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Exchange Students' Health Security in Africa

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Thesis abstract

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Exchange programs have been popular among university students already for over 30 years. Through Erasmus+ program, over 90 000 exchange students were sent from Finland to all around the world. The Erasmus+ program supports cooperation between different universities for students, teachers, and other staff mobilities. Nursing students have a lot of positive experiences about their exchange periods for example from cultural, language and social skills perspective. Benefits of the exchange periods are considered important as in personal growth, context-sensitivity, and citizenship. Employers also give value to a nursing student who has been abroad.

This thesis was implemented as a functional thesis as a request to Health Africa - network. The aim of the thesis was to improve knowledge of health security during the exchange study period for social- and health field students. The purpose of the thesis was to create a digital databank for the training of social- and health field students. The research question that the thesis addressed was: What aspects should social- and health field students consider before an exchange period? Inductive content analysis was the chosen research method. A total of 12 students participated in the Webropol survey with open questions.

The data analysis resulted in the formulation of three upper category classes in total, which were physical health security, psychological health security, and social health security. These categories were used as topics when Moodle platform was created for future exchange students. It is important to have needed information on the same platform and easily accessible. Furthermore, education is an important factor, especially from the point of view of health promotion and safety. This thesis provides help for future exchange students by offering updated information from the perspective of health security.

¹ Keywords: Prevention, Health Security, Health-Africa, Exchange Student, Communicable Diseases

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1 INTRODUCTION

Exchange programs have been popular among university students already for over 30 years (Finnish National Agency for Education, n.d). According to Finnish National Agency for Education, over 90 000 exchange students were sent from Finland to all around the world through Erasmus+ program. In accordance with the Finnish National Agency for Education, the program supports cooperation between different universities for students, teachers and other staffs. According to Finnish National Agency for Education, the main points of the program are inclusion, digitalization, knowledge of the environment and the prevention of climate change and participation in global activities.

Nursing students have a lot of positive experiences about their exchange periods for example from cultural, language- and social skills perspective (Avci et al., 2022, p. 26). The benefits of the exchange periods are considered important for personal growth, context-sensitivity and citizenship. Employers also give value to nursing students who have been abroad (Trapani et al., 2020, pp. 501–505). The topic of this thesis is useful and important because student exchanges are common.

The goal of this thesis is to create a Moodle platform that aims to educate new nursing exchange students in the aspect of Health Security, such as what to consider before the exchange period, and what kind of health risks and possible differences between Africa and Finland are there. In addition, the moodle platform will include bringing information about the functionality and availability of health care in the destination country, considering also how to prevent health risks with different means. According to Health Library (2022), prevention of health risks consists of many sub-concepts, which deal with prevention before, during, and after the exchange.

The starting point of this thesis was to develop a functional thesis related to exchange students' health safety for the cooperative organization, Health Africa Development Cooperation Organization, which arranges exchange programs for students (HADCO, n.d). The request for training material came from Health Africa Development Cooperation Organization, because there is a need for training material for outgoing students. The training material will include instructions that help to prevent health threats and develop the knowledge and skills of students in social and health field in the prevention of health risks.

2 HEALTH SECURE EXCHANGE FOR SOCIAL- AND HEALTH CARE STUDENTS

2.1 Health Africa Network as a Partner

Health Africa Development Cooperation Organization (HADCO) was founded in 1999 to promote international health and social competence and health in Finland and African countries. The aim of the organization is to increase interest in cooperation between different people and cultures, to increase knowledge of developing countries, global cultural sensitivity and development policy expertise in Finland. In addition to its regular members, the organization has eight supporting Universities of Applied Sciences, which form the Health Africa Development Cooperation Organization (HADCO, n.d.).

The Health Africa Development Cooperation Organization enables mobility of students and experts in social and health care to Uganda and Kenya. The partner universities are Clarke International University (CIU) in Uganda and Maseno University in Kenya. Between 1996-2022 there has been 427 students going to these countries through Health Africa program (Anttila et al., 2022, pp. 259-260).

2.2 Concept of Health

The World Health Organization (n.d.) defines the concept of health as total physical, social and mental well-being rather than sickness or current diseases of a person. According to WHO, many factors combined together affect the health of people and communities. The determinants of health include for example physical environment, social environment, education, person's characteristics, and social status (WHO). According to WHO also gender affects, since men more commonly get injured or challenges with mental health. Huttunen (2020) identifies health as constantly changing condition. Every individual defines their own health status, which can differentiate from doctors' assessment.

2.3 Health Security

The concept Health Security stands for securing human life from old and new, rapidly transmitted health threats, and especially ones crossing the borders of countries and regions

(Sane, 2022, pp. 9-11). Health Security is regulated and ensured with worldwide contracts and projects (Finnish Ministry of Social Affairs and Health, n.d.). According to Finnish Ministry of Social Affairs and Health, the International Health Regulations (IHR) regulates WHO's and its member countries' acts to prepare against Health Threats. The worldwide health security programs (GHSA) purpose is to repel the unexpected biohazardous and health security risks. According to Sane (2022), the preparation against smaller, for instance, local epidemics, other failovers, and bigger, e.g., Pandemics, health threats is the main concept of health security.

Health Security also includes the concerns of travelling (Finnish Foreign Ministry, 2022). The Finnish Foreign Ministry's travel notices provide relevant information about another country's health security and safety. The Finnish Foreign Ministry tells that, In Eastern- Africa you must prepare for possible rapidly changing situations. The Finnish Foreign Ministry emphasizes travelers to obey carefulness, especially near the borderlines, since political tensions might change very quickly, and are unpredictable, especially the borders of Rwanda, Congo and South-Sudan must be avoided. According to Finnish Foreign Ministry you must follow the guidelines of local authorities during crisis- situations, even though the destination country is considered safe, for instance there are peacekeepers in Uganda, who are fighting against terrorist organizations. The Finnish Foreign Ministry tells that, it is regular to security check every person who is trying to enter shopping malls.

3 INTERNAL HEALTH SECURITY

3.1 Physical Well-being

Felman (2023) describes physical well-being as a person having a bodily function, such as exercising regularly, sleeping well and having healthy nutrition. Physical well-being is having a healthy lifestyle aiming at preventing illnesses. Medical News Today states that advancing the physical state of a body is to avoid substances that are harmful to the human body, vaccinating yourself against diseases and practicing effective hygiene. Reduction of risks and injuries are implemented as well with maintaining physical well-being. Felman (2023), brings up the association with physical and mental health, where both counterparts can improve each other.

According to the World Health Organization (2022c), physical activities have lots of positive benefits. It prevents heart diseases, cancer and diabetes for example. Physical activities do not only affect physical health, but they also help with psychological and social health.

3.2 Social Well-being

Ramirez-Duran (2021) describes social well-being as maintainability and development of social interactions between other people. Vesa et al. (2020, p. 13) defines and measures social well-being with concepts such as, loneliness, participation in social interactions, attachment with society, social network and participation in social activities. Vesa et al. (2020, p. 13) lists different factors affecting social well-being. Physical activities, communality, sleeping, sexual intercourses and stable income are both, positively and negatively affecting the social well-being of an individual, whereas mental health problems are negatively affecting social well-being and vice versa.

Vesa et al. (2020, p. 14) say that the concept of social well-being and its borderlines cannot be clearly defined, but it also has connections with several subjects, such as quality of life, mental health and financial welfare.

3.3 Psychological Well-being

Robertson (n.d.) narrates psychological well-being as more of an individual sensation, and it cannot be fully determined by scales or examinations. He refers to the fact that psychological well-being can be noticed as happiness and through other positive mental states.

Wells (2010, p. 77.) says that positive factors in psychological well-being are satisfaction with life, internal control and self-esteem. Negative factors are said to be depression and the powerful others.

According to the World Health Organization (2022b), mental health is more than absence of mental disorders. It helps people to handle stress in their lives. According to Centers of Disease Control and Prevention, mental health can be affected by various things, such as trauma or a history of abuse, experiences about other medical conditions, biological factors, substance abuse, and the feeling of loneliness.

4 EXTERNAL HEALTH SECURITY

4.1 Malaria

According to Siikamäki (2021), malaria is nowadays categorized as a tropical and subtropical disease. Siikamäki (2021) explains that the main symptom of Malaria is fever, but the illness has countless of other symptoms. The disease is spread by mosquito species called Anopheles, it is transmitted through mosquito bites, and through blood contact, which is considered rare. Siikamäki (2021) specifies that protozoan named Plasmodium infects the red blood cells.

UNICEF (2019) statistics show that worldwide over 290 million people yearly get infected by malaria, which of about 400 000 cases are fatal. UNICEF (2019) says most of the fatal cases are children, which is estimated to be about 74 %.

Kainulainen et al. (2023) says when traveling to East- Africa malaria prevention is highly recommended, and prophylactic medication is required. Kainulainen and Siikamäki (2019), explain other ways to protect from mosquito bites than medicative prevention. Kainulainen and Siikamäki (2019) lists that it is important to sleep under mosquito nets, use mosquito repellants protect from malaria mosquito bites and wearing light-colored long sleeves and long-legged trousers to protect from mosquitos during the nighttime. Centers for Disease Control and Prevention (2022) states it is recommended carrying protective equipment when leaving from home country, also taking environment into consideration with prevention, since mosquitos thrive and multiply in moist or humid areas.

Kainulainen and Siikamäki (2019) recommend, before travelling it is wise to investigate which malaria prophylactic medication suits you. Kainulainen and Siikamäki (2019) point out that the side-effects of malaria prophylactic medications can vary on personal level, which is the reason why they should be experimented on before traveling.

4.2 Travelers Diarrhea

Travelers' diarrhea is one of the most common illnesses among travelers (Duodecim, 2010). Diarrhea is caused 60 % of the time by bacteria, 10-20 % by viruses and 5 % by protozoans

(Kantele & Lääveri, 2022). Kantele and Lääveri (2022) clarify that the real cause of the illness cannot be determined by the symptoms of diarrhea. According to Kantele and Lääveri (2022) the most common bacteria causing diarrhea is colon bacillus- bacteria, which is carried by over half of ill and symptomless persons. Kantele and Lääveri (2022) tells salmonella bacteria is also one of the most common bacteria causing diarrhea, and approximately 50 % of the infections are from outside of Finland. Kantele and Lääveri (2022) emphasize that norovirus is the most common virus causing diarrhea, which can transfer in close contact and infect multiple persons. Kantele and Lääveri (2022) point out the probability of falling ill is mainly affected by the season, traveling destination and the destination's nature, it is more likely to get infected during warm seasons than the cold seasons. Kantele and Lääveri (2022) adds that the risk of illness is increased by the poor level of hygiene and country's economic situation. Also, countries which do not have clean water or do not have food hygiene significantly increase the probability of getting ill.

Risk areas include south and southeast Asia, Africa and Central and South America. In these countries one can get sick already on the first day as many as in the Nordic countries in three series (Duodecim, 2022a). Which is why drinking tap water in Uganda/ East-Africa is not recommended (Onyutha et al. 2022). Drinks containing ice cubes must be avoided, since they are probably being made of tap water and can cause travelers' diarrhea (Kantele & Lääveri, 2022). Kantele & Lääveri (2022) recommend inspecting food, since the local food might not be produced and cooked the same ways as in residing country and the food product processing can vary very much, which can be the reason the food can be contaminated and increase the risk of diarrhea.

Because of the various pathogens, as Duodecim (2022b) states that, there is yet to be discovered a vaccination which gives protection for all the pathogens. Also, antibiotics are not used to treat travelers' diarrhea because their harms are considered to outweigh the possible benefits (Duodecim, 2022b).

4.3 Protection from sunlight

The Radiation Safety Centre of Finland (2015) describes that, the protection from sunlight is important since it can cause health problems. Sun is radiating ultraviolet radiation, which can be harmful in excessive amounts. According to the Radiation Safety Centre of Finland (2015)

light and sensitive skin can get excessive amount of ultraviolet radiation just in ten minutes of sunlight without the protection of sunscreen.

It is recommended to favor domestic sunscreens, since destination country might not have ultraviolet protecting sunscreens. The protection of sunlight is extremely important in prevention of skin cancer. The Radiation Safety Centre explains of three types of skin cancer; Squamous cell carcinoma, basal cell carcinoma and malignant melanoma, which is the most dangerous of the above-mentioned. Ultraviolet radiation can weaken the immunity system of the human body (Stuk, 2015). Protection from sunlight includes also covering clothes, hats and high-quality sunglasses, and avoiding sunlight.

Mayoclinic (2022) explains that hyperthermia is also known as heatstroke, which is a condition where the temperature of the human body rises above 40 degrees Celsius. When measuring the temperature, you must keep in mind that infection related to body heating is different than hyperthermia itself (Saarelma, 2022). According to Saarelma (2022) the risk of hyperthermia is caused by being in a warm area without cooling, or disturbance in liquid balance, such as dehydration, which causes the human body not to sweat, and sweat is a cooling factor of human body. The first signs referring to heat stroke are usually nausea, vapor, headache, shortness of breath, disturbance of balance, fast and weak heartbeat, disorderliness, and dry skin Finnish (Institute for Health and Welfare, 2021). According to Terveystieteiden tutkimuskeskus (2021), hyperthermia is a life-threatening condition.

The milder version of heat stroke is called sunstroke (Saarelma, 2022). Saarelma (2022) explains that sunstroke is caused by the warming of the head area, when the sunlight is directed to head. The most typical symptoms include headache, nausea and dizziness regarding Saarelma (2022). Saarelma (2022) emphasizes that the symptoms themselves are very common, but sunstroke cases must be taken seriously and be careful, since the condition can become more severe if not treated correctly. Saarelma (2022) clarifies, sunstroke patients care consists of recovery of fluid balance and cooling the human body.

4.4 Vaccines

Vaccines are critical in effective prevention of communicable diseases (World Health Organization, n.d.). Vaccinating is method of prevention, which is processed with strict development process (Duodecim, 2021). Duodecim explains the functioning of vaccines is to activate the

vaccinated persons immune system by injecting small doses of antigens, i.e., active substances. In this way the human's immune system learns to recognize the noxious substances, and forms defense mechanism against pathogens.

According to the World Health Organization (n.d.), the first vaccinations created by humans' dates to the late 1800s. The vaccination was made in the laboratory and made against fowl cholera of chickens. The late 1800s to early 1900s was the development era of virology and bacteriology, where studying and learning the capabilities of vaccinations and outcomes of vaccines in the human body was one of the major focuses. The World Health Organization (WHO) states that, the first breakthrough of vaccines dates to year 1937, when the Yellow Fever vaccination was developed by Max Theiler, Hugh Smith & Eugen Haagen. Since then, there has been many various vaccines, e.g., Polio vaccine, Influenza vaccine, and more recent one, COVID-19 vaccine.

A vaccination licensed health care professional is allowed to vaccinate, doctor is always responsible for planning and executing the vaccination action (Decree of The Ministry of Social Affairs and Health on Vaccinations 149/2017). The injected antigens can be injected through intramuscular, intradermal or subcutaneous way (Finnish Institute for Health and welfare, 2022). Finnish Institute for Health and welfare tells that, some vaccines are possible to administer through oral ways by swallowing, i.e., Per os. The entering to Eastern Africa recommends a vaccination this kind, which contains **cholera bacteria** (Finnish Institute for Health and welfare, 2022).

Duodecim (n.d.), says that many vaccines are recommended when traveling to Eastern Africa. One of the must requirements is **yellow fever** vaccination, which certification of vaccination is always verified from the travelers over the age of one up on entering the East- African countries. Duodecim adds, the recommended vaccines are against **typhoid fever, meningococcus, hepatitis A- and B, measles-mumps-rubella** (MPR), **polio, tetanus toxoid**. In addition, the vaccination set is recommended to be started at least three months before the exchange period, since some vaccines require booster vaccines (Terveysten- ja hyvinvoinninlaitos, 2022).

4.4.1 Yellow Ffever

Yellow fever (YF) is an acute, hemorrhagic fever, which can lead to death (Rokote.fi. n.d.). Rokote.fi has listed the symptoms of a patient, Fever, nausea, muscle pain and headache. Yellow fever is transmitted by mosquitos. According to Rokote.fi most of the patients will recover from the yellow fever in a couple of days, approximately 15% will develop a more severe phase. Rokote.fi adds that, the severe phase contains yellowness of skin and eyes, i.e., Icterus, and liver failure, also hemorrhage. Yellow fever cases have grown and spread during the last two decades. This brings challenges for global prevention (Oyono et al., 2022, p. 1).

4.4.2 Hepatitis A & B

Hepatitis, in general, is the infection of a liver (Anttila, 2021). Anttila (2021), explains the differences between Hepatitis A and B. Hepatitis A- virus infection is visible as fatigue and hospital care is usually not needed. Liver Gangrene is very rare in Hepatitis A, the condition is severe, but only one out of thousand cases are leading to gangrene. Hepatitis A- virus is transmitted by feces, or food and beverages contaminated by feces. Sexual contact between men is counted as a risk factor of transmission. The infection of hepatitis A can be screened with blood antibody test.

Anttila (2021) says that Hepatitis B- virus is an inflammation of liver, which is transmitted through blood-contact or unsafe sexual intercourse, also through a pregnant mother to the fetus. According to Leino and Puumalainen (2019), Finnish students who are under the risk of infection during practical trainings are given the hepatitis B- vaccination free of charge. The vaccination is not required to be taken, but usually recommended when travelling to destination with higher prevalence of hepatitis B- infections or working abroad. Leino and Puumalainen (2019) points out that some diseases carriers might develop diseases such as, chronic hepatitis, liver cirrhosis, or in worst case, liver cancer.

4.4.3 Cholera Bacteria

Cholera is a highly virulent disease, which causes severe acute diarrhea (World Health Organization, 2022a). World Health Organization (2022a) states that cholera is a global threat for public health. The symptoms of cholera are showing after 12 hours to 5 days after the ingestion of contaminated water or food based on World Health Organization (2022a). Most of

the symptoms of cases are mild or moderate, minority might develop acute diarrhea, which can be lethal within hours if left untreated.

Cholera is usually found in South and Southeast Asia, sub-Saharan Africa, especially the Indian subcontinent and South and Central America (Nohynek et al., 2016). Cholera bacteria spreads easily and it globally occurs approximately 1,3-4 million cases annually and 21 000-143 000 of the cases causes death (rokote.fi, 2022). According to World Health Organization (2022a), the *Vibrio cholerae* bacterium in contaminated water or food is causing the infection.

The Cholera Bacteria vaccination does not belong to the national vaccination program, so the traveler must make sure to get the required vaccine against the bacteria. Because of the rapid spread of the bacteria the vaccination should be taken into consideration when staying longer periods in poor hygienic areas, as (Rokote.fi, 2022) highlights that the vaccination is recommended for those who are staying in a cholera area in poor hygienic conditions. The vaccination is taken orally and adults and children who have turned 7 takes two doses between 1 to 6 weeks. For children under the age of 7 it is recommended a third dose after 6 months. The protection lasts approximately for two years.

Other preventative measures besides vaccination are clean water, good sanitation to the traveler and to the people who don't have access to it, health education and good food hygiene are important (World Health Organization (WHO), N.d.). It is also important when considering prevention of disease, that it is not only general hygiene that matters. As the World Health Organization (Nd.) states, strengthening surveillance and early warning systems are important measures to allow detection of the first cases in an outbreak and to put in place control measures as quickly as possible.

4.4.4 Typhoid Fever

Typhoid fever is a severe general infection caused by the *Salmonella Typhi* bacteria, which is transmitted through contaminated food or drink (Nohynek et al., 2022). After 1 to 2 weeks of the contamination, according to Nohynek et al., (2022), the symptoms are usually headache, fever, feeling ill, stomachache and nausea. The disease is usually found in the Indian subcontinent, Middle East, Southeast Asia, Africa and the Pacific Islands, especially in the tropics (Nohynek et al., 2022). According to the World Health Organization (2023), as of 2019, an estimated 9 million people get sick from typhoid and 110 000 people die from it every year.

As Nohynek et al. (2022) stated, the disease is usually found outside of the regular tourist areas in the small towns or in the countryside's where there is less population and poor hygiene. The vaccination is highly recommended when staying longer periods of time in these kinds of areas where the disease prevalence is more common, but on the other hand, tourists who stays for short periods in cities and in good hotels they usually don't need the vaccination (Nohynek et al., 2022).

When considering working in these kinds of risk areas as mentioned earlier, the form of work is called risk work. Risk work is a concept which the Finnish institute for health and welfare (2019) defines as work tasks, where the contamination is high, or the people exposed to the disease are at more high risk than usual to serious infection. If the one is doing risk work and is tested positive for S.Typhi or S. Para typhi- infection, one shall not act in the work position before the needed follow-up samples have been taken. For example, nursing work with children under school age is classified as risk work (this only applies to salmonella S. Typhi and S. Para typhi), which is common tasks for social- and health care students.

What comes to prevention of the typhoid fever is especially good general hygiene and full vaccination protection. The World Health Organization (2023) highlights that the typhoid fever is common in places with poor sanitation and the lack of clean and safe water, so access to safe water, sanitation, vaccination and well processed food are all effective when preventing typhoid fever. As Krenn (2015), states that there are two different doses, one of which is taken orally and the other is injected. Both of the doses are given about 2 weeks before travelling. The Vaccination gives protection for 1 to 3 years. There is no defined schedule for the booster dose, but when travelling frequently to an area where the disease occurs or live there, one can renew the vaccination every year. The World Health Organization (2023) also recommends avoiding raw milk and products from raw milk, ice if not from safe water, to boil the water when drinking it is questionable, frequently washing hands with soap after been in contact with animals or after having been to the toilet, washing carefully fruits and vegetables especially when eaten raw.

4.4.5 Meningococcus

Meningococcus, *Neisseria meningitidis*, is an infection, which can cause meningitis, the infection of meninx, or sepsis (Nohynek et al., 2022). Meningococcus is usually present among younger children or young adults. According to Nohynek et al., (2022), the meningococcus bacteria is separated into meningococcus groups A, C, W, Y and B. The disease is transmitted from person to person by droplet contact, which is the reason why the meningococcus vaccinations are commonly required for exchange students. Nohynek et al., tell those Sub-Saharan countries, which are located in the equator, are in a meningitis zone, where bigger epidemics appear every five to twelve years. World Health Organization informs about current meningococcus epidemics.

Meningitis is commonly caused by either bacteria or viruses among adults (Anttila, 2021). Bacterial meningitis is considered more severe, which causes difficult sepsis, and the lethality of bacterial meningitis is more significant and regularly caused by meningococcus-, pneumococcus- or listeria- bacteria. Bacterial meningitis needs hospital care and is treated with intravenous antibiotic treatment. According to Anttila (2021), the symptoms are fever, headache, vomiting and stiffness of neck. Anttila (2021), also states that virus meningitis is milder, and is not life-threatening and meningitis caused by viruses are healed on their own with rest. Milder meningitis can occur with normal seasonal influenza. According to Centers for Disease Control and Prevention (2022), meningococcal disease can be confirmed with blood samples or with cerebrospinal fluid samples. Centers for Disease Control and Prevention (2022) lists possible complications, which can be possible loss of limbs, brain damage, deafness or nervous system problems.

4.4.6 Measles-Mumps-Rubella

Measles, Mumps and Rubella (MMR) are highly contagious diseases caused by different viruses. Especially measles can cause severe pneumonia and brain damage. As we get older the course of the (MMR) diseases gets more difficult and there will be more sequelae's. The vaccination includes live attenuated (MMR) viruses, and it is usually given in two doses according to the vaccination program in Finland (Kontio, 2022). Also, when travelling to Africa, Aasia and to the middle East before the age of 12 month it is highly recommended to take the (MMR) vaccination. Although, at this time Kontio (2022) states that, the booster vaccination is not needed after the two-dose program.

According to Kontio, 2022 If a grownup traveler does not know that he or she has had measles, mumps or rubella they should check if they have the two-dose protection (MMR) against these diseases. Most of the people born before 1970s have immunity given by the (MMR) diseases contracted as a child. Those born in the late 1960s or early 1970s may have insufficient protection against the disease because some of them have not had (MMR). But almost all those born in or after 1975 have received the (MMR) vaccination because of the vaccination program (Finnish Institute for Health and Welfare, 2020). According to the (MMR) vaccine prescription the vaccine can be used from the age of 9 months. (THL), (WHO) and the authorities of many countries recommends that the vaccine can be used already from the age of 6 months if there occurs continuous measles or wider measles outbreaks in the region or in the country (Kontio, 2022).

The benefits of the (MMR) vaccination: The vaccination gives protection against measles, mumps, rubella and for the secondary diseases such as meningitis, pneumonia, orchitis, congenital rubella syndromes and other complications (Finnish institute for health and welfare, 2020). Also, according to (Finnis institute for health and welfare, 2020), individual cases of measles and mumps have been reported in persons who have contracted this infection abroad and persons close to them, however no more than 0 to 5 cases a year. So, the effectiveness is very reliable when considering taking the vaccination.

4.4.7 Poliomyelitis

Poliomyelitis (Polio) is a highly infectious disease caused by a virus, and it affects mainly children under the age of 5 (WHO, 2022d). The virus is highly contagious and spreads through contact with fecal matter or oral secretions of an infected person. Most people who are infected from poliovirus have no visible symptoms, but some people have flu-like symptoms, like fever, sore throat, headache, nausea, and tiredness (CDC). These symptoms usually go away in 2-5 days. Approximately 1 in 200 infections lead to paralysis and about 5-10 percent of them die when their breathing muscles become paralyzed (WHO).

According to the World Health Organization (2022d), there is no cure for polio, so preventing it is important. Polio vaccine is given multiple times, and it can protect child for life. There are two different options for vaccine, inactivated polio vaccine and oral polio vaccine. Both of

these options are safe, and they are selected depending on local circumstances to ensure the best protection for people.

With the help from different organizations like Rotary (Rotary), polio cases have reduced from approximately 350000 cases in 1988 to just 6 cases in 2021 (WHO). Polio has reduced over 99,9% in just 33 years with the help of vaccines (WHO). As speaking today, polio is endemic in only Afghanistan and Pakistan (Rotary).

4.4.8 Tetanus

According to the World Health Organization, Tetanus is an infectious disease caused by the bacterium *Clostridium tetani*. It's found basically everywhere in the environment, for example in ash, soil, feces of animals and humans, surface of skin and rusty tools. Any human can get tetanus, but infant babies and pregnant women who have not been vaccinated are in danger the most (WHO). According to the World Health Organization most of the well- developed countries have reached high immunization coverage, therefore tetanus rates are low. In low-income countries tetanus is still a big problem, because immunization coverage is low and places to give birth are commonly unclean.

Symptoms of tetanus include seizures, fever, inability to open mouth, muscle spasms and changes in blood pressure (WHO). Tetanus is treated in hospital with antibiotics and other medicines, such as human tetanus immune globulin and tetanus vaccination. People who have been recovered from tetanus does not gain natural immunity against the disease, so there is a risk of getting tetanus again if not vaccinated (WHO).

The vaccine used for tetanus is called tetanus toxoid. According to WHO, it is recommended, that one person takes six shots of vaccine, three primary and three boosters. Primary doses should begin from the age of six weeks and should be given every four weeks. Booster doses should start from the age of two years and be given every four years. In the year of 1988 estimated 787000 babies were killed by tetanus. In 2015 approximately 34000 babies died of tetanus, so there has been a 96% reduction since then.

5 AIM AND PURPOSE OF THE THESIS

The aim of this thesis was to improve knowledge of health security during the exchange study period among social- and health field students.

The purpose of the thesis is to create a Moodle platform for the training of social- and health field students. It is made for the usage of Health Africa Development Cooperation Organization (HADCO).

Research question:

What aspects should social- and health field students consider before an exchange period?

6 THESIS IMPLEMENTATION

6.1 Research method

The thesis is done by qualitative research method. Qualitative research means that the research is done via methodological orientation of scientific research, where the researcher observes the objects properties, quality and meanings holistically. As Hakala (2015, p. 22) describes that qualitative research method's main goal is usually to highlight and acknowledge the research subjects' own interpretations.

When using the Qualitative research method, it is important that the survey contains open questions where the participant can answer freely without any interception of the researcher, so that the answers can be more reliable. Because the functional plan (Moodle), needs results and feedback that can be analyzed before the result can be done, the qualitative research method is the best option.

6.2 Functional thesis plan

Airaksinen et al. (2022) defines the functional thesis plan as a development work that is used in different universities with their own guidelines. Usually, the functional thesis is done based on the needs of a cooperation organization from the working life. Airaksinen et al. (2022) also states that the functional thesis increases the knowledge of the authors because the functional and theoretical issues are in balance.

Seinäjoki University of Applied Sciences (SeAMK) states that in a functional thesis a production leads to a limited outcome, e.g., the design and development of new products or tools. It is reported both in writing, in accordance with the goals and functions set for the thesis, and as the product itself. The outcome of a production process may be a staff training day, brochure, radio, TV or computer program, work or product, or an exhibition. The documentation of the production must be attached to the thesis.

As Airaksinen et al. (2022) highlight, when considering making a functional thesis, the researchers must know that the developmental aim is to produce a professional work for the cooperation organization and to help the target group in daily issues. The authors of this

thesis chose to create a functional thesis ordered by Health Africa Development Cooperation Organization. The outcome was to use online training material on Moodle platform, to help the social and health care students going on an exchange program. Because the production was online, the development of the production is continuous, which is why it gives constantly updated and reliable information for the target group.

6.3 The online survey

The thesis online survey was approved with the cooperation agreement signature (HADCO). As Valli and Perkkilä (2015, p. 109-110) mention, the world continues to digitalize and online surveys are getting more popular also in research. Although paper surveys are still done, nowadays online surveys answer percentages are getting higher and paper surveys answer percentages lower. With the help of this information, the authors of the thesis got more confident when deciding which survey form would be better in this research. The content of the training material will be collected based on the survey's answers. This gives reliable information to the authors how to modify the content so that the respondents and the Health Africa Development Cooperation Organizations needs will meet.

The target group of the survey was the future social and health care students who are going to exchange program in Uganda and Kenya during spring 2023. With this target group, the number of answers increased and the results were more reliable. The survey questions were open questions and theme based so that the participant keeps consistency and understands the whole concept throughout the survey. To get reliable answers, the survey structure must be well organized. As it turns out in Valli's and Perkkilä's article (2015, p. 109-110), it is better for the participants to be able to move back to the earlier question so that they can make adjustments if needed. That is why the participants were able to move also back and forth during the survey so that the results are more precise. This will help the result analysis, because the participant has time and the right to give opinions and thoughts without any restrictions.

Furthermore, when creating an online survey, one of the most important features is visualization. Online surveys can be built versatilely in many ways. There can be video clips, voice files etc. Which paper surveys cannot include. It is also important to take into consideration, even though there are so many options and features when creating online surveys, to whom the surveys are done for and what is the aim of the survey. According to Valli and Perkkilä

(2015, p. 109-110), one of the advantages is the speed in sending and answering the survey, but sometimes it takes time to figure out how to reach the target group, which is why the target groups information will be figured out with the (HADCO). Also, the online survey usually does not need any financial resources whereas paper surveys can cost money for example, when trying to send into different countries. Nowadays most people have different mobile devices such as smartphones, tablets, computers etc. And for that cause, the survey will be designed to be suitable for all devices, so that the participant can answer properly to the questions which were formed together with the cooperating organization and former research.

6.4 Collection and Analyzing of Data

The online survey was first sent to the Health Africa Development Cooperation Organization (HADCO) for a review to see if there was any need to adjust or other suggestions to improve the online survey. After the online survey was approved, together the authors and the Health Africa Development Cooperation Organization decided that it was more efficient to send the final online survey through the organization, because they had better access to the target groups email addresses, and for the respondent's personnel security it was the best option. Also, the thesis cooperation organization HADCO mentioned that the online survey got more attention when it was sent at once with the authors accompanying words and a suitable deadline with HADCO reminders.

The Webropol survey with open questions was sent to the future exchange students who were selected to go either to Kenya or Uganda in one month after answering the survey. 12 students participated in the survey. After the deadline, results were analyzed by content analysis. As Sundler (2019, p.736) states, the goal of the content analysis was to achieve an understanding of patterns of meanings from data on lived experiences (i.e., informants' descriptions of experiences related to the research question in, e.g., interviews or narratives). The analysis began with data that needs to be textual and aims to organize meanings found in the data into patterns and, finally, themes. While conducting the analysis, the researcher aims to understand the meanings embedded in experiences and describes these meanings textually.

Following the steps of content analysis, the authors read the answers of the survey and searched reduced expressions corresponding to the research question. As Elo et al. (2022, p. 215-225) justifies how to proceed in qualitative content analysis stages and progression, similar reduced expressions were organized, and they were divided into specific sub-categories. The main categories were created based on the sub-categories into bigger concepts. Lastly, according to the final step of the content analysis, the authors discussed the achieved results and argued the analysis process critically, to prove the analysis reliability Elo et al. (2022, p. 223).

6.5 Moodle- Platform

The training material will be created on the Moodle platform. The Moodle represents one of the most widely used free open-source e-learning platforms, that enables the creation of a course website, ensuring their access only to enrolled students. A simple interface, functional, and well-documented resources along with improvements make Moodle easy to learn and use (Moodle, n.d.). The training material will include internet links, videos, discussions, and instructions, which all are easy to add on to the Moodle platform. The platform is easy to update, so the material will not expire.

Health Africa Development Cooperation Organization is the principal of the thesis, and the organization wishes coaching material to the future exchange students who goes through their exchange program. The material is assembled into the Moodle surface, which is the basis of the functional thesis plan and where all the information about health security can be found easily. The information and results from the survey are used to analyze and guide what the future exchange students would like to have in the Moodle. Also, the former exchange students' experiences and knowledge are used to utilize the result.

7 ETHICS AND RELIABILITY

When the authors thought about confidence and trustworthiness, they had to take into consideration the validity in our thesis progress (Dobakhti, 2020, p. 62.). Validity improves the matters of trustworthiness and confidence; in this thesis research, the authors prove it in the following ways: The survey was done anonymously and emphasized that all the participants are answering voluntarily and there would be no threat if one didn't answer. The first question that the survey included made sure to the participant understands that their confidential information will not be asked nor shared with the other participants. The survey was pre-tested by the authors and fellow colleagues before sharing with the participants, so that there weren't any problems during the survey, which might affect the answers. Authors made sure that the answers were only been used to research and developmental purposes. The survey was also approved by the Health Africa Development cooperation Organization (HADCO) and sent through them, to make sure that confidentiality and privacy policy was reached.

Reliability was also one of the main matters of this research process. As researchers, understanding the differences between quantitative and qualitative research method enhances the research reliability. In the research, authors used the qualitative method and utilized multiple reliable sources, not only from local but also from international sources, to get more information and learn the process. The authors acknowledged that, according to Dobakhti (2020) qualitative research might be more difficult and harder, because of the non-numerical form which the quantitative method utilizes. Lot of attention was paid by the authors to make sure that own opinions won't affect the result analyzing process between one researcher to another, and kept it as subjective as possible (Dobakhti, 2020, p. 68). Although, as former exchange students who have been in the same process as the target group, authors found out that when developing the Moodle platform, it is important to reflect in own experiences with the results from the survey to improve the needed content.

Therefore, as mentioned earlier in the Section: (6.2) Functional Thesis Plan, the final product was created online to allow easier access and the possibility to edit and update the information in the platform. This improved and keeps improving the platforms' reliability and confidence since no personal information is needed to login and the cooperative organization is available to edit the platform continuously.

As Dobakhti (2020) describes, ethicality usually can be interpreted only in one stage of the research which is giving sensitivity to the rights of the participants. The authors understood that ethicality has to be considered in every stage, not only in the research process but also in the whole thesis in general. Finding reliable sources and obtaining consensuality developed these factors. Authors also had taken into consideration Ethical Recommendations for Thesis Writing at Universities of Applied Sciences. Finnish legislation related to data protection was followed. The authors were aware of the rules of plagiarism. The participants of the Thesis were informed, and their consent was asked (ARENE, n.d). The cooperation contract with Health Africa Network was also done according to instructions of SeAMK.

In conclusion, when making sure that the research achieved the issues above, it was important that collecting and analysing data, was not interfered with our personal biases nor changed the participants point of views or answers during the research (Dobakhti, 2022, p. 85.)

8 RESULTS

The survey was built around the research question: What aspects should social- and healthcare field students consider before an exchange period?

The analysis of the survey was done using inductive content analysis method. The answers to the survey were categorized into groups which showed similar results. The categorized groups were headlined based on the reduced answers of the survey. After reduction, upper categories and sub-categories were made. The upper categories were made by suiting sub-categories into them and deciding proper names for the upper categories. The reduced results were gathered into smaller groups, which contained similar answers, and named after the categorized reduced results. The authors gathered three upper category classes in total, the two upper categories physical health security and psychological health security both have three different sub-categories. The last upper category, social health security contains two different sub-categories.

The survey (Appendix 1.) was delivered to the future exchange students of social- and healthcare field who were travelling to the eastern- Africa countries. In total the survey was sent to 18 future exchange students, and it was responded by 12 of them. All of the respondents were women, 50% were between the age of 18-25 years, 17 % 26- 30 years, 8 % 31- 35 years and 25 % over 36 years.

Over half of the respondents were general nursing students with 56 %, 8 % of them were public health nurses, 17 % were geriatric nurses and the rest 17 % were social working students. Every respondent had traveled outside of their home country, Finland, and 58,3 % had travelled outside of continent of Europe. Only one student wished for more information about health security. The respondent answered to the open question; Information about vaccines was received late.

The majority of respondents gained their knowledge about health security from the exchange course from school. In addition, the respondents gathered information on their own from student's health care services, preparation course for exchange and government webpages.

8.1 Physical Health Security

Physical health security is categorized into the upper category. Subcategories of physical health security include Protection from diseases, external threats and importance of hygiene. As in (table 1.) appears, the results show that respondents wanted more *information about vaccinations and guidance on how to take them* (n=15), *the prevention of malaria* (n=9), *more knowledge about infectious and public diseases* (n=10), *general anticipation and prevention of diseases* (n=8), *adequate travel-pharmacy* (n=4) and *sun protection* (n=3).

External threats' is one of the subcategories. The respondents answered important things to keep in mind while in exchange period, *being precautionary* (n=10), *following security instructions* (n=5), *safe place of living* (n=4), *safe transportation* (=4), *not to walk outside after night-fall* (n=3), *maintaining physical immunity* (n=2), *maintaining physical condition* (n=3) and *avoiding unnecessary risks* (n=2).

In the category of importance of hygiene (table 1.), the respondents brought up multiple times the *quality of food and water* (n=9). *Having knowledge of quality food* (n=2) and *maintaining general good hygiene* (n=1).

Table 1. Survey answers about physical health security

Subcategory	Reduced Expressions
Protection from Diseases	<ul style="list-style-type: none"> • Knowledge of Infectious- and Public Diseases (n=10) • General Anticipation and Prevention of Diseases (n=8) • Sun Protection (n=3) • Prevention of Malaria (n=9) • Information about vaccinations and how to take them (n=15) • Adequate travel-pharmacy (n=4)
External Threats	<ul style="list-style-type: none"> • Avoiding unnecessary risks (n=2) • Safe place of living (n=4) • Maintaining physical condition (n=3) • Following security instructions (n=5) • Maintaining physical immunity (n=2) • Precautionary (n=10) • Safety in transportation (n=4) • Not walking outside after nightfall (n=3)
Importance of Hygiene	<ul style="list-style-type: none"> • Quality of food and water (n=6) • Knowledge of quality food (n=2) • General good hygiene

8.2 Psychological well-being

Psychological well-being was chosen by the authors of the thesis as the second upper category, which includes three main concepts based on the respondents' answers, emotional awareness, personal values & ethics and increasing mental well-being. The concepts study the respondents' thoughts and concerns about psychological matters and answers straight to the thesis research question. As shown in table 2, the respondents' thought that *Awareness of homesickness and worry (n=3)*, *Allowance and facing emotions (n=2)*, *Sence of belonging into the group (n=2)*, *Fear of loneliness (n=2)*, *Psychological sense of security*, *Understanding that you can't influence everything in health*, *Awareness of that you can't change the world by yourself* are important when considering how to prepare before the exchange period.

Personal values & ethics was formed when the respondents included the *Importance of self-determination and mental integrity (n=2)*, *Difficult encounters in training*, *right attitude*, *strong orientation towards wrongdoing*, *consideration of the family staying in Finland*.

The respondents also thought that *information where to get treatment if needed* (n=3), *Possibility to get emergency care if needed* (n=3) and *information what to do in unexpected situations* (n=2) important things when increasing mental wellbeing.

Table 2. Survey answers about psychological well-being.

Subcategory	Reduced Expressions
Emotional Awareness	<ul style="list-style-type: none"> • Awareness of homesickness and worry (n=3) • Allowance and facing emotions (n=2) • Sense of belonging into the group (n=2) • Fear of loneliness (n=2) • Psychological sense of security • Understanding that you can't influence everything in your health. • Awareness of that you can't change the world by yourself
Personal Values & Ethics	<ul style="list-style-type: none"> • Importance of Self-determination and mental integrity (n=2) • Difficult encounters in training • Right attitude • Strong orientation towards wrongdoing • Consideration of the family staying in Finland
Increasing of Mental Well-being	<ul style="list-style-type: none"> • Information where to get treatment if needed (n=3) • Possibility to get emergency care if needed (n=3) • Information what to do in unexpected situations (n=2)

8.3 Social Health Security

As explained in table 3, the results of the survey showed the *amount of money needed* (n=3), *tips from previous exchange students* (n=2), *insurances* (n=2), *guidance on what to pack* (n=2) and *information about places to live* (n=1).

Lastly, the respondents considered the preparation for cultural differences important. Respondents brought up aspects, such as *gathering information about culture before the exchange* (n=3), *awareness of culture shock* (n=1), *having cultural respect* (n=1), *the understanding of not being in home country* (n=1), *gathering information about nursing culture* (n=2) and *information about culture of the exchange country* (n=2).

Table 3. Survey answers about social health security.

Subcategory	Reduced Expressions
Beneficial tips for future students	<ul style="list-style-type: none"> • What to pack (n=2) • Information about places to live. • Insurances (n=2) • Hints for adjustment • Tips from previous exchange students (n=2) • Amount of money (n=3) • Going through things what to avoid
Preparedness for cultural differences	<ul style="list-style-type: none"> • Gathering information about culture before the exchange (n=3) • Nursing culture (n=2) • Awareness of culture shock • Information about culture of the exchange country (n=2) • Cultural respect • Understanding that you are not in home country. • Awareness of differences in culture (n=2)

8.4 Utilizing the results on Moodle- platform

In the platform, the first section is introduction which gives information about the platform and what information it gives for the exchange students going to Africa regarding the Physical, Social, Psychological Health Security Issues. The next sections are based on the theory of this thesis which includes basic information about the Internal Health Security: Social-, Physical-, and psychological wellbeing issues and External Health Security issues that includes information about different diseases and vaccination issues etc. The Moodle platform's content is designed also to obtain methodical structure, so that the whole is easy to understand and read by the students.

In summary, the Moodle platform was designed based on the results of the thesis survey, the authors experiences and customized in the needs of the cooperation organization, Health Africa Development Cooperation Organization. Professionalism was obtained during the whole thesis process and kept our research question, purpose and aim in mind to achieve the goal, and to promote health towards our target group. With the wishes of Health Africa- organization, the Moodle platform literature was written in Finnish language.

9 DISCUSSION

The goal of this thesis was to create a Moodle platform to help future exchange students when travelling to Eastern-African countries. A survey was created to collect information from the future exchange students, and based on the answers, to develop the Moodle platform content. The survey was tested beforehand by the authors, fellow colleagues, and the collaboration partner (HADCO). The questions of the survey were approved by the cooperation organization and edited to support and answer the thesis research question.

The answers of the survey were approved to be used for the digital information bank, which gave ideas for the creation of the digital platform and shaping the platform to be useful for the upcoming exchange students. Furthermore, guiding on which subjects to focus on, since the survey answers were given by persons going to exchange period in the future.

Based on the survey, it can be stated that physical, psychological and social health matters are all important for future exchange students. According to the answers, it can be assumed that preparing for exchange period in Eastern-Africa is significantly important. The results of the survey are similar to those in a previous thesis written by Gazdag and Härmävaara (2021), where they have stated that a guide supports future exchange students.

For example, as a student described in Sollman and Ylhäinen (2018) thesis interview, after attending an arranged orientation session, it was still considered that not enough information about culture was given. Therefore, the same concerns were shown in the survey answers. The participants thought that awareness of cultural shock, cultural respect, information about culture of the exchange country, were important factors. Furthermore, the results of this thesis show respondents thought that generally getting information about culture before the exchange was an important matter of social health security and when preparing for the cultural differences. In addition, as indicated in Solman and Ylhäinen (2018) thesis interview, the health care students experienced, when considering preparation to the exchange period, that preparing better for the local culture and language is important. It helps the practical training to go more smoothly and the negative feelings could be avoided. This statement proves the importance of preparation to exchange and supports the research question of this thesis.

Even though nursing culture was not a matter that came up in Sollman and Ylhäinen (2018) interviews, our survey participants thought that it was one factor to consider when cultural

differences intervene in working life. Based on this finding above, it was possible to categorize these upper matters as preparedness for cultural differences and utilize it as one subtitle of social health security in the Moodle platform.

10 CONCLUSION AND FUTURE DEVELOPMENT

Because the world is constantly developing, and the information is changing to online, it is important to have needed information in the same platform and easily accessible. Furthermore, education is an important factor, especially from the point of view of health promotion and safety.

When planning to create a functional thesis, the authors felt that they did not have a good experience finding information easily and everything was confusing in general. Therefore, authors wanted to produce a useful platform for the future exchange students to get access for all the needed information easily from the same place. However, because of restrictions of the study field, the authors could not involve information of every aspect regarding the exchange process. Therefore, when considering the development of this thesis functional part, the product was guided by our research question: **What aspects should social- and healthcare field students consider before an exchange period?** It would be helpful to expand the platform with more reliable information and sources from other subjects that concern the exchange process.

The vision for the Moodle platform in the future is that it could include some test quizzes made by Health Africa Development Cooperation Organization (HADCO) to help prepare for the exchange period. Furthermore, there could be added some discussion forums where the former exchange students can write their experiences and based on those, the future exchange students could take tips and reflect on their own process. Information about the needed visa, passport, money, accommodation issues would be important to add as well.

All in all, the production is designed to help the whole exchange process and to make it a less stressful event. Because the platform is online, it is easy to update it and perhaps, keep it as a permanent addition for the exchange process by the cooperation organization. Therefore, every developmental element that keeps improving the platform is more than welcome.

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APPENDICES

Appendix 1. Questions of Survey

1. I understand that by answering the survey, I give permission to use my answers for research purposes.

- Yes

2. Gender

- Female
- Male
- Other

3. Age

- 18 – 25 years of age
- 26 – 30 years of age
- 31 – 35 years of age
- 36+ years of age

4. Field of Study

- Social work
- Geriatric nursing
- Registered nurse
- Public health nurse
- Physiotherapist

5. Travelling history

- I have travelled outside of Europe.
- I have not travelled outside of Europe.
- This is my first time travelling abroad.

- 6. Do you feel that you got enough information about health safety before you left for the exchange?**
 - I feel like I have had enough information.
 - I have received some information*
 - I have not received enough information*
- 7. What else would you like to know about? ***
- 8. Where did you get information about health security?**
- 9. What does mental and physical health security mean to you in your destination country?**
- 10. What do you think should be considered when traveling to Kenya/ Uganda in terms of health security?**
- 11. What tips and material should the Moodle- platform include in terms of health security?**

Appendix 2. [Moodle- platform](#)

