical ward were to improve and
if daily treatment at the medical ward would be established.

To summarize, the health care in Liberia is underdeveloped, which means that they lack
resources that are crucial for the rehabilitation of stroke patients. The mentioned outlined
individual- and societal factors affect the stroke care, meaning that the rehabilitation of stroke
patients suffers. The Liberian population may have a low trust in the public health care, but our study shows that there are factors that affect the stroke care that is out of the health care professionals’ control. These factors are working against the physiotherapist, meaning that once the physiotherapist gets in contact with the stroke patients, many of them are in such bad condition that the chance of a successful rehabilitation is unlikely. Nevertheless, the health care professionals do their best despite the limited resources and we got the impression that they would be open to changes that would improve the care of the stroke patients. There may be decades of development within the stroke care ahead, we got the perception that the country is ready to make the first changes to improve the stroke care.
References


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Appendix 2
"The rehabilitation process of stroke patients in an environment where there is a resource constraint"

We are two students from Sweden visiting Liberia to write our final essay for the physiotherapist programme. We are here for eight weeks to collect data for our essay. This will be done by observations and by conducting interviews with health professions that work with stroke patients.

The aim of this study is to describe the rehabilitation process of stroke patients in an environment where there is a resource constrain. The study has the hopes to increase the understanding of the difference in stroke rehabilitation between a developed and a developing country. Increased knowledge by learning from each other could lead to a better and faster rehabilitation that is more cost efficient and where fewer resources might be needed. There are always aspects of the rehabilitation process that could be developed and if the different countries can enlist the help of each other and learn from each other’s flaws and strengths the rehabilitation of stroke patient can be improved.

The participation of this study is voluntary, meaning that you have the right to withdraw from the study anytime. All the personal information will be anonymous, meaning that you will not be able to be identified in the study. Your profession will be presented in the method, but you will never be identified by your statements and we will not use cites in the study. The interview and the personal information will be confidential. Therefore you will never be identified to specific statements from the interview. It is the data collected from the interview and the observations that will be used in the study. Would further information need to be published, we will contact you and seek permission.

The study will be published at the Luleå University of technology’s website (www.ltu.se), the Swedish organisation (SIDA) website and a copy of the study will be sent to the project manager at the Monrovia Rehabilitation Centre at JFK-hospital.

Thank you for participating in our study.
/ Carolina Ringertz & Ida Sjösten

I hereby leave my consent to participate in the study.

Name:


Signature:


Date, Place: