E-health in Khartoum
Viewpoints from University Students

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Abstract

The research was conducted in Khartoum, Sudan, with the purpose to see whether there was an awareness on e-health among university students in Khartoum and how they perceive health-related information on the Internet. As there is very little covered in this area, this research also aims to cover the gap in information and data of this field in this particular region, as e-health in Africa is an under-researched area in general. The general picture is that health information in Africa lacks coordination and that e-health system implementations are incapable of allocating crucial information on health for a continuity of care.\(^1\)

Health care systems are shifting towards models that emphasizes self-care management and two major concerns in the general perception of online based health information are; The limitations in health-seekers’ own ability as well as the limitations/credibility of online information. With this in mind a qualitative method was conducted by using focus groups. The researcher did so due to the ability of creating a discussion with a wider range of perspectives, with a larger number of participants during one discussion, rather than one-to-one discussion/interview, and to identify collective thoughts or perspectives in order to see what might be treated/viewed upon as culturally.

The targeted groups consisted of university students, mixed gender, in the age group of 17-25 in Khartoum.

Below are the research questions together with brief results;

- What are the viewpoints of Sudanese university students between the ages 17-25 on using the Internet as a health guide? The students that were participating in the focus group discussions had in general a positive view upon Internet as a health guide, at least the idea of it. What they were highlighting as an issue was the matter of trust, this was recurring in all four groups and they also shared a wish for something more reliable as a source of information.

- What could be the benefits of an Internet-based health guide in Sudan for university students between the ages 17-25? The students said that Internet is, or could be, a time and money saving alternative, especially for people living in the more remote areas in Sudan. They also brought up the issue of privacy, in this case the students expressed a feeling of more privacy and anonymity when being online, rather than confronting medical staff in real life.

- What could be done in order to raise awareness on health-related information on the Internet? Policy actors and medical professional in Sudan need to develop software which is customized for its population, e.g. mobile applications and websites. These actors also have an effect on the population in terms of the trust they have, and therefore they should take the responsibility in guiding them towards the right direction of e-health.
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1 Introduction

The Research Area

I met a woman in Khartoum who was about to give birth the week after. She was complaining about a headache and was about to take some painkillers when her friend, who is an assistant nurse in Sweden, told her that she should not. For some reason they also asked me for my opinion. I just did what I usually do when I am not sure about something; I searched the internet. I took my smartphone, opened up a browser and searched. I could then somehow confirm by reading health-related information on the Internet that is was not ideal to take painkillers while pregnant. Like most medical issues, this information came with variants. I also read that it depended on whether it was anti-inflammatory painkillers or not. I later saw the pregnant woman’s phone, it was a smartphone with access to the internet, which allowed her to communicate internationally (she was using an online application for tele-communication). With that said, she had as much access to e-health as I did.

The phenomenon of the Internet provides us with a large amount of information that we have an easy access to, especially with today’s technology and smartphones. It is helping many people through their daily life whether it is a question of seeking information regarding one’s health, possibilities to get a job, nutritional information, etc.

The area of this research is electronic health (e-health) in Sudan, and more specifically it focuses on how e-health is used by university students in Khartoum. The aim of the research is to see whether there is an awareness on e-health among university students in Khartoum and how they perceive e-health related information on the Internet.

The questions this research seek to answer are: what are the viewpoints of Sudanese students on using the internet as a health guide; what the benefits of an internet-based health guide could be; what could be done in order to increase awareness and provision, regarding health, through the Internet.

In order to answer these questions, a case study was conducted in Khartoum where four focus group discussions were held in order to get a broader understanding on students’ awareness and viewpoints on e-health.
The methodology applied in this study is the focus group method, as the study took a qualitative approach that involved group discussions around the research topic with a specifically chosen group of Sudanese university students. Given that it is generally very little known about e-health in Sudan, the research method selected – i.e., focus groups – is of an exploratory nature. The reason for conducting the focus group discussions with students was because of the fact that youth (which is age 15-24 in Brahima Sanou’s article) make about 70% of the world’s Internet users, however nine out of 10 young individuals that are not using the Internet are living in Africa or Asia.

To give the reader a brief background on information and communications technologies (ICTs), and their adoption in contemporary Sudan, here are some statistics; According to internetlivestats.com, there are 10,886,813 Internet users today in Sudan which is 26,4% of the population. We can expect the number to increase in a short period of time, as Sudan’s Sudatel Telecom Group (STG) will be investing $267 million in infrastructure by the year of 2020.

Sudan is among the most developed countries in Africa in the use of ICTs, including the Internet and its applications, according to a report from the University of Khartoum.

In comparison to regional standards, Sudan has a relatively good telecommunications infrastructure with fibre optics and international fibre connections. With this information we know that e-health is available to more citizens of Khartoum than ever.

**Aims and Research Questions**

The purpose of this study is to discover whether there is enough trust, and awareness, in an Internet based health guide among young students in Khartoum. It also aims to reach

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4 Ibid.


conclusions, that can be used for further developments of a successful Internet-based health guide in Sudan.

The ambition is to present perspectives of Sudanese university students on e-health, in order to obtain a deeper understanding on their Internet behaviour regarding the particular topic of health provision. Although this study is limited to a very specific demographic group in Sudan, it also functions as a piece of a larger picture and provides an exclusive insight for anyone interested in e-health. E-health is widely used over the world with the benefits of saving money and time, therefore this study is a contribution to the developing of e-health in Sudan.

This research aims to explore and answer the following research questions:

What are the viewpoints of Sudanese university students between the ages 17-25 on using the Internet as a health guide?

What could be the benefits of an Internet-based health guide in Sudan for university students between the ages 17-25?

What could be done in order to increase health awareness through the Internet?

The study is divided into chapters with this introduction being the first, thence comes the literature review in order to see what has been written and studied within this research area, and to outline potential gaps in the information needed to answer the research questions. Then follows the methodology which explains how the data was collected from the field through focus group discussions. Thence a content-analysis takes place, discussing and analysing the themes from the results of the collected data and comparing them with previous research found in the literature review.

The discussion puts the research in a context with other studies and shows its contribution within the chosen area of research, as well as its limitations in regard of what could have been done differently.
Literature Review

The purpose of the literature review is to provide an overview of health information-seeking behaviour (HISB) among university students in Khartoum, Sudan, other African countries as well as western countries. Specific objectives in the review will include; documenting internet accessibility and usage patterns, and identifying possible online sources of health information.

With the continuous move towards globalisation, the ICT has become one of the most important factors in achieving progress within improving awareness and providing better and faster health accessibility.

Stella N. Anasi asserts in her dissertation on health information in Africa, that there is a general gap and paucity of empirical research on public interest in health information in Africa.\(^7\) Compared to Australia’s and the USA’s internet users where 80% of them use it for health related purposes in one way or another.\(^8\) For this reason, the researcher has provided comparisons to other regions of the world in order to provide a greater picture of the field of e-health and to point out recurrent findings and patterns that might be found in Khartoum as well.

ICTs/Internet in general and in Sudan

The general universal definition of ICT is that it is the infrastructure and components that enables modern computing, that is all the components related to computer and digital technologies – for example; computers, mobile phones, personal digital assistants (PDA), digital television.\(^9\)

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As mentioned in the introduction chapter about the ICTs and their adoption in contemporary Sudan, the World Bank provides with statistics showing that there are about 10.886.900 Internet users today in Sudan which is around 27% of the population. Only 10 years ago in 2007 it was about 8.5% Internet users in Sudan, by 2005 it was 1.3%. Those numbers are indicating a rapid growth and spread within the ICTs in Sudan. The Middle East and North African region as a whole has 44% Internet users within its population. We can expect the number to increase in a short period of time, as Sudan’s Sudatel Telecom Group (STG) will be investing $267 million in infrastructure by the year of 2020.

The wireless telecommunication is not the main technology for providing internet in Africa, rather the Global System for Mobile communication (GSM) network fills in due to how the GSM telecommunication grew rapidly in Africa the past decade. In “Internet is no longer a luxury,” Joel Macharia describes it as a boom of mobile phones in Africa during the 2000’s, as its penetration grew from 1% in 2000 to 54% in 2012. Another example, given by the World Bank, is showing that the number of mobile subscriptions in use in Africa increased from fewer than 25 million in 2001 to almost 650 million by 2012. In 2012 two-thirds of African adults had access to ICTs and it has evolved from that till today.

The access to information via ICT is definitely there, at least in the major capitals of Africa, Khartoum included. The articles mentioned above do not specifically point out the rural and remote parts of Africa. While this could also be an interesting addition to my research, I have focused specifically on Khartoum-partly where ICT has grown particularly much, despite

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many obstacles regarding high cost. Also, Khartoum was chosen due to the geographical limitations, such as restriction of movement within the country.

E-health in general and in Sudan

Definitions and history

The expression e-health, or electronic health, was hardly used before 1999. It was coined and used along with other so-called “e-words” such as e-commerce and e-business. In the beginning it was primarily used in business contexts but was later also adapted by the academic environment. The definition of e-health below is described by Gunther Eysenbach:

E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.

E-health development and adoption

There are always two sides of a coin, and so it is with e-health as well. The criticisms on e-health in Europe is, inter alia, that it could be a risk of having people self medicating themselves wrongly. On the other hand, one can argue for the economical benefits and how it can save time. Especially in remote areas with limited infrastructure and access.

E-health in Africa is in general an under-researched area which gives this topic a weak starting point in the question of how the adoption and development of e-health has taken form in Africa. If one looks towards the adoption of e-health practices in Europe, one can identify the barriers in its process of development and adoption. For example, the European Commission (EC) points out the “lack of awareness of, and confidence in e-health solutions among patients, citizens and healthcare professionals” as a one of the great barriers. The EC also points out the high costs in the start-up process of e-health systems and the access of

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different ICT-services in different regions. These are points that should be taken into consideration in the African context.

**Trust and other debates on e-health**

When looking over previous models on trust regarding online information that suggest a judgement of trustworthiness based on criteria of usefulness beside assessments, like information credibility for instance, it is suggested in contemporary studies that there is an important distinction in information quality and websites. The design itself, as a health information provider, plays a big role in the perception in regard of trust among individuals that are looking for health-related information online - also called health seekers.

There are key factors that have to be taken into consideration when discussing trust judgement, such as the information technology (IT) innovation process in different regions, as it usually is linked to the public sector and affected by it through reforms involving policy actors on both national and international level. In African countries, in particular, there is a general lack of knowledge in the IT-field among the population. In such situations it is challenging to find adequate level of confidence towards information technology, and by that automatically e-health.

Lastly, one has to take into consideration that lots of the innovation of IT designs within the public administration in most developing countries are imported from abroad, especially software applications. These may have been developed for a different targeted group with a different need and background due to their different contexts, and therefore different references.

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21 Ibid, 14-15.
As more people use the Internet as a tool for seeking health information, there is meanwhile an ethical debate on the quality the health information itself provides. Studies shows us that mentioning the author of health information on websites is more of an exception. Another issue is whether the health information is updated or not, as this is also an exception. 22

The ethical debate on e-health also makes a distinction between electronic commerce (e-commerce) and e-health, as the latter intends to educate its visitors it is therefore a different responsibility that comes with it in terms of codes of conduct. Studies shows us that many online health seekers automatically think that they are anonymous when entering or searching an e-health based website, and that their e-mail address disappears forever once deleted. This is not the case, as for example an e-mail address will stay forever once made its print. Further on the debate argues that these websites should follow strict security measures in order to make sure that its visitors can obtain their privacy and not being exposed to the commercial market. 23

In the US the American Medical Association suggest the following;

Medical websites, more than any other type of site on the Internet, should ensure visitors' personal privacy and prevent personal medical information, including patterns of use and interests, from being sold, purchased, or inadvertently entering the hands of marketers, employers, and insurers. 24

Perceptions in the general population

Health care systems are shifting towards models that emphasizes self-care management and two major concerns in the general perception of online based health information are;

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• Limitations in own ability regarding e-literacy and limitations/credibility of the online information itself. It is suggested that an enhancement is needed in e-literacy assessments, in cooperation with creditable online health resources.25

• The perspective of health professionals. Although a majority of them in Murray’s study shows that 75% of health professionals believe it is a good thing with their patients searching on the internet for health-related information, there is still a concern over health information that can be misleading or being misinterpreted. 85% of the health professionals in Murray’s study had at least once experienced that a patient had brought information from the internet to their visit. This is a strong indicator of an existing awareness, although not necessary fully efficient or helpful due to the possibility of lacking e-literacy, which could have consequences like misinterpretation or being mislead.26

Online health seekers generally praise the accessibility of the information itself, as you can be anywhere at any time given, finding the information you are looking for, as long as you have an electronic device of any kind connected to the Internet. Also, it is considered time saving. There has to be no appointment for the actual searching for answers, as it would be if visiting a hospital. Another side of the coin is how people in general feel about the security and privacy aspects, which is considered to be an important issue for them.27

**Perceptions in the student population**

Generally, the majority of students and young people are better off in terms of online navigation skills than the rest of the population. Despite the competence in Internet searching, the success of finding specific health information is not guaranteed. Students tend to feel a present frustration with the overwhelming volume of information and whether the information is reliable or not, due to its accuracy and credibility.

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25 Eysenbach, “What is e-health?”


The criteria for young people in general to determine whether to trust presented health information or not is, partly based on whether they feel that the website is trying to sell them something, or if the website is produced or backed by a reputable organization. They also tend to determine the credibility of information through a process of cross-checking. Young people also tend to judge the credibility on the layout of the website and whether it is recently updated.  

2 Methodology
In order to expand on the literature researched and to answer the questions presented in the introduction, I have chosen to use qualitative research to further identify the uses of e-health. Specifically, I have chosen to use small focus groups. Although there are many ways in which the use of e-health could be studied within an urban context, I have identified the following advantages:

- Its ability to single out different perspectives on the research topic.
- The ability to create a discussion with a wider range of perspectives, due to a larger number of participants during one discussion than of one-to-one discussion/interview.
- To identify collective thoughts or perspectives in order to see what might be treated/viewed upon as culturally.
- It is time efficient since a great amount of data can be collected in few occasions.

The disadvantages/limitations are;

- It demands a lot of logistic preparations, as there are many participants attending at the same time.

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Hierarchies may develop within the group dynamics which could be difficult to control, such as power-relationships.

It can generate a relatively large amount of data, which could be very time consuming to analyse at the analysis stage.

The targeted groups consisted of young students (men and women) within the age of 17-25 in Khartoum. The reason for this specific age span is due to the students being University students, which in Sudan is possible from the age of 17. I chose to work with this age group because they represent the largest group of internet users.\(^{29}\)

They were separated for the discussion by sex. The reasons for dividing the participants based on sex is because men tend to dominate the discussion in general, not only in Sudan but most parts of the world, therefore I hoped to give women an opportunity to speak more openly. It was also in order to avoid the phenomenon of the peacock effect, in other words trying to attract attention from the other participants or taking too much space in general.\(^{30}\)

I applied “snowball recruitment” to recruit participants for my focus groups.\(^{31,32}\) I asked people who somehow were involved with university students to act as key informants, to help me get in touch with university students and promote my research to them. I also went to various events where I expected to see and meet university students, and I simply presented myself and my study. I visited particular areas in Khartoum where university students tended to meet up and if a student was interested to participate then we swapped numbers.

I took the level of acquaintance between the participants into consideration. I did not want a group of friends to participate in each discussion, as this could have inhibited the discussion with the participants having roles within the group just as they might have in their school or elsewhere. Already existing hierarchical structures could have prevented the participants who might have had known each other from fully expressing themselves. Another reason I kept the

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29 Briones Rowena, “Harnessing the Web: How E-Health and E-Health Literacy Impact Young Adults’ Perceptions of Online Health Information.”
30 Hennink, International Focus Group Research, 126.
31 Ibid, 112.
level of acquaintance relatively low is to avoid inter-group communication codes within the group, since jokes or particular expressions between friends could create a communication gap with the other participants. Some level of acquaintance did not seem to pose any problems and is likely to exist since recruitment was done through snowballing, namely by getting in touch with contacts and friends.\(^3\) I tried to separate those who knew each other by simply asking them to join the discussions on different occasions.

The total number of recruited participants was 30. Divided into four separate groups, each focus group consisted of 7-9 unique participants. The reason for having four groups was that I wanted at least two different groups of each sex in order to cross-analyse them. A larger number of participants would have provided the project with more data and a better overview on the research overall, but due to limitations regarding the size of the project it was not possible. There was simply not enough time nor resources. It was also preferable for this study to be completed within a short period considering the nature of this project, which is a learning student exercise. The number of participants (i.e., 7-8 participants per group) is not too small and was able to sustain a discussion, and it was not too big for the moderator to handle it.\(^3\) Since the study itself is deeply qualitative and does not aim to obtain large-scale data, I decided that a larger number of participants was not necessary in this case.

**The role of moderator**

Ms. Rooa Hamsis was the moderator. As Monique M. Hennink suggest that a moderator should have “suitable socio-demographic characteristics”, Ms. Hamsis was chosen due to the following: she speaks Arabic, English and Swedish and she has previous experience as a moderator within research which gave me comfort in the data collection. She has family in Khartoum and therefore she is familiar with the culture and was expected to have a developed sensitivity to the social values, which is to be considered a crucial factor in the making of a relaxed atmosphere during the interviews. I believed her being Swedish would have a positive effect on the participants, as there would be a slight alienation between them.\(^3\) I briefed her by sending her my proposal to give her an idea of the project and we also had a meeting before the actual discussions where I explained the methodology itself and the schedule of the


\(^3\) Ibid.

\(^3\) Ibid, 29-30, 79, 129.
focus group discussions as presented below. As she had previous experience she was already informed about ethics, even though we discussed it again. A more critical perspective on why using a moderator for the focus groups are discussed in the section below.

**The researcher’s role during the focus group discussions**

As the moderator focused on asking the questions the researcher took a role as note-taker, which was convenient in terms of not having the discussion to wait or be interrupted for taking notes. Since the researcher was more orientated on he-health than the moderator it was also convenient for the researcher to easier get a better overview on the discussions that were held.

On a more critical point of view, by leaving the research in the hands of the moderator it was then a risk of having it affected by the moderator’s agenda or perception on the matter, unconsciously or not. One can truly ask if having a moderator was necessary. During the discussions it turned out to be comfortable, as many topics were discussed and a lot was said. On the other hand, an alternative could have been to hire a note-taker and to let the researcher do the questioning. By doing so there is less risk of interpretations of interpretations, e.g. having the researcher being affected by the moderators interpretation.

**The focus group discussions**

The discussions took place in a hotel. I made contact with different hotels in Khartoum in order to find a setting where the focus groups could take place without any disturbance from on-lookers and surrounding noise for the sake of the audio recording.\(^{36}\) I made an agreement with the Corinthia Hotel in central Khartoum and the discussions took place there.

During the introductions in each focus group I always chose to introduce myself in Arabic to make participants feel that I did not expect them to speak English. I believe this gave the discussions a positive start, and helped the participants feel more comfortable. During the discussions I felt a certain divide among the participants, the ones who spoke English normally spoke more than those who chose to speak in Arabic. Even though the questions were asked in Arabic. For the first discussion only four students turned up which felt like a strong set back, I became worried and was wondering whether it would be the same for the

\(^{36}\) Ibid, 6-7.
coming interviews. I had to commence the first interview regardless the amount of participants because it would have had delayed the second interview, which was scheduled later the same evening. It felt like I had enough participants in order to have a good and balanced discussion. The focus group went on well and the dynamic felt good within the group, as all of the participants respected each other’s opinion and did not interrupt each other. No one really interrupted one another. There was one student who had a great sense of humour, which I believe contributed to set a comfortable vibe since the other participants had a laugh when this participant pulled off a joke. I believe this helped the participants to shake off some nerves before the discussion. The participants even shared their contact details with one another after the group discussion. Their attitude was strongly positive and one participant clearly said that she enjoyed the discussion, which the other participants agreed with.

I felt a bit stressed at first with the number of participants being low and I was thinking of how this would be perceived by the ones who turned up, as I felt responsibility and did not want to waste their time. Eventually the situation turned for the better, as people turned up and the dynamic was very good—just like the discussion itself.

The second group had a few more participants than the first. There was a mutual respect among the participants even though I could sense a structure of some being more educated than others, due to their critical thinking, which also to some extent made the others change their minds or opinions along the discussion. One of the participants, who initially did not seem to fully understand the topic, did not hinder herself from expressing opinions even though it sometimes created laughter and doubts among the other participants. One disadvantage of this reaction of the other participants could be that no one else would dare to fully express themselves, as they might be scared of taking the same role as “X”. There were a few who seemed a bit shy but in the end all participants expressed themselves. The attitude of this group as a whole was positive in general and there was a mixture of excitement and seriousness.

In the third group four participants came late. This was not a problem for the ones who came on time as they said it was normal in Sudan being late. I took their word for it and felt less uncomfortable having them waiting for the remaining participants to come. At the beginning they asked me many questions which functioned as an ice-breaker and made it less forced to commence the discussion.
The dynamics were taking form during the interview and two-three participants took a lot more space than the other participants and this effected the discussion. The consequence of this was that the findings in this discussion became less diverse than in the other discussions. One of the participants sometimes questioned the questions and had a slightly arrogant attitude, and even interrupted the moderator by putting words in her mouth. I would not consider him rude but I sensed that he might have blocked the flow of ideas and opinions from other participants. This group had the least positive group attitude of the conducted discussions.

Finally, regarding group four, the biggest difference between this and the other groups was that the participants in this group almost solely spoke Arabic. Everyone got the opportunity to speak and share their opinion. Overall, I had a good feeling during this group discussion and it was very fruitful. The participants seemed less excited but more thoughtful.

In sum, all four focus groups were conducted as planned. They were well prepared and I was confident during the process. One of the factors contributing to the excitement and seriousness within the groups was probably the location itself, as the Corinthia Hotel is one of most famous hotels in Khartoum. I felt the seriousness from the participants whom seemed to be familiar with the setting as well as the topic under study, as if they had been interviewed before or taking part in something similar in a past experience. The more excited participants were those who seemed more stunned of the surroundings, as these participants also took many “selfies”. I also noticed that those who spoke better English were the ones who seemed more relaxed- but still serious. It seemed to me that they were more used to this type of setting and that they were not unfamiliar with expressing themselves in English. Some of the participants had been educated abroad. The participants who tended to be more silent were the ones who seemed more stunned and excited about the location itself.

Having said that, I would argue that the groups were quite diverse. Both the two groups consisting of women differed in a sense that one seemed to have a more easy-going vibe whilst the other one did not to the same extent. I believe that the more easy-going group was so due to the fact of more laughter during the discussion. The two groups of men also differed in a sense that one of the groups felt more strained as the discussion did not come as natural as the latter.
Reflections on the focus groups

The advantage was that I managed to collect a range of data in a short period of time. The disadvantage of this method is that some participants appear shy and other participants are more extrovert, often dominating the discussion, as the case was in my focus groups. In this respect, it would have been interesting to have individual interviews with the participants who were more silent to get a better idea about their opinions. Still, I believe this method was the better option because we as human beings tend to explicate our ideas in group. It is a natural setting for people to develop thoughts and discuss in group.

Another disadvantage is the logistics of focus groups, to stay in touch with many people at the same time to make sure that everyone turns up same time and same place is not easy. Also it is important for not making the ones who come to think that their participation is in vain. A kind of responsibility lies with the researcher, in this regard.

Another disadvantage is the audio recording. It would have been easier to record a discussion or an interview between two persons, such as the interviewer and one participant. For the focus groups, I sometimes had to move the audio recorder because of the different strength of the participants’ voices, while transcribing was harder as well (e.g., distinguishing between different voices and two or more participants talking at the same time).

Arabic translation and transcription

The purpose of using a moderator and translator was to ensure proper translation from Arabic to English and to eliminate possible limitations based on language barriers. For me it was important to have the focus groups in Arabic, as I wanted them to be more including.

Everything was audio recorded during the discussions and notes were taken meantime. In order to cross-check the translations and interpretations Ms Hamsis, the moderator, was asked to translate some parts of the discussions. It was concluded that she would be a good choice as she had been participating in the discussions. She also speaks fluent Sudanese Arabic which is different to modern standard Arabic and also Egyptian Arabic which is the dialect that I know foremost. Amal Suliman, a Sudanese resident and student at the Ahfad University in Khartoum, was also transcribing parts of the audio recordings into Arabic text, in order to get a better understanding of the Sudanese dialect and with the translation of the discussions.
The data was thence transcribed and transliterated with audionote\textsuperscript{37} which was recommended among other transcribing programs by Prof. Wardini from Stockholm University (SU). The data was transcribed according to the transcription rules of The Section for Middle Eastern Studies Department of Oriental Languages at SU.\textsuperscript{38} The presentation of the transcription is based on the Brockelman system,\textsuperscript{39} since it was more convenient for the spoken dialect, as it was used for the Lebanese dialect in the examples of the SU’s transcription rules and therefore easier to apply, rather than Modern Standard Arabic. The table of signs within the Brockelmann system is presented below.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
Sign & Description \\
\hline
\hline
\end{tabular}
\caption{Table of Signs within the Brockelmann System}
\end{table}

\textsuperscript{37} http://luminantsoftware.com/iphone/audionote.html
\textsuperscript{38} http://www.su.se/polopoly_fs/1.177823.1400507049!/menu/standard/file/3.%20Formalia%20-%20Att%20Transkribera%20Jan2013.pdf
\textsuperscript{39} Ibid,
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Focus group discussion schedule

The Discussions followed a Questioning route, meaning that the research questions were actually included in the discussion guide which takes away the need for improvisation for the moderator during the discussions. This enhanced the comparability of the collected data, as all four groups discussed the same questions.40

The moderator conducted a non-directive moderation style in order to allow more flow and hopefully new ideas and perspectives, which also had to do with this being an exploratory study.41 The questioning route had a funnel design and started off with warm-up questions to set a comfortable vibe, these questions had nothing to do with the key questions.42 The same questions and topics were brought up through the discussions for all the four groups.

During the introductory questions the moderator made sure that each participant said something. Primarily for two reasons: firstly, it was easier during the transcribing to get the names of the at the beginning of the discussion in order to sort the comments that were made; secondly, it was easier for each participant to participate at an early stage if the participants felt more relaxed with each other.

Thence the questions regarding the key topics were asked. The key topics took approximately half of the total discussion time.

The closing topic was more of an open question on whether there was anything special anyone wanted to brief regarding what had been discussed. This enabled the participants to reflect on what had been said and if anyone had something to add. The closing topic was not necessary crucial for the research, but more of a chance to for the participants to add something that might have crossed their mind during the discussions, in reflection to the discussed topics. Finally, a summary question was asked in order to erase possible misunderstandings or misinterpretations.43

40 Hennink, International Focus Group Research, 48, 87.
41 Ibid, 177.
42 Ibid, 50.
43 Ibid, 54-56.
Themes and Key Questions during the discussions

During the discussions the moderator asked questions to the participants to initiate discussion. The key questions that were asked during the discussions are presented below in falling order under the main themes that were discussed and discovered;

The students’ Internet habits

• How many of you have access to internet and for how long have you had access to internet? This question was asked in the beginning of the question route in order to get an idea of the amount of Internet users within the group, and to see whether the group could be viewed upon as relevant or not. It would be problematic if only half of the participants had daily access to Internet.

The students’ perception of e-health

• What are the benefits with searching for guidance regarding health on the Internet? When the moderator felt that the participants were reflecting over e-health as a substitute to a visit to the hospital or medical centre, she asked this question in order to to narrow the discussion.

• What are the disadvantages with searching for guidance regarding one’s health on the Internet? Similar to the question above, but on the contrary, the students discussed the other side of the coin- in regard of e-health.

Questions that initiated discussion on trust

• What would you suggest to create a better awareness regarding minor health issues by using the internet? The study is aiming to obtain new perspectives on e-health, perspectives from Sudan where very little research on this matter has been made. Hence the question.
• What could be a reason for not many people not using the Internet in order to get guidance regarding their health? A sort of a follow-up-question related to the previous mentioned, but of a more reflective nature.

• If there was a site where you could get information on different symptoms, how would you use it? What would make you trust it? This was the main question, which focused on trust and, to get an idea on what makes good e-health in Sudan. Or at least what the participants would appreciate when navigating e-health, in order to provide with information on this particular topic, which could lead to further studies and potential e-health projects in Sudan.

Limitation

The researcher had to take the differences in both culture and the juridical aspects into consideration, since they in some ways differ from their counterparts in Sweden.

Strategy and Timetable

The beginning lies in the creation of the research question, the development of an idea. Hence came the planning stage, which method was to be conducted and how.

Four group discussions were conducted, as it was suitable due to the motive based on the post-fieldwork stage and the amount of time the transcribing would take. The number of discussions was also based on the segmentation, which during the discussions was sex and location.44 The moderator and I conducted the four focus group discussions in two days, two discussions per day.

The research had an academic approach hence the type called Questioning route as it facilitated the comparability between the groups’ discussions during the stage of analysis.45

The moderator conducted a non-directive moderation style in order to allow more flow new ideas and perspectives, which also had to do with this being an exploratory study.46

44 Ibid, 48.
46 Ibid, 177.
The questioning route had a funnel design and started off with warm-up questions to set a comfortable vibe, these questions were of a general nature and did not have anything to do with the key topics.47

During the introduction questions the moderator made sure that each participant had said something for several reasons, firstly to make it easier during the transcribing part to get the names in the beginning of the interview, even though the names were not presented in the study it still somehow helped me to sort out the comments, in order to see the different viewpoints. Secondly for each participant to participate at an early stage, in order to break the ice.

Thence came the key questions, which focused on the actual topic and took approximately half of the total interview time.

The ending questions was indicating for a closure and enabled the participants to reflect on what had been said and to add things they felt had been left out. Finally, there was a summary question in order to erase misunderstandings or/and misinterpretations.48

**Logistics**

The interviews were held in a closed environment to prevent possible onlookers and passers-by or anything that can cause distraction. This occurred at Hotel Corinthia where an agreement had been done.

The chairs were put in a circle; this allowed the participants to interact more effectively.

**Ethics**

The confidentiality and the anonymity regarding the collected data were discussed with all the participants as well as the moderator before the discussions, in order to avoid unnecessary dissemination of the findings. They were also provided with information on the research and what it was about and what role they had in it. They were informed that they were participating freely and that the interview would be being recorded in full.

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48 Ibid, 54-56.
The ethics of the field studies and research were the following:

- Point out to the participants that being a part of the research is fully voluntary.
- Keep the voluntary participants informed about the nature and purpose of the research.
- Ensure the participants that their anonymity is preserved.
- Researching with integrity, no fraud, deception or dishonesty.

If the research somehow is too controversial or sensitive in any way, or if people can get exposed or be endangered the research should stop immediately.

3 Results

The findings presented below are playing a role as representatives for how the different discussions, and their topics, went as a whole. Therefore, the findings are presented with a brief on how the participants responded and discussed around the different themes and what questions that were asked. No group differed remarkably from the others and the findings were being analysed as from one demographic group as a whole, namely students in Khartoum. The quotes that are presented only in English (without transcription above them) were said in English, the ones with transcription were said in Arabic.

The students’ discussion on trust, regarding e-health

When the students were discussing about the issues regarding trust, as an effect of questions under the theme of trust (see method chapter), they expressed how they preferred some sort of in-real-life interaction with a doctor. They did not fully trust the information that could be found on a website, they expressed how they were concerned on how their private information was treated, they felt their integrity were more exposed on the Internet then of behind closed doors at a hospital. There are some of the comments from the discussions followed below.

When the participants were discussing the questions regarding trust on e-health, it was concluded that there was a lack of trust towards the Internet as a source of health information
expressed within all four groups. One of the students mentioned the importance of reliable sources and said that such website would be more trustworthy: “If it [the website] was made by a trustworthy institute, like the ministry of health and [if] good doctors [were] helping them making it [the website]”.

The main question on trust, how they would use an established e-health website and what would make them trust such site, opened up for discussions on the importance and the demand for quality and safety. They also highlighted the need of medical professionals’ presence. The trust for doctors were high and the participants would, according to their discussion, most-likely use a website for searching information if it was recommended by a Doctor.

Further on when discussing trust on health-related information on the Internet, one of the students said that she was always cross-checking the information she find on the internet regardless the subject; “I would search it [the information] again on another website to see if there is a similarity”.

Through the discussions on trust it was said that searching on health information online is an advantage in regard of anonymity. However, the majority of the students rather expressed the opposite with concerns over privacy and confidentiality, meaning they do not feel convinced in terms of security measures.

The easiest thing between a doctor and a is the security [confidentiality]. Because if it was available [security] on the webpage and if I [would] find it through several friends that had recommended it to me then I would feel safe to 50%, until I have tried it myself.

49 Student 12: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.
50 Student 4: Focus Group discussion. 11 girls and 19 boys, discussion number one, 5 April 2017.
51 Student 6: Focus Group discussion. 11 girls and 19 boys, discussion number two, 5 April 2017.
Speaking of trust and privacy the students expressed that lack of interaction between a doctor and a patient, when using e-health, was something of an issue. The students discussed the importance of feeling comfortable with sharing your symptoms and that you would feel better having someone who asked you questions, rather than just giving you answers. The latter would be the case of using the Internet, in their opinion. One of the students concluded it like this:

I want someone who talks to me, sitting down and tells me "why don't you do this or that", correcting things, period. Moderator: There is no interaction [when using the Internet]? There is no interaction, but you want comments. It is a good thing and a bad thing at the same time. It is good in that I can really do it my pleasure. But it is bad since I need a response. That is maybe I say to you that I need a response of a doctor. I won't find something like that, so then I go back [to what I said], that I am that free person, that I [can] speak of anything but won't be delivered everything. It has to be a problem with/in it, it can't be complete [one has to look upon it with indulgence, nothing is perfect]. For the problem is that it does not deliver the comfort, it does not speak to me.\(^5^2\)

When the students discussed benefits and disadvantages of e-health they praised the comfort of saving money and time, however, in contradiction to how they expressed concerns over integrity they also mentioned the anonymity as a benefit when using the Internet. For example: “It [the Internet] provides you with anonymity...if there is confidentiality then you don't have to reveal your name you don't have to reveal your personal data”.\(^5^3\)

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\(^5^2\) Student 7: Focus Group discussion. 11 girls and 19 boys, discussion number four, 6 April 2017.

\(^5^3\) Student 7: Focus Group discussion. 11 girls and 19 boys, discussion number two, 5 April 2017.
The students’ perception of e-health

Perceptions on the general population from the students’ perspective

Throughout the focus group discussions, the participants of the four groups repeatedly made comparisons and made examples of their society. This created a natural path to a new topic which was not thought of in the earlier stages of the study, their perspective on the general population in Sudan. It was an interesting topic, as the students discussed themselves in a wider perspective and how they looked upon it as something they were being a part of, which provided more background information to the research problem in this particular area, namely Sudan. Thus the subtitle above and the presentation on its discussions, regarding the society in Sudan, below.

What do the students think of e-health? When it came to what they thought of their society, in regard of this question, it was not too highly. When the students were discussing their society in general they were, more than once, describing it as a developing country. One student was harsher then the rest of the participants and expressed some sort of frustration calling the Sudanese society “retarded”, saying there were too many barriers in terms of seeking help, one of them being shame.

It was said in the discussions that anonymity is something that would be of great advantage in Sudan, by pointing out a collective integrity. A majority of the students seemed to agree with this viewpoint.
one [in Sudan] is very secretive, like in anything it is very sensitive, now for example, in the array [the way you appear], not free [of being judged], in talking with the doctors, not free, in everything. For example in diseases of the Sudanese [people], they can have a disease but they are being afraid [ashamed] of talking to you about it, so now I'm going to tell her, the doctor. I say to her I want this and I want that, because it is the story of our education [how we were raised] growing up, like, sorry but the society [in Sudan] is retarded, you don't talk about anything, about being sick, your position, if anything. Because of that you go to dr. google [go and search the internet], you write there to be fully free [anonymous].

It is known to be a general lack of IT-knowledge in Sudan among its population, this was also mentioned in one of the discussions. People [Sudanese] are not familiar with the internet and do not know how to use it.

Though the students are confirming the lack of IT-knowledge they also discussed factors that could enhance the use of IT, in terms of seeking health related information. Similar to what was quoted on one of the students in the subsection above –trust on e-health- on how the student would trust a website if it was recommended by a friend, the issue of trust was also brought up when discussing the Sudanese population in general.

In our society we are normally affected by what affect others, for example, if someone has succeeded with something then something what we in business call “falafel favour” happens, which means that if someone succeed with something then everyone else also try it. So if it is about searching health care on the Internet, if someone gets good treatment online then everyone else will do it and there will be full support. They [people in general] want someone to sacrifice himself. If that person succeed then [it is] good, otherwise not so good.

When discussing benefits of an established online health-guide the students mentioned, on behalf of their society, that Sudanese people were always looking for the cheaper method.

54 Student 11: Focus Group discussion. 11 girls and 19 boys, discussion number four 6 April 2017.
56 Student 12: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.
57 Student 5: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.
I will talk about my society, 'aḥnā hunā fī developing country. l-nās b-fetšū bī ’ay wasīla, to decrease the cost of cure. fī sites hīa b-tadfa’ līhā qurūṣ ‘ašān tāḥud, lekin bitkelīf ḥāja b-sīṭa jiddan. fa-l-nās dāyrīn l-ley hūa l-raḥīṣ marḡūb zey mā b-qūlū. fa-ay ḥāja hīa raḥīṣa hīa marḡūba. fa-l-faham bitā’ annhā mejānā hīa mā 100 percent perfect, it will lead you in the right path, dī ḥāja b-tḥalī l-nās yemšū līhā zeyāda. hīa l-nās ’ayza ḥāja raḥīṣa b-l-nisbat līhā.

I will talk about my society, we are in a developing country. the people are looking for any means of decreasing the cost of cure…because the people are drawn to what is cheap, not what is told them. For any thing that is cheap is desirable. The understanding which is transmitted is that what is free is not hundred percent perfect. It will lead you in the right path, this thing is given up by the people that goes [use it] alot. These people want the cheap things.

One student pointed out the importance of the word-to-mouth method in Sudan, how Sudanese people only need someone to try it out first. If it works out fine than the rumour will spread, according to the students.

**Perceptions on e-health in the student population**

When the students were discussing the questions regarding “the students’ perception of e-health” it was found that they recognizes the advantage of accessibility to the health information thanks to the Internet.

What Eysenbach found out in his study, “what is e-health?”, was that young individuals in Europe had a positive stance on searching for health information on the Internet, as it was foremost a time-saving and less costly alternative to an actual visit at a hospital or care Centre. Some of the students who participated in the focus group discussions expressed the same as the above mentioned, that they perceive it as a cheaper and time saving alternative to a visit at a medical centre, the majority of the participants agreed on this.

I think ‘annahū l-muwḍū’kwēīs, I think tawaffur l-money, save money, and time.

I think that the topic is good because it…saves money and time.

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58 Student 10: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.
59 Eysenbach, What is e-health?”
60 Ibid.
61 Student 4: Focus Group discussion. 11 girls and 19 boys, discussion number one, 5 April 2017.
The students did however also mention that they thought searching health-related information on the Internet was only good to a certain extent, saying it might be useful for minor health issues only and that you can only get information to a certain level, in difference to what a doctor can give you.

Another participant expressed it like this:

Another thing, about the diagnoses of someone [doctor] that diagnose you, he [the doctor] sometimes needs to see more of what you have and [will] ask you for certain things, because he base [his decision] on the things that you are using, it decides what you want [need], if you want this or that. When you use Google [searching health related information online] you type, but there are more things that are needed, more information, because it hands you the thing you want, it shows you what you have for it won’t be determined.63

If one group ought to be the foremost in Internet navigation in Sudan it is most likely this demographic group, if one is to compare with its counterpart in Europe.64 In the discussions on trust the critical thinking among the students was always present, in terms of not blindly trust just any information that can be found on the Internet. Some of the students explained their ways of how to sort out the information by cross-checking it and to determine its reliability by whether the website gave them a good impression or not, based on the layout and design.

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62 Student 1: Focus Group discussion. 11 girls and 19 boys, discussion number four, 6 April 2017.
63 Student 3: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.
As was mentioned earlier in the chapter, one way on how to determine whether the information is reliable or not was to cross-check the information and its different sources. In this case the students discussed the idea of cross-checking the information received from a doctor with other sources on the Internet. They also discussed what could make a website reliable giving different examples like the ability of sending pictures on symptoms and what kind of information the website asked for.

They also emphasized the importance of the source of information. Again, these are similar findings as can be found in R. Briones’s study on youths’ e-literacy in Europe.65

When asked about whether searching health-related information on the Internet was a good thing or not there was to some extent scepticism among the participants regarding the risk of getting the wrong information, and in worst case scenario give yourself the wrong diagnoses. Another issue that was brought up was exaggerated anxiety, in terms of that you might end up


66 Student 7: Focus Group discussion. 11 girls and 19 boys, discussion number one, 5 April 2017.
suspecting brain-cancer while only having a bad headache, as one of the students mentioned it.

You can type, for example, “I have a headache”, when you type you have a headache on google it gives you everything, and then this can traumatize you, this can get you into depression. It tells you [that] you might have brain-cancer. But that's not what you have. so this would put you in a traumatized state.\textsuperscript{67}

**The students’ own Internet habits**

When the discussions commenced the students told one another for how long they had used the Internet for various reasons. They have had access to Internet on a regular basis, and together they have had so for an average of 9.8 years with no notable exception, no participant was effecting the median significantly.

When discussing trust on e-health I noticed an issue that did not occur in Eysenbach’s study which leaves a gap in the pattern of similarities between students in Khartoum and in Europe. The overall trust in the doctors that were expressed throughout the discussions, how the students often preferred some sort of interaction even when being introduced to a website.\textsuperscript{68} One has to remember the differences in the context between Sudan and a western country, as mentioned above in the background brief on Sudan earlier in this study. Still there is however a contradiction in this issue, as one of the criteria mentioned for having trust in a website with health information was, as one of the students mentioned: “I never trust any website unless a Doctor tells me you can use this website”.\textsuperscript{69} The rest of the group consented to this. Having said that, one can also see the overall trust in the doctors’ skills and judgment as it was mentioned in all four groups that somehow interaction was preferable and appreciated at some point.

\textsuperscript{67}Student 13: Focus Group discussion. 11 girls and 19 boys, discussion number three, 6 April 2017.

\textsuperscript{68}Eysenbach, What is e-health?"

\textsuperscript{69}Student 7: Focus Group discussion. 11 girls and 19 boys, discussion number two, 5 April 2017.
4 Discussion

This chapter discusses results and the themes through content-analysis.

The students’ viewpoints on e-health as a health guide

All the students had a certain degree of positive attitude towards using the Internet as a health guide, and also some negative. The students embraced e-health as something with a lot of potential, there was one topic that stood out more then the others. The viewpoints of the students in this study were mostly circling around trust. The students’ trust in health-related information on the Internet was in general navigated by factors like:

- Interaction with a Doctor

- Integrity, in terms of how personal information is treated

- Legitimate source

- Quality of the website, in terms of layout

- Recommendation from Doctor

- Recommendation from friends

The first point is somehow connected to the second one, as the students expressed that an interaction with a doctor felt more reliable in a sense that a person in real life is more trustworthy than something created by anonymous people, in terms of not being directly identified. An interaction, in the students’ perspective, felt more direct and less abstract than of interaction through a website. And with having that said they –the students- have shown that they strongly value their integrity, it is important for them that their personal data and information is treated with caution and confidentiality.

This leads to the third point, the importance of a legitimate source. The students discussed the role of ministry of health, how it could establish a Sudanese based website for e-health with help of various doctors. When the students discussed how important the quality of the
information there was an impression of this being a crucial factor, this can also be seen in similar studies on e-health among students in Europe.\textsuperscript{70}

Just like the importance of having interaction with a doctor they also discussed how the students would prefer a recommendation from a doctor, in order to trust an e-health website. The students also discussed how they put a lot of trust in the word of mouth, and the influence of their friends. Therefore, one can state that recommendation from a third part is an important factor in terms of trust among the students.

**The benefits of e-health for young health-seekers in Sudan**

This topic requires an understanding of the importance of e-literacy, in order to enjoy the benefits of e-health the students must now how to navigate the Internet and through its overwhelming amount of health-related information. This was, as we could see in the literature review, also a major concern for young health seekers in Europe.\textsuperscript{71} So with that in mind one could rather say that if the students had a better understanding of e-literacy the benefits would, foremost, be:

- Time saving
- Better accessibility
- Less costly

The concept of any ICT is to make it easier and faster for whoever uses it to get the information of whatever one wishes for, e-health is no exception. We saw in the findings that the students value their time and expressed how e-health could help them to save just that, namely time. Therefore, this demographic group was no exception when looking onto its counterpart in Europe. As the students also expressed how long the queues at the hospital were, this confirms that it actually is time saving. Even so without the queues due to the need


of making an appointment and as for the the transport as well. The use of ICT in e-health eliminates the need for an appointment with a doctor, the time for transportation and the possibility of having to wait in queue at the hospital or medical Centre. This, however, is debateable. It assumes that it concerns minor health issues and diseases that with proper information can be treated without professional help. If it is not then it would take more time in the long term, as if one tries to cure oneself without having any success and needs to make a visit to the hospital in the end anyway.

Having the freedom of searching information on the Internet in any place given requires some sort of an electronic device and connection, as explained earlier in the literature review on ICTs. The students discussed the benefit of accessibility through e-health, it is for them a better option than of a visit at a hospital or medical Centre in this matter. This was also considered a benefit from e-health among their -the students- counterpart in Europe, it was therefore, together with other aspects considered as a benefit by Eysenbach in his study. E-health compresses the amount of effort it used to take or if not having access to ICT, to obtain health related information, it is as the students suggests a benefit- in terms of accessibility. Not much in difference to what was explained above about saving time.

This leads us to the reason for e-health being a less costly alternative to a visit at a hospital- or a medical Centre, as factors like transportation, an appointment with a doctor and spending time away from work or studies are to be considered as, in most cases, expenses. The students confirm this in the discussions and one can see to their counterpart in Europe that it is considered as a benefit for them as well. One might argue about the fact that any electronic device is an expense itself, as well as the need of GSM. What one could see in the discussions were, on the other hand, that all of the students had access to the Internet. Having said that one can except the expense of an electronic device as a factor more influential to the students’ point of view, concerning e-health being a less costly alternative, due to the fact that most students in Khartoum seem to have access to Internet already.

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What could be done in order to improve health awareness through the Internet

In order to raise awareness on health-related information on the Internet among the students they need to improve their e-literacy. Firstly, we know through studies that young people in Europe expressed similar factors on e-literacy, as the students of this study, such as;

- Cross-checking information
- Judging the website on its layout
- Determine the source of the information

However, young people in Europe brought up factors that were not brought up during the discussions in Khartoum, namely; whether the website had been updated recently or not- and whether they got the impression of that the website were trying to sell them something. With that in mind, as it was mentioned in the literature review, the EC points out the lack of e-literacy in Europe as a great barrier, even with the knowledge of having young people pointing out these factors as important, when searching on e-health. Eysenbach suggests further enhancements in e-literacy assessments in his study, regarding raising awareness and potential in e-health.

If one were to consider, through the fact that young people in Europe brought up more suggestions for checking the validity of information on the Internet, that young people in Europe have a higher level of e-literacy than its counterpart in Khartoum, then we can argue that the EC would confirm the lack of e-literacy regarding e-health in Khartoum as well.

Having pointed out the lack of e-literacy as a key factor - regarding how to raise awareness on e-health? It then leads us to the recurring topic on trust. In order to raise awareness on e-health in Sudan it is suggested that it is developed from within, a main reason is due to the fact of importance of trust. This was also expressed by the students themselves throughout the discussions.

Therefore, if one intended to launch a health care guide on the Internet intended for the Sudanese population, then further assessments on trust has to be done. The perception among

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the students on trust, as we can see in the literature review and in the result chapter, differs from their counterpart in Europe. Trust judgment is something that differs between cultures and therefore it would at this point be hasted to launch a health care guide made in, for example, the US or Europe. One has also to bare in mind that different health care guides in various countries, in the public sector, were developed with the influence of policy actors, whom of course differs widely from state to state for various reasons such as the influence of religion, culture, attitude towards drugs –drugs is an important factor in this case, due to the problem area regarding health care, as whereas in some countries certain drugs are for strictly restricted use, whereas in other not as much- etc.

The majority of those IT designs, within the public administration, that are to be found on the Internet are mainly innovations from the western world. Having said that, with the findings on the students’ perceptions on e-health related to trust, how the students expressed how they trusted their own health professionals throughout all four discussions, then in order to increase the e-literacy related to e-health the process has to be made from within Sudan by its policy actors and health professionals.

It was said in the discussions that the students preferred a recommendation from a doctor, in order to feel more comfortable with using health related websites. Hence the argument on the importance of having Sudanese professional developing an e-health platform customized for the Sudanese citizens.

However, there is at this day plenty of health related information accessible elsewhere and the Internet in Sudan does access, if not all, many of them such as the US government’s official website where they have a section a health guide, the applies with New Zealand’s official website. This leaves us to the question whether the students are receptive to this or not? The students have computing skills and have told us they used the Internet in their

76 Ibid 14-15
schoolwork among other things and should therefore be considered receptive to e-health. They just need someone to point out the direction, again this leaves us to the important role of the medical professionals and policy actors in Sudan. This was also expressed in the discussions, the need of guidance. The students suggested mobile applications but did on the other hand not mention any application they already knew of, which somehow confirms Bernardi’s statement on how the majority of applications in general are made in the western countries.\textsuperscript{79} If applications were to be made in order to raise awareness in Sudan they need to apply to the Sudanese population. Thence, again, the need of further assessments on perception on trust within the Sudanese population.

**The study’s position in a bigger and wider context**

The study was limited to Khartoum with a demographic group being university students 17-25 of age, so even though discussing the Sudanese population in general one has to bare in mind that this study can not show a fully representative picture of the Sudanese population. It is to someone else to do further research in order fill the gaps of representatives. Sudan is also the third biggest country on the African continent with a population of around 40 million - which is mentioned earlier in the study-, this number puts this study into perspective of being relatively small scale.

However, due to the large gap of information regarding ICT and e-health in African countries it is of relevance, small scale or not.

**How the information for this study was obtained**

When searching for relevant literature for this study the main focus was on academic articles that was to be found online. Various databases were also searched, such as the *Journal of Medical Internet Research*,\textsuperscript{80} which is a search tool with focus on e-health. This website was recurring quite often when searching articles and found mentioned in other articles frequently.

Apart from regular search tools such as Google Scholar and LIBRIS, which is in association with Stockholm University, necessary and also useful information were found at the United

\textsuperscript{79} Bernardi, ”Information Technology and Resistance to Public Sector Reforms: A Case Study in Kenya”, 14.
Nation’s iLibrary where there were many articles with more focus on developing countries in particular.\(^{81}\)

The data from the interviews was obtained through the focus group discussions, more specifically through questions that the moderator asked. However, the questions were constructed by the researcher. In this stage of the thesis, looking back, it could have been more convenient not having a moderator but rather a note-taker and having the researcher asking the questions. The dilemma is whether the moderator interprets the study differently to the researcher -which is inevitable even if limited or not.

5 Conclusion

In the focus group discussions, the students expressed a positive attitude towards e-health even though they were not too familiar with it. They are more positive to the idea of it rather than through own experiences. Further on they expressed their viewpoints on benefits of e-health as foremost time efficient, a way to save money and easy to access. Their viewpoints are not through own experience but their idea of why e-health could be good for them and their society.

In order to raise awareness on e-health in Sudan among students, and the Sudanese population in general, policy actors and medical professional in Sudan need to develop software which is customized for its population, e.g. mobile applications and websites. The students lack e-literacy to an extent that they do not take use of already existing e-health or m-health information, this was observed in the focus group discussions.

These conclusions were based on the results of the research and the content analysis. The students have concerns about their integrity and are selective on information based on the source, they want a reliable source of information in order to use it.

When developing software for e-health purposes it is necessary for it to be customized for its target group. Sudan is a developing country and also differs from Europe culturally, therefore, it can not import software customized for the western world. This is proven to be problematic

in similar contexts. In this study the students did not mentioned any, for them, known e-health related website which indicates that despite the existing e-health websites and m-health applications they have not yet received- nor discovered it.

This study’s raw observation is that the students will rely, trust and use a website or an application if it is made and recommended by a medical professionals.

Further observations and assessments on trust need to be conducted on a larger scale in Sudan in order to obtain enough data for a project to commence, this due to the fact of this study being relatively small considering Sudan’s extensive and diverse population. These conclusions do not dismiss the idea of importing ideas or help from software developers from abroad, rather the opposite. Since e-health is not widely present in Sudan the question remains; how can Sudan use the information on e-health abroad, in order to create their own platform? Is there a country with a similar culture where e-health is more successful?

Out of retro-perspective this study could have been conducted differently on some points. One of them being how the researcher could have taken the role as a moderator during the focus group discussions, with help from a note-taker. This would have enhanced the control of data gathering during discussions, e.g. not given it in the hands of someone else than the researcher.

6 Bibliography


