

”We think about health when we are sick”

- **A study of knowledge, perceptions and attitudes towards cardiovascular diseases and obesity in Babati town, Tanzania.**

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Abstract

The aim of this study is to investigate knowledge, perceptions and attitudes towards cardiovascular diseases and obesity among men and women and current health strategies in Babati, Tanzania. The results of this study can contribute to answers about where focus needs to be added for preventive health interventions. In order to answer the research questions of this study, a qualitative field study was conducted in Babati town, Tanzania during three weeks in February and March 2017. The theoretical framework used in this study is the Theory of planned behavior, a psychological theory that explains human behavior that is used to understand people's behavior and decision making. The findings of this study shows that people in Babati have a substantial knowledge, which shows that knowledge does not play an important role in the fight against NCDs since it is increasing anyway. People have a negative attitude towards these diseases but claims that there is still people that has a positive attitude. This study conclude that the main problem is people's behavior and accepting a lifestyle change rather than lack of knowledge as previous research claims.

Keywords: NCD, cardiovascular disease, obesity, knowledge, Babati

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List of acronyms

AIDS - Acquired Immunodeficiency Syndrome

BMI – Body mass index

CVD – Cardiovascular disease

HIV - Human Immunodeficiency Virus

NCD – Non-communicable disease

TB – Tuberculosis

TPB – Theory of Planned Behavior

UTI – Urine Tract Infection

WHO – World Health Organization

Table of contents

1. Introduction	1
1.1 Problem formulation.....	1
1.2 Purpose.....	2
1.3 Research questions	2
1.4 Delimitation.....	3
2. Previous research.....	4
2.1 An overview of the NCD situation in Tanzania	7
3. Theoretical framework	9
3.1 Theory of planned behavior	9
3.2 Attitude toward behavior.....	10
3.3 Subjective norms	11
3.4 Perceived behavioral control	11
4. Method	12
4.1 Field study preparations	12
4.2 The field study in Babati	12
4.3 Choice of method	14
4.4 Choice of informants	14
4.5 Ethical considerations.....	15
4.6 Method criticism.....	15
5. Findings	17
5.1 Interview with environmental and health officer	17
5.2 Interviews with health personnel.....	18
5.3 Interviews with females and males.....	19
5.4 Conclusion of the findings.....	23
6. Analysis and discussion.....	24
6.1 The problem and the main barriers.....	24
6.2 Implementing the theory of planned behavior.....	26
6.2.1 Attitude toward behavior	26
6.2.2 Subjective norms	27
6.2.3 Perceived behavioral control	28
7. Conclusion.....	30
References.....	31
Appendix 1: List of respondents	35
Appendix 2: Interview questions.....	36

1. Introduction

Non-communicable diseases (NCDs), mainly cardiovascular and vascular diseases, cancer, chronic lung disease and diabetes is the major cause of death globally (World Health Organization, 2015). NCDs kill 38 million people every year and most deaths occur in low- and middle-income countries (28 million), which covers nearly three quarters of the NCD deaths. These diseases are often associated with older age groups but research shows that 16 million deaths occur before 70 years of age. Modifiable risk behaviors are, for example, tobacco use, physical inactivity, unhealthy diet, and harmful use of alcohol (WHO, 2015). Risk factors for non-communicable diseases is: aging, urbanization, and globalization of an unhealthier life. The increased numbers of NCDs is mainly due to globalization, urbanization and migration from rural to urban areas and the socio-economic transition (Amunaa & B. Zotor, 2008). The World Health Organization (WHO) and the United Nations have criticized a growing concern for the CVD (Cardiovascular disease) epidemic in low- and middle-income countries, and that measures should be taken urgently (Feigin et al. 2015). Over three quarters of CVD deaths occur in low- and middle-income countries. People in low- and middle-income countries do not often have the benefits of integrated programs in primary prevention, early detection and treatment of disease. The disease is usually detected late in the disease process, leading to early death, usually in the most productive age (WHO, 2016a).

Overweight and obesity is a major public health problem and increases the risk of cardiovascular disease and the prevalence of obesity is increasing dramatically. According to the WHO, the burden of obesity has doubled in recent decades (Mligiliche et al. 2012). Obesity is usually associated with high-income countries, but in low and middle-income countries it is becoming increasingly common, particularly in urban areas. (Fotso, Oshako & Ziraba, 2009). The cause of the increasing number of overweight and obesity has globally been an increased intake of energy-dense foods that are high in fat, decreased physical activity, changed transportation ways and increased urbanization. This is usually the result of changes in the environment and society in connection with development (WHO, 2016b).

1.1 Problem formulation

Infectious and parasitic diseases such as malaria, HIV (Human Immunodeficiency Virus) AIDS (Acquired Immunodeficiency Syndrome) are still major problems that developing countries are

struggling with. The change in diet and lifestyle over the last two decades in developing countries have led to the increase of non-communicable diseases which has created a double burden of disease to humans and health care (Amuna and Zotor, 2008).

Many scientists believe that non-communicable diseases such as cardiovascular disease, obesity and diabetes has been neglected, given the focus and investments to infectious diseases such as HIV, tuberculosis, and malaria. Prevention of these diseases is not adopted in Africa and this is a lack (Fotso, Oshako and Ziraba, 2009). Mainly CVD has been neglected and the lack of data about the burden is due to lack of research caused by reduced local expertise and poor funding (Mocumbi, 2012). During the search for scientific articles, it was discovered that there was limited availability of studies that examines CVD in Tanzania.

Even if NCDs is a major burden for people and the health care in Tanzania, only 1, 03% of the total health budget was allocated to NCDs in 2013 and 2014 (MoH and Social Welfare, 2013). The burden does not only affect individuals, families and the health care, but also the government (Kengne et al, 2013). Therefore, preventive measures need to be addressed in health interventions. These interventions often fail to make behavioral changes sustainable which is a result of individuals' inability to listen and commit to different health interventions (Airhihenbuwa, 2010). This makes it important to understand why people take the decisions they take and what affects the decision making, for example, not to change their dietary habits and lifestyle.

1.2 Purpose

The purpose of this study is to investigate knowledge, perceptions and attitudes towards cardiovascular diseases and obesity among men and women and current strategies in Babati. The results of this study can contribute to answers about where focus needs to be added for preventive health interventions.

1.3 Research questions

- Does people's knowledge play an important role in the fight against cardiovascular diseases and obesity?
- What are people's perception and attitude towards cardiovascular disease and obesity?
- What prevents people in Babati from dietary and lifestyle changes?

1.4 Delimitation

This study is focused on two diseases, cardiovascular disease and obesity. Other types of NCDs is mentioned a few times in this study because many NCDs are related to each other. Still, the focus is on two diseases to delimitate the study because of limited time and resources.

The study is only focused on knowledge, perceptions, attitudes and strategies of these diseases. Other impacts like environmental impacts and cultural impacts would be both relevant and important to this study, but as mentioned above, this was not possible due to resource and time limit.

2. Previous research

Sub-Saharan Africa is facing an epidemiological transition from AIDS being the leading cause of death to cardiovascular diseases (Mocumbi, 2012). It is well known that the prevalence of NCDs are higher in urban areas than in rural areas. NCDs have not replaced communicable diseases or infectious diseases in Tanzania but exist alongside these diseases which becomes a double burden (Cheema and Raschke, 2008). Several studies conducted in Tanzania have shown that high-calorie diets and high salt intake have strongly influenced the increased burden, especially in Dar Es Salaam. There is also a higher consumption of red meat and coconut milk in this area. Rural areas consume more green vegetables that contains magnesium and calcium which are important for the body (Njelekela et al, 2003). The changes in diet is often called the “Western diet” rich in fat and carbohydrates. This is not only a trend in urban areas, it is currently increasing in rural areas. Scientists believe that food rich in vegetables are disappearing (Adair, Popkin and Wen Ng, 2012). Other scientist believes that the globalized food system of multinational corporations replaces the East African traditional food. The urban East African population is constantly confronted with the wide range of packaged food (Cheema and Raschke, 2008). However, studies in both Tanzania and South Africa shows that fruit and vegetable intake increases in urban areas along with other dietary changes. Evidences in South Africa shows that intake of fruits and vegetables were higher in urban areas compared to rural areas. Fruits and vegetables have beneficial effects on blood pressure and this may explain why blood pressure levels decreased after rural to urban migration in several other studies (James et al, 2010). The results from the study ‘‘ Rural to urban migration and changes in cardiovascular risk factors in Tanzania: a prospective cohort study’’ also shows that dietary changes were mixed and fruits and vegetable intake increased while physical activity decreased significantly (ibid).

The higher prevalence of NCDs in urban areas can hence not only be explained by dietary factors, but also the decreased levels of physical activity (Adair, Popkin and Wen Ng, 2012). Access to technology and more advanced technology have reduced the physical activity at work. Also, changes in transportation and spare time are related to the increased inactivity (ibid).

It is important to understand the level of peoples’ knowledge and how they think to deal with the problems of obesity and CVD, where health behavior models are often used as a too (Adler

and Stewart, 2009). Studies have shown that obesity is affected by the educational level of people. People with no formal education or primary level have higher prevalence of obesity than people with secondary education for example. Increasing age and the female sex were also risks for obesity (Shayo and Mugusi, 2011). Studies made on who are at risk of overweight and obesity shows that women who are engaged in income generating activities were more likely to be overweight or obese. This could be explained by the fact that working people have fewer opportunities for doing physical activities like exercising. The results also show (similar to the recent study) that prevalence of obesity is higher among non-educated women than women with secondary education or higher (Fotso, Oshako & Ziraba, 2009).

Regarding studies about knowledge on obesity, one study among primary school children in Dar Es Salaam showed that children have a good knowledge about obesity (Anaeli et al. 2015). Less than a half of the children had a good knowledge about obesity, where the prevalence was higher among the children that were obese than non-obese children. A similar study conducted in southern Brazil showed the same results were obese children had more knowledge than non-obese children. This can be explained by the fact that obese children are more likely to be interested about their condition and tends to seek information about it. Also, studies conducted in Chicago and the Kaski district in Nepal shows that majority of the respondents had right knowledge about obesity. Therefore, programs focusing on behavioral modifications are essential (Cardozo et al, 2013; Acharyal, Chauhan, Balal, Kaphle and Thapa, 2016). Studies shows also that people with education, married women and people below 65 years are more knowledgeable of risk factors of CVD (Squires, 2000; Tedesco, Di Giuseppe, Mapolitano and Angelillo, 2015).

Perceptions about body weight is influenced by factors regarding ethnicity and culture. In developed countries, thin and slim bodies is the body ideal, while heavier bodies are preferred in developing countries even if it starts to change (Mligiliche et al. 2012). According to the article, many studies have pointed out that a large body size is preferred among black girls, but there is a changed trend among the higher class. Scientists claims that the Western body ideal is increasingly promoted through global media which have affected this changed trend (ibid).

Slimness has never been admired in Tanzania (Anaeli et al. 2015). Previous, women rarely got heavier bodies because they were working hard with physical demanding jobs. The man with the fattest wife were the most respected man because he had the most beautiful wife (ibid)

In a previous study conducted among middle-aged adults in Dar Es Salaam in Tanzania, results show that majority of people with overweight or obesity included in the study did not perceive themselves as overweight or obese. This results shows that is a difference between actual and perceived body size. Men tend to underestimate the body size more than females (Mligiliche et al, 2012). The same pattern can be seen in one study among children too (Mpembeni, Muhihi, Maghembe and Njelekela, 2014). Other studies also confirm that females are more dissatisfied with their body more than men. The same study made in Morocco gave the opposite results that female's underestimate their body more than men and were wishing to have a bigger body size (Lahmam, 2007). Perceived body weight and size is important to investigate for improved body control behavior, therefore, education and information for people to realize the associated risks of excessed body weight is important (Mligiliche, 2012).

People's perception and attitude about body weight in Tanzania is also influenced by HIV pandemic (Mpembeni, Muhihi, Maghembe and Njelekela, 2014). Weight loss is one of the most common symptoms people suffering from HIV. However, ART (Antiretroviral Therapy) is claimed to make infected people gain much weight and look healthy. As a result of this, people will never think that a fat person is HIV positive (Ezekiel, Talle, Juma and Klepp, 2009; Kedinga, Krawinkela, Maassd and Msuyac, 2013). Therefore, not to look suspicious of having HIV/AIDS, many people prefer to be overweight or obese (Mligiliche et al. 2012). The outcomes of ART are locally described as *kitambi*. *Kitambi* is the enlarged stomach, which is often seen on older men. The stomach is a sign of wealth, good health and having money (Ezekiel, Talle, Juma, and Klepp, 2009). In one study, one third of the participating children did agree with the statement that "you will be suspected of being HIV positive if you lose weight" (Anaeli et al. 2015). In another study about attitudes towards overweight and obesity among women in rural Tanzania, the majority mentioned more negative than positive features for a corpulent person (Kedinga, Krawinkela, Maassd and Msuyac, 2013). Still, one third linked overweight and obesity with beauty. The common positive things linked with overweight and obesity mentioned by the participants were that a person is perceived as attractive, looks beautiful and is respected. Other people thought that the person suffering from these diseases has a good health because of the fat on the body. Skinniness is often associated with illness and diseases. The fact that respondents had more negative than positive features show that there is an awareness of the resulting problems (ibid). One study among school children in Dar Es Salaam showed that most of the children had negative attitudes towards childhood obesity. Majority of the children disagreed with the statements that obesity is an indicator of good health

or that you will be suspected of having HIV if you lose weight. Still one third of the children agreed with these two statements (Anaeli et al. 2015).

The article “Why Culture Matters in Health Interventions: Lessons From HIV/AIDS Stigma and NCDs” argues that public health intervention should focus on culture rather than behavior to achieve positive health outcomes. Also, educational programs about these diseases and their consequences are recommended in Tanzania (Airhihenbuwa, Ford and Iwelunmor, 2014).

2.1 An overview of the NCD situation in Tanzania

Tanzania is currently going through a so-called nutrition transition. This means that there is an ongoing shift in consumption of food and lifestyle. This nutrition transition has resulted in the outcome of NCDs, including CVD and obesity (Schmidhuber and Shetty, 2007).

Non-communicable diseases, along with communicable diseases, provides a double burden on the health care system. The chronic diseases that contribute to most deaths in Tanzania are CVD and diabetes. NCDs are estimated to account for 27% of the deaths in the country (WHO, 2012). In Tanzania, NCDs is significantly a disease that affects the older population, meaning adults. These diseases were considered rare but is now a normal phenomenon. Previous research shows increased prevalence's of diabetes, hypertension, obesity and stroke (James et al. 2010). This is mainly due to rural to urban migration. Because of the rapid urbanization in recent years in Tanzania, people are more exposed to sedentary lifestyles, mainly reduced physical activity and unhealthy diet (Mayige, Kagaruki, Ramaiya and Swa, 2012). From 1960 to 1998 there was a fivefold increase of people living in urban areas (Maletnlema, 2002). Studies show that the BMI (body mass index) in urban areas are higher than in rural areas and physical activity levels were low compared to the rural areas. The increase of NCDs are predicted to continue to increase if strategies to combat the current trends are not taken (Mayige et al, 2012).

The so-called ‘Westernization’ have been a factor that directly influenced NCDs (Maletnlema, 2002). It is for example the change in using personal car instead of walking or eating ice cream instead of fruits. Before 1960, Tanzania rarely processed food in factories. Most of the food were cooked in natural form. Nowadays, a large percentage of food are processed and packaged in urban areas. These processed foods include food with high amounts of carbohydrates, starch, fats, salt and sugar. Snacks, cakes and sugary drinks are often available in urban areas for richer people (ibid).

NCDs can be prevented through healthy diets, avoiding cigarette smoking and participation in physical activities (Mayige et al, 2012). Screening and early treatment of the early stages are also preventive measures. The burden will grow when the health care system lacks preventive programs. Today there is a problem of lack of infrastructure, human resources and funding mechanisms for health services in Tanzania. Nevertheless, Tanzania is one of the few countries in Africa to respond to the growing burden of NCDs. Some of the already existing initiatives cannot continue due to lack of resources. The Ministry of Health and Social Welfare established a department within the ministry to deal with the burden of NCDs through national strategies (ibid).

3. Theoretical framework

To understand people's perceptions and attitudes, it is important to understand the underlying causes of why people take the decisions they take (Andrews, Silk and Eneli, 2010). To understand this, different behavior approaches can be used as a tool. In this study, the Theory of Planned Behavior (TPB), a psychological theory that explains human behavior, is used to understand people's behavior and decision making. The TPB was developed in 1985 by Icke Ajzen as an extension of the earlier Theory of Reasoned action. This theory is the most tested model in attitude and behavior science with a strong empirical support (Andrews, Silk and Eneli, 2010). Therefore, TPB will be used as a theoretical basis for a later analysis in this study.

3.1 Theory of planned behavior

To understand why people take certain health decisions, for example not to change into a healthier lifestyle, it is important to understand what affects the decision making (Ajzen 1988 s. 113). It is important to understand that an individual's deliberate action is a result of deliberate considerations of each individual (Ajzen 1988 pp. 113). Before, it was believed that people's attitudes to certain things is linked to a later behavior. Previous research has shown that the connection between attitudes and behavior is weak (Ajzen & Fishbein 1980 pp. 13-17). Ajzen mean that more components are required than only attitudes to explain human behavior. Our intention to a certain behavior control our actions. This intention is a result of three underlying components that shapes an individual's behavioral intention and behavior. These three components are: *Attitudes toward behavior, subjective norms and perceived behavioral control*. The three components together create an intention to a certain behavior (Ajzen, 2006).

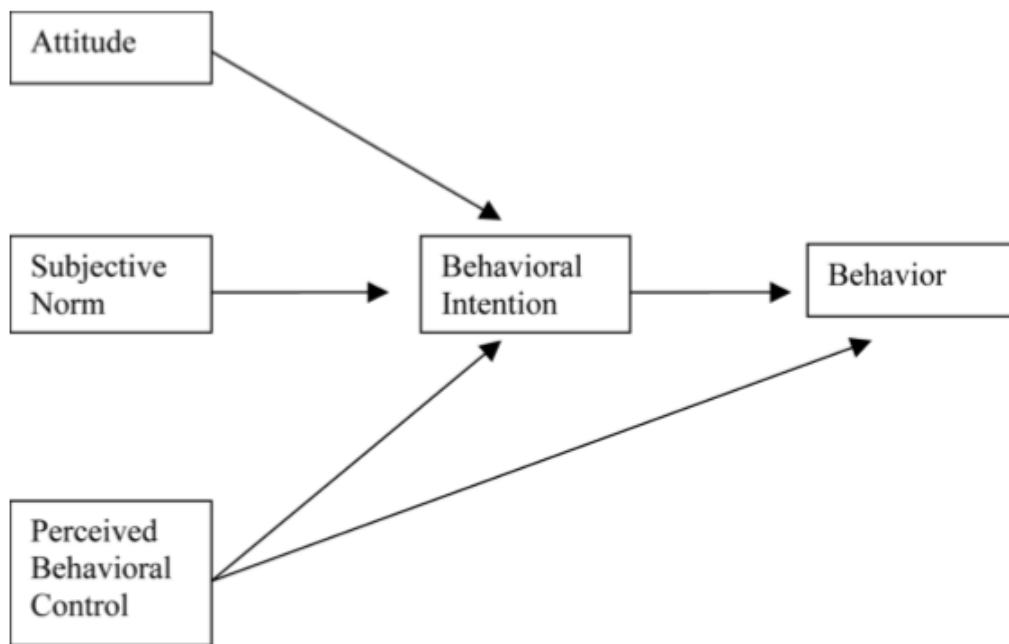


Figure 1. The Theory of Planned Behavior model (Andrews, Silk and Eneli, 2010).

Depending on the context of the situation, each component has different impact of the individual. For example, the attitude can have a greater impact than the subjective norm in different situations and on the contrary (Ajzen, 1988 pp. 117).

3.2 Attitude toward behavior

Attitudes toward a particular behavior is about how an individual perceives the consequences of the behavior (Ajzen, 2012 pp. 441-444). Every individual makes his/her own impact assessment, which then becomes the basis for an individual's behavior. Attitudes can be assessed in advance and help us understand why an individual do or do not show a behavior. The risk for different diseases can affect the attitude. If an individual think that a certain behavior contributes to a certain disease, this can affect the person to reduce risk behaviors (ibid). On the other hand, if an individual think that the risk of cardiovascular disease or obesity is relatively small if you live an unhealthy life, then the attitude towards the consequences is negative. If one continue to maintain this behavior without getting any consequences, it will eventually become a habit behavior and the attitude towards the consequences gets more negative. This is linked to knowledge, the more the individual know about the consequences and the more likely it is for the individual to avoid the behavior (ibid).

3.3 Subjective norms

Other people's expectations, requirements and the social pressure in a decision also affects human behavior (Ajzen, 1988 pp. 117). This is called the subjective norm, where the individual believes of what others think is a good and right behavior, which in many times controls the person's behavior and action (ibid). At the same time as this is a normative belief that concerns people's expectation of how one should behave, it is also about the individual's motivation to follow up the expectation. The subjective norms are not as strong that it can directly affect the individual's decision as long as the individual do not feel that it is an important behavior. Individuals as family, friends and groups such as church can be examples of what may influence perceptions of a behavior. One study showed that family and friends had an important role changing parents serving of healthy food for children (Andrews, Silk and Eneli, 2010). In the article "Knowledge and attitudes towards obesity among primary school children in Dar Es Salaam, Tanzania", the results show that children agreed with the statement that "Obesity is an indicator of good health" (Anaeli et al. 2015). This can be an example of what the social network considers and therefore people eat unhealthy food because the social norm says that the outcome of eating unhealthy food (obesity for example) shows that people have good health (Anaeli et al. 2015).

3.4 Perceived behavioral control

Perceived behavioral control is about the individual's perception if a behavior is easy or hard to perform. The conviction of the person's ability to handle a certain situation is what control individual behavior in the end (Ajzen, 2012 pp. 446-447). This is not about the actual skills that the individual has but the conviction that the individual can perform the action. If the individual is convinced that he/she can perform the act, the person is more likely to perform the behavior. The individual does his/her own assessment whether if the behavior or act is easy or hard, if there is any obstacles and what kind of opportunities there are. The perceived behavioral control can either have a direct or indirect connection to later behavior, which is showed in Figure 1. (Ajzen 1988 p. 132–133). For example, the individual finds many obstacles along the way for start doing exercise. The greatest obstacle is lack of time or that there is no motivation to do it and even though the attitude is positive towards this change and that this is the subjective norm, the chance of a lifestyle change is not so big. In some situations, the perceived behavioral control alone can influence a behavior without involvement of attitude or subjective norms (Ajzen 1988 pp. 133–135).

4. Method

4.1 Field study preparations

One month before the trip to Babati, Manyara region in Tanzania, the preparations for the field visit began. Several lessons were given to get a general overview of the society in Babati. A secondary data review was done to find relevant information to my topic of research. The secondary data were used to get more knowledge and a broader perspective of the area.

4.2 The field study in Babati

This field study was conducted in Babati town in Tanzania in February and March 2017. Semi-structured interviews were conducted during 12 field days. The first week of the field study consisted of different excursions to get a general view of the society in Babati and to get familiar with the town. The interview questions were tried through a pilot study if it could be used in further field study or if it needed to be changed.

A total of 23 people was interviewed, ten females, nine males, two nurses, one doctor from the Manyara Regional Hospital and the environmental and health officer. The interviews lasted between 20-40 minutes and everyone were between the ages of 30-65 years. All respondents had different social backgrounds and different levels of education, from primary to master level, while some of them did not have any formal education. The respondents had different types of professions as; teacher, business women and men, lawyer, restaurant owner, shop owner and program manager at Farm Africa. This was chosen intentionally to reach a broader perspective and wider response since similar professions, such as teachers, can for example, give similar answers.

During the three weeks, three field assistants helped to find respondents according to chosen criteria. Due to illness, the first field assistant could not work anymore and therefore, the amount of different field assistants.

Before the interviewing, interview questions were thoroughly discussed with the field assistants. Since this study examines diseases, the use of medical terms was needed. Cardiovascular diseases can be difficult to understand and difficult to translate to Kiswahili.

Because of this, heart attack and heart failure was used as terms instead of cardiovascular diseases to make it easier to understand.

All the interviews were recorded with a mobile phone. This was chosen to not miss any important quotes and that the interview would be more as a conversation rather than an interview with questions and answers. The benefits with recording the interviews is that it improves the memory in which the unconscious interpretations can be controlled, it facilitates a thorough analysis of what people have said and the researcher can make repeated reviews of the interviewee's answers (Bryman, 2011 pp. 428). This made the author also feel comfortable during the interviewing sessions not to focus as much on taking notes. Not all recordings were listened to and transcribed. This was because of that some respondents were short in the answers which meant that most of the interview was noted and the recording was not needed. These interview recordings were deleted right after the interviews.

One of McCracken's guidelines for a successful interview was used, which is to *'begin interviews with traditional greetings in local manners and state that the team are here to learn'* (McCracken, Pretty and Conway, 1988 pp: 18-23). To implement this into the interviews, the interviews were started with greetings and a few words that were relevant to the conversation in Kiswahili. The respondents appreciate the author trying to speak in Kiswahili which made them feel comfortable.

In the structured part of the interviewing questions, gender, age, education and current profession were asked about. This was to see if the respondent fulfilled the criteria and to after the results, analyze if these factors affect somehow. It was also asked if the respondent had electricity and water in the household and whether the informant was living in Babati town to see if the informant met the wealth criteria. In the initial phase of the interview, the respondents were asked generally on what health problems they experience are in Babati. This was to see if NCDs is a conscious problem for the respondents and to examine what diseases the respondents mention. The second part of the interview questions examined the respondents' knowledge of CVDs and obesity by responding about risk factors, risk behaviors and risk groups of the diseases. The third part of the interviewing questions examined the informants' perceptions and attitudes towards the diseases. This part of the interview was deeper and more discussed. Why the questions were put in this order were partly to initiate the interview questions that require short answers so that the informant with time became more comfortable with the interview. This meant that the last part could get deeper answers of perceptions and attitudes because this part was more of a focus and demanded deeper answers. The interviews

ended with general questions such as where to find information about nutrition and what strategies informants were aware of. During the interviews with medical personnel and the environmental and health officer, strategies and what they consider that people in Babati know about these diseases were asked.

4.3 Choice of method

Since the purpose of this study was to examine the knowledge, perceptions and attitudes of cardiovascular diseases and obesity, a qualitative method has been chosen which allow this study for deeper studies of the questions. Because of limited time and resources, it was not possible to conduct a quantitative survey. Data has been collected through semi-structured interviews. Structured questions initiated the interview and responds to the knowledge of the respondents. The second phase of the interviews, gives the opportunity to get deeper to the problem and responds to the perceptions and attitudes towards cardiovascular diseases and obesity. This gave the opportunity to make the interviews more like a conversation between the author and the respondents, with a more unrestrained scope.

4.4 Choice of informants

In the choice of the target group, people that lives in Babati town were interviewed. The field assistants were given four criterions of respondents to delimitate the study. The four criterions were: that the respondents should live in town, have electricity and water at home and have a less physically demanding job. Two of these criterions, that they should live in town and have a less physically demanding job, were chosen based on previous research showing that NCDs comes with urbanization and people living in an urban lifestyle in town and because an underlying cause of NCDs is a sedentary lifestyle (Mayige, Kagaruki, Ramaiya and Swa, 2012). Therefore, it is important in this paper to examine the knowledge, attitudes and perceptions of the population residing in the town. During the first day of the field work, the author went with two student colleagues on a wealth ranking interview to observe what respondents associate with wealth. Their results gave five criterions of wealth, where electricity and water, as mentioned above, were chosen as two criterions for the choice respondents. Why electricity and water in the home was chosen was to delimitate this study. These two criterions where confirmed by the field assistants to be two indicators of wealth.

This study examines both males and female's knowledge, perceptions and attitudes. Therefore, both men and women between the ages 30-65 years were interviewed. The selection of these age groups for this study were mainly because of that these age groups suffers most from NCDs according to previous research (Shayo and Mugusi, 2011). Because this study also examines strategies to reduce the burden of NCDs in Babati, an officer that works with health issues and medical staff at a hospital was interviewed.

4.5 Ethical considerations

To make the respondents comfortable and to protect their integrity, some ethical considerations has been used during the interviews. These ethical considerations where introduced to the respondent before the interviews for the respondent to feel comfortable with the interviewing session and to know its ethical right. Some of the fundamental ethical considerations for Swedish science relate to: informing the participants about the aim, voluntary participation, confidentiality and utility (Bryman, 2011 pp. 131-132). The respondents were told that:

- This study examines knowledge, attitudes and perceptions about cardiovascular diseases and obesity.
- The participation is voluntary and the respondent has the right to terminate its participation at any time.
- The respondent is anonymous, transcripts will not include any name. Information about the respondent will be treated with confidentiality.
- Information collected during the study will only be used for research purposes.

4.6 Method criticism

During the field study, there were different factors that could affect the study to be less reliable. To begin with, the lack of time and resources during the field visit did not allow more interviews. This makes this study hard to generalize which means that the results cannot be applied to other cases. Some of the respondents were stressed during the interviews because they for example needed to be somewhere else. During these interviews the answers were very short and could be discussed furthermore, but it still felt like needed answers were received.

Most the interviews were conducted in English. When there were language differences between the author and the respondent, the field assistant was needed to translate. Using an interpreter,

there is a chance for misinterpretations between the author and the field assistant and between the field assistant and the respondent. To avoid misinterpretations, the field assistants were well informed about the subject of the study and they were given the opportunity to go through the interview questions to see if anything were unclear. What may be problematic when the interview is being interpreted is that the field assistant cannot translate what the respondent answered the same way in English as the respondent explained in Kiswahili, which means that one may not get the exact quote. During certain times, respondents did not understand some of the questions. To solve this, the questions were explained in different ways.

One problem with using secondary literature is that the author misunderstands or misinterpret the results and gives a deceptive picture of what is in the primary literature (Bryman, 2011 pp. 120). This has been taken to consideration and the data has been vigilant used to avoid incorrect interpretations. The major part of the secondary data collection were scientific articles which has gone through a scientific examination which makes the references reliable.

As mentioned before, the interviews were recorded. This means that there is a risk that the respondent feels uncomfortable despite that he/she accepted to be recorded. With this in mind, it felt like this was no barrier and the respondents seemed relaxed and comfortable during the interview.

5. Findings

This chapter presents the following data that was collected through interviews with women and men, health personnel and the environmental and health officer. The empirical data are presented in three different parts. To begin with, interviews with the environmental and health officer will be presented where the main focus during the interview was to discuss how he perceives the current situation of NCDs in Babati, different strategies from the government and the main challenges. After this, the findings from the interviews with the three nurses and the doctor at Manyara regional hospital are presented where the main focus during the interviews was to discuss how they perceive knowledge and awareness among their patients with these diseases and also how they perceive the current situation with NCDs in Babati. The last part of this chapter will present the findings of the interviews with male and female respondents. This section will be divided according to the five themes of the interviews assumed, 1) General thoughts about which diseases there are in Babati, 2) knowledge about the cardiovascular diseases and obesity, 3) perceptions, 4) attitudes and 5) information and strategies.

5.1 Interview with environmental and health officer

To begin with, the officer thought that the NCDs are increasing compared to the past years. Cardiovascular diseases and obesity increase due to lifestyle, people's changing behavior and the type of food they are eating. Also, people are not walking nowadays, people in town uses transport to go to work. This is a problem in town and not outside the town. Most of the people are not aware of the risk factors that causes cardiovascular diseases and obesity. But education is still proceeded to people that are not aware of that. Most of the people get the information through discussion groups and TV.

The main strategy that the government has to decrease the burden of NCDs was announced this year, 2017 two months ago. The government have announced that the second Saturday of the month is the day were all people should do exercise. This means that every morning from 12 o'clock, people are invited to do exercise. Civil workers are the ones that are attending this. People who are attending this are not much, the, but the government hope that as they go on, people will catch up. They have announced this trough radio and TV and this is the national strategy.

There is no specific target group, but from the officer's point of view, the people that are attending is specifically adults, and those who are working, civil servants. He does not see businessmen who are attending this, and businessmen are the ones getting these diseases.

Other strategies are just to maintain balanced diet, which is individual strategy based. But in schools there were also announced that the students should make jogging before they attend school in the morning.

5.2 Interviews with health personnel

According to the interviewing list, the nurses and the doctor, will be in this part called: R1, R5 and R6, where R stands for respondent.

All the health personnel confirmed that NCDs has increased during the past decades and that it affects the urban people in Babati that have bad lifestyle habits, which means poor habits of eating and not exercising. These diseases provide a double burden of the health care along with infectious diseases. When it comes to if patients are aware of the associated risks with cardiovascular diseases and obesity two of them agreed that it was not enough awareness. The reason of this is due to lack of knowledge. R6 thought that when it comes to obesity, people are aware, they know that it has to do with food. But with cardiovascular diseases they do not have awareness because it can be caused by many other factors too, not only food. This is due to that people are outside the medical field. People with education knows about obesity, but with cardiovascular diseases both educated and non-educated people do not know about the associated risk factors.

Information about nutrition, diet and lifestyle can be found on TV, radio, internet and in school. There are a few nutritional posters in district hospitals, but not in regional hospitals where the information is preventive. The posters in most hospitals informs about breast feeding and malnutrition, it is a focus on children and the mother of the child. There is too little information about cardiovascular diseases and obesity, the information is not enough. Preventive information is a lack. People are not searching when they are not suffering from it, and that is also a problem. Today, malaria, HIV and TB (Tuberculosis) are the diseases that is prioritized in the health care.

The thing that motivates a person to change diet and lifestyle is after they get the diseases or when they are already suffering, then they get motivated. Patients' needs to be sensitized, they do not understand the consequences. There is a lack of knowledge and preventive strategies

from decision-makers, is a lack of specific preventive strategies from the health care to reduce the burden of NCDs. There was a doctor in Manyara regional hospital that had campaigns to reduce the burden of NCDs. Medical staff went out to villages to measure BMI and blood pressure at the same time as health personnel gave information. After the doctor left, there is no strategy anymore. The ministry has this exercise campaign once a month, where everyone can come and exercise together. They have also had annual meetings to discuss NCDs.

The problems that the health care face when dealing with the problems of non-communicable diseases is mainly financial problems and a lack of good doctors and expertise. There are good doctors but they fail to deliver good quality when it comes to NCD. Manyara regional hospital does not have doctors specialized in NCDs, people go elsewhere to get help.

5.3 Interviews with females and males

In the part about general thoughts, the female respondents' answers and the male respondents' answers will be divided, because the answers of females and males differs. Like the part before, according to the interviewing list, the respondents are named by "R" and the number of the order they were interviewed in if it is necessary.

General thoughts about diseases in Babati

There were three diseases that the interviewed females named as health problems in Babati, which were malaria, typhoid and UTI (Urinary Tract Infection). Four out of ten of the females named at least one of the non-communicable diseases, which were pressure and diabetes. Eight out of ten thought malaria was the greatest burden for people in Babati and only one respondent thought that a non-communicable disease should be prioritized in the health politics.

The male respondents named malaria, waterborne diseases and diabetes as health problems in Babati today. Six out of nine respondents named at least one of the non-communicable diseases. Malaria was primarily pointed out as the greatest burden of people in Babati, with eight out of nine answers. Three respondents named at least one NCD that should be prioritized in the health politics. Otherwise the majority answered malaria.

Knowledge about cardiovascular diseases and obesity

When the question about what kind of diseases one can get if one eat unhealthy food and have a low daily physical activity everyone answered: obesity, diabetes, hypertension, heart diseases, malnutrition or blood pressure. All the respondents knew the underlying causes of cardiovascular diseases, but many of them only answered stress and did not link it to unhealthy lifestyles. The respondents also answered that middle-aged, between 30 years and above are the biggest risk group to suffer from CVD. They also knew that it is mainly the middle-class and rich people that are at risk of CVD.

When it comes to obesity, all the respondents answered that obesity comes with poor habits of eating and that people do not exercise. R20 explained that Babati is a transitional town between the traditional lifestyle to a more modern lifestyle. The answers differed about risk age group were respondents answered from youths to older people. Still, the majority answered that adults is the largest risk group. According to R2, people call it “*adult diseases*” in Kiswahili. If one say that they are going to do adult diseases people understand that they are going to eat unhealthy and much food. All respondents agreed that it affects mostly people that has money and employees because they are sitting in offices and does not walk so much. Poor people are often active because they earn money from farming for example.

The respondents were also asked about food, what they considered as healthy and unhealthy food. All the respondents had the similar answers were they commonly stated; *vegetables, fish, fruits, beans, ugali (maize porridge) and rice* as healthy food and *red meat, meat, ugali and beans* as unhealthy food. Almost everyone highlighted that the amount of food and a balanced diet is what matters the most. Some of the respondents claimed that there is not a thing called healthy or unhealthy food, it is only the amount of food that does matter because the body need a little bit of everything.

Perceptions

Most the respondents perceive that CVD and obesity is a problem in Babati today, as R4 said: “*It is a problem because people does not even know it is a problem.*” Four respondents do not perceive these diseases as a problem in the society in Babati today with the argument that it

does not affect many people as, for example, malaria do. Malaria affects all ages and classes, and many respondents thought that malaria is important because it affects poor people and they do not have money to visit hospitals or treat themselves. It is a problem in Babati, first of all because of poor habits of eating and people do not do exercise. Second, the lifestyle has changed over the past decades to a more improved way. It is increasing because people do not have this kind of education. People that are already sick goes to the hospital and the medical staff tell them to eat fish instead of red meat, but the economic status does not allow it. Also, people do not have time to do exercise. The majority could not find any reason why CVD and obesity should not be given priority. The ones that did not think that these NCDs should not be prioritized argued that it affects rich people that have money to treat themselves and they are also educated.

“People do not prioritize health at all. We think about health when we are sick.”

Attitudes

All respondents had a negative attitude towards obesity and cannot find any reason why it can be positive, except one respondent that thought it can be an indicator of a person having money. The majority agreed that there are still people in Tanzania that thinks it can be an indicator of good health or that the person have money. Some people think it is beautiful and feel prestige when they are obese. It starts to change a little bit but it is still a problem. The mentality is a problem. *“If, for example, the wife in a household is thin everyone starts to blame the husband that he does not take care of his wife. If the husband is thin, everyone starts to blame the wife.”* This can vary in some cultures. The northern part of Tanzania, they do believe if someone is very fat he is taking very good care of himself and he got everything he wants. On opposite, if you are skinny people think you are poor. *“You cannot be obese if you do not have money.”* In the society, people call other people poor if meat is not served on the table, if one only serve vegetables, guests will not come back. As R19 said: *“I take what is available, I do not think of diet. When I have money, I eat meat.”* Some of the respondents claimed that these views of obesity are more common among men than women.

Information and strategies

Information about nutrition and lifestyle can be found on internet, media, TV, radio, hospitals and on seminars and workshops about nutrition. In hospitals, they educate about these diseases and on Thursdays they have special clinics for diabetes. The information is often verbal because the doctors educate the patient that already got the diseases. There are seminars for pregnant women of what to eat and after the delivery about child health. The posters in hospitals are about nutrition for the child and the mother of the child. There is also a focus on breast feeding. Many respondents claimed that there is a focus on mothers and children in hospitals and not NCDs in general.

“You can just google, everybody has a smartphone. The problem is that people do not search for answers and information. In hospitals, there is bad information. They don’t focus on preventive information because they want money when people come and gets sick.”

Most of the informants mentioned the strategy that is announced from the government, the vice president, that people should do exercise the second Saturday of the month which is for everyone. The government are also providing education trough media and TV. There is a hospital in Dodoma that deals with heart diseases and lever problems. If a person need to plant the lever they used to travel to India, but now they can go to Dodoma.

“The government tries but it depends on the perception of the people. The government is doing their job but people are the problem. “

When the question about what prevents people from changing lifestyle, almost everyone answered that it is a matter of lack of knowledge and lack of money. When people have a small income, it becomes difficult to have a balanced diet. There is also a focus on exercise among the national strategies and not on diet. Therefore, people do not know what a balanced or healthy diet is. Another thing that were commonly answered were that people do not have time, especially if one works at a full-time job. People are busy to earn money. R8 gave an example of this:

“I think of doing exercise because I have had heart problems, but the problem is that I wake up every morning to go to work. I take the car to work and after work, I go tired home to have dinner and I watch a bit TV and then I go to sleep. I do not have time”.

Many respondents also named ignorance and the mentality as a main problem. People do not want to change even if they know the consequences of these types of health behaviors. There is also an importance of checkups, people in Tanzania do not do checkups and it is expensive.

5.4 Conclusion of the findings

NCDs is increasing in Babati due to lifestyle changes and provides a double burden for people, politics and the health care system. The main findings will be summarized in dot-shape below.

- Almost all respondents had knowledge about risk factors, risk groups and risk behaviors of obesity and CVD.
- The majority of the respondents perceives CVD and obesity as a problem in Babati today.
- Many respondents claimed that malaria should be prioritized before NCDs because NCDs only affect rich people.
- All respondents except one had a negative attitude toward obesity. Still, everyone claimed that there are still people that have a positive attitude toward obesity.
- Health staff, the health officer and males and females agreed that the increase of NCD is due to lack of knowledge.
- Other reasons of barriers to lifestyle changes were ignorance, the mentality, lack of money and lack of time.
- One can get information about NCDs through social media, TV and radio. In hospitals, there is a focus on breastfeeding and child malnutrition.
- The government announced one strategy that people should exercise and almost all respondents were aware of the strategy.

6. Analysis and discussion

This analysis and discussion will be divided into four main themes where the first part will be analyzing and discussing the main problems and the main barriers when it comes to CVD and obesity in Babati from previous research, the empirical findings and observations. The second phase will be analyzed and discussed based on this study's theoretical framework as a starting point with the three components of the theory including: *attitudes*, *subjective norms* and *perceived behavioral control*.

6.1 The problem and the main barriers

Previous research concludes that NCDs has been neglected in Sub-Saharan Africa. (Fotso, Oshako & Ziraba, 2009), (Mocumbi, 2012). Already in the search for scientific articles, there was not much research about CVD. The interviewed health staff confirmed that NCDs are not prioritized in Babati. Malaria, HIV and TB are the diseases prioritized which is due to lack of resources. When the question about what kind of diseases are there in Babati today and what diseases should be prioritized, the majority did not name any NCDs. This shows that people are not aware of the increasing rates of NCDs in Babati. This is understandable thought, because of the large burden of malaria, HIV and TB during many years while NCDs is a new burden of disease. As health personnel and previous research claimed, NCDs has not replaced infectious diseases and communicable diseases in Tanzania, it exists alongside (Cheema and Raschke, 2008).

Still, lack of knowledge is not the main problem as almost all respondents claim. The majority had knowledge about risk factors, risk behaviors and risk groups of CVD and obesity, they knew the consequences of eating unhealthy food and increased physical activity. The only thing notable is that when it comes to CVD, many respondents did not link the diseases to unhealthy dietary intake or decreased physical activity, but linked it to stress. Stress is also a contributing factor for increased risk for CVD (National Heart, Lung and Blood Institute, 2014), but it was not the answer this study was seeking for. This should be taken into mind, where health interventions should be focusing more on knowledge about risk factors and risk behaviors when it comes to CVD. In observations made on previous research, it has been noticed that many scientists suggest educational programs because of lack of knowledge which this study does not agree with. Even if there are educational programs addressing risk factors and risk behaviors

of CVD, would people change? People know about obesity and that it has to do with food and physical activity, but still it is increasing. There were no significant differences in knowledge among educated and non-educated people, age or sex as other studies claim (Squires, 2000; Tedesco, Di Giuseppe, Mapolitano and Angelillo, 2015). Respondents with a university degree and those with only a primary level education had the same knowledge in this study. It is rather a problem of awareness than knowledge. “Lack of knowledge” seems like the thing many people often blame without knowing what the main problem is.

Respondents were also asked about what they consider as healthy and unhealthy food. Most of the respondents identified fruits and vegetables as healthy food, which brings a lot of health benefits. Some respondents stated Ugali (maize porridge) as healthy food and some of them stated it as unhealthy food. Ugali contains a lot of carbohydrate and starch and should not be eaten in a large amount (Healthy Eating, 2013). A common sentence that the respondents named were “balanced diet” and “the amount of food”. This means that all type of food is good, but the diet needs to be balanced (not eating the same food) and everything should not be taken in higher amount than the body needs. This shows even a good nutritional knowledge because a balanced diet is essential because it gives the body nutrients that the body needs to function, and overeating has never been a good thing.

After a few observations, it does not seem like there is a significant change in diet in Babati. This study disagrees with the statement that the globalized food system has replaced the traditional food (Cheema and Raschke, 2008). Some respondents said that they have always cooked the traditional food, and when they get the diseases and the doctors in the hospital tell them to change the diet without giving any alternatives. It seems to be a lifestyle change and problem of physical activity rather than changes in diet. One problem with food in Babati were the attitudes towards meat. People have a positive attitude towards meat, especially red meat because it symbolizes money. If one do not serve meat, people will think that this person is poor. As R18 said: “When I have money, I eat meat.” Maybe this can be a contributing factor whenever people move to the town and starts to earn more money, they buy more meat because they can afford it and because it has been a sign for wealth. The increased intake of meat and a decreased physical activity is more likely to affect the increase of NCDs in Babati. It is hard to change traditions and culture as literature describes it. Therefore, it is also hard to change health behaviors if it means that one needs to change a traditional lifestyle.

Almost all respondents named the main strategy that the government has announced. This shows that the strategy is well advertised. Even though people were aware of the strategy, none

of the informants were attending to it. The health officer confirmed that few people attend to this. One respondent argued that to exercise one day every month would not do any difference. Other respondents answered that people think that this strategy only take their time. This is an example of behaviors and attitudes that needs to change. As other respondents claimed, the government is doing their job, it is people that are the problem.

Many respondents joked about that they eat a lot and that they eat what is available, but they do exercise (mostly walking instead of taking the car to work). This can be due to that there is not much focus on food, but on exercise. This observation during the time in Babati were confirmed by the respondents. The respondents often highlighted the importance of exercising but not so much about diet. As mentioned before, the respondents named lack of time as the reason not attending to the exercise announced by the government. With this in mind, there should be more alternatives than just only exercise, maybe start promoting balanced diet.

Most of the respondents answered that nutritional information can be found trough social media, TV and radio. In hospitals, there is only verbal information if one is sick and there are posters about child nutrition and how to breastfeed the baby. Information should be provided more, and trough channels that everyone can access because everyone does not have a radio, TV or a smartphone. Posters in hospitals should not only focus on breastfeeding and children since the burden of NCDs is increasing among middle-aged adults.

6.2 Implementing the theory of planned behavior

As the theoretical framework of this study established, it is important to understand what affects the decision making. The findings about attitudes and perceptions will be put into the context of the Theory of Planned Behavior.

6.2.1 Attitude toward behavior

The risk for different diseases can affect an attitude and this is closely linked to knowledge. The respondents had a substantial knowledge about the outcomes of an unhealthy lifestyle. They knew that this leads to obesity and CVD and therefore, the attitudes became negative towards these diseases. The attitude toward behavior component mean that the more the individual know about the consequences, the more likely is it for the individual to avoid the behavior. In this study, attitudes seem to have a relatively small impact of the behavior. R4 had much knowledge

about these diseases because she came from a medical family, with the mother as a nurse. Even though, she eats what is available, she just eats because she loves food and she do not do exercise because of the lack of time. As the theory explains this type of behavior, she continues to maintain this behavior because she has not got any consequences of it, and therefore it becomes a habit behavior.

6.2.2 Subjective norms

Subjective norms are other people's expectation and the social pressure in a decision that affects human behavior. According to the theory, this component is not strong enough to directly affect the decision. Talking about subjective norms, it automatically brings us back to attitudes and body ideals. The respondents had a negative attitude towards obesity but confirmed that there is still people in Babati that thinks it can be an indicator of good health, that it is prestige and respectable and that people have money, which is consistent with previous research (Ezekiel, Talle, Juma and Klepp, 2009; Kedinga, Krawinkela, Maassd and Msuyac, 2013)._This study has shown that even if there is still people in the society that thinks being obese can be an indicator of good health or that the person has money, all respondents had a negative attitude toward obesity and were willing to lose weight. In this case, the subjective norms do not have a strong impact. Hence this, it was noticed in markets that the mannequins differ a lot than for example in Sweden. The Western body ideal contains a slim and physically fit body size (Mligiliche et al. 2012), where the mannequins in Babati were more "curvy" with broad hips than the Western mannequins. Even if the respondents were negative toward obesity and wanted to lose weight, there may be a subconscious attitude that wants to fit into the norms of the society. This was clear in some interviews with male respondents, that many of them joked about their "*kitambi*" (potbelly/enlarged stomach) and that the "*kitambi*" shows that their wife treat them well. This lead to the conclusion that even if the respondents answered that obesity is a bad thing, these subjective norms are still in mind. To joke about it may normalize and belittle the fact that it is not good for the health. It was also noticed that female respondents where shy when it came to talking about obesity. Some of them talked about them being overweight or obese but it was something they were ashamed of. The respondents answered that they do not find anything positive with being obese but other people does. It is not contradiction, but some respondents may have answered what they know is the correct answer but agrees with what they think other people thinks about being obese.

As mentioned before, meat is a symbol for money and many respondents claimed that when they have money, they eat meat even if they previously stated meat as unhealthy food. This is also an example of the impact of subjective norms.

6.2.3 Perceived behavioral control

Perceived behavioral control is about if a behavior is easy or hard to perform, which is not about the actual skills but the conviction of the ability to handle the situation. This component has a strong influence on the individual. The majority of the respondents, as mentioned before, answered that the main barriers to do exercise was the lack of time. The respondents have done their own assessment of that this type of behavior change is hard and it takes time. Even if the attitudes are positive to the change and the subjective norms promotes a slim body, the respondents still did not do exercise because of the self-conviction to change. Many respondents also claimed that people start to change when they get the diseases but one respondent showed the opposite by saying that he has heart problems but still do not do exercise because of the lack of time. This shows how much impact the perceived behavioral control has on the individual.

Previous research shows that public health interventions should focus on culture rather than behavior to achieve positive health outcomes and also to provide educational programs (Airhihenbuwa, Ford and Iwelunmor, 2014). This study shows the opposite. First, the knowledge about these diseases is substantial and even if educational programs would be implemented, would people change? It is a matter of behavior rather than knowledge or culture. By own experiences, it is similar in Sweden where we know about the consequences of an unhealthy lifestyle but we still do not change. Second, this study did not see a change in traditional food, but only attitudes that need to be changed. It can be further discussed if these attitudes should be called “a culture” or “the mentality”. More preventive strategies focusing on behavioural programs should be promoted by the government, since it has turned out that the government reach out to the people in Babati. The current strategy is a fail since people see it as a punishment rather than exercise good for the health. Some of the respondents answered that they do jogging and walk instead of taking the car to work. This seems to be individual initiatives without the governments’ involvement that works better currently. The reason for this strategy is to make people attend to the event and start thinking of exercise. The government is at the wrong starting point out trying to make people attend when people have not yet established this kind of preventive thinking from the beginning. Tradition and culture should not be seen as a barrier and changes should not replace traditional manners, but exist alongside

with them. It is a question of time when this increases to the rural population along with the technological development. It is important to start with preventive measures in an early stage, already in the childhood, because the main challenge is people habits and the overcoming these habits.

7. Conclusion

In order to prevent the increasing number of NCDs, this study has examined knowledge, perceptions, attitudes, information and strategies. The empirical findings show that people in Babati has substantial knowledge about CVD and obesity even if previous research shows the opposite. The majority perceives CVD and obesity as problems in the society today, but there were still many of the respondents that did not perceive these diseases as a problem and that malaria should be prioritized instead. Almost everyone had a negative attitude toward obesity but claimed that are still people that thinks that someone is beautiful, rich or respective having this disease.

What prevents people in Babati from lifestyle changes are people's behaviors and to accept these changes and live up to it. Respondents and pervious research claims that the main barriers are lack of knowledge, but this study proves the opposite. This study proves that knowledge does not play an important role in the fight against these NCDs since people have substantial knowledge, but still does not change and the NCDs are continuing to increase. The government's strategy is not working currently, and they seem to be far away of knowing how to handle the fast-growing increase of NCDs in Babati.

Since changing behaviors is the main barrier in the fight against NCDs preventive strategies, focusing on behavioural programs should be promoted by the government since it has turned out that the government reach out to the people in Babati. People also sees lack of time as a barrier, which makes exercise as a strategy not sustainable. There have been a lot of focus on communicable diseases and infectious diseases (especially malaria, TB and HIV) that probably do not make people think of NCDs. Therefore, there is a need of campaigns that raise awareness of the increasing rates of NCDs. Promoting walking to work instead of taking the car or local transport could also be a successful strategy. This study shows that there have been no dietary changes but there are positive attitudes towards meat because it shows that you have money if one serve meat. People's tradition to eat a certain food and accepting the change is a problem that means that the mentality should change too. Preventive measures should be implemented urgently, to prevent these diseases to increase furthermore.

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Appendix 1: List of respondents

Sex, age, education, profession.

Respondent 1: Male, 35, **health personnel.**

Respondent 2: Male, 30, Bachelor of Science and land management valuation, valuer.

Respondent 3: Male, 35, postgraduate diploma in legal practice, lawyer.

Respondent 4: Female, 34, master in environmental and natural resource economics, project leader at Farm Africa.

Respondent 5: Female, 34, **health personnel.**

Respondent 6: Female, 31, **health personnel.**

Respondent 7: Male, 44, teaching education at college, teacher at secondary school.

Respondent 8: Female, 32, master in sociology, tutorial assistant.

Respondent 9: Female, 31, degree in teaching, teacher in English and Kiswahili.

Respondent 10: Female, 31, bachelor of education, teacher at secondary school.

Respondent 11: Female, 20, diploma in education, teacher at secondary school.

Respondent 12: Female, 34, bachelor of education, teacher at secondary school.

Respondent 13: Male, 39, teaching diploma, teacher at secondary school.

Respondent 14: Male, 64, graduate in education, retired officer.

Respondent 15: Male 63, primary school, restaurant owner.

Respondent 16: Female, 61, no formal education, retailer at shoe shop.

Respondent 17: Female, 62, primary school, business.

Respondent 18: Male, 46, **environmental and health officer.**

Respondent 19: Male, 42, no formal education, farmer.

Respondent 20: Male, 49, primary level, business.

Respondent 21: Female, 40, secondary school, business.

Respondent 22: Female, 52, primary school, business.

Respondent 23: Male, 56, primary school, business at shop.

Appendix 2: Interview questions

Interviews with middle-aged adults

1. What kind of health problems are there in Babati today?
2. Which diseases has the greatest burden for people in Babati today?
3. Is it these diseases that should be prioritized?

Knowledge about the diseases

4. What kind of diseases can you get if you eat unhealthy food and have a low daily physical activity? What's the consequences of this type of lifestyle?
5. Why do you think people suffer from heart attack, stroke and heart failure? What are the underlying causes?
6. Which is the biggest risk group to suffer from heart attack, stroke and heart failure?
7. Why do you think people gets obese? What are the underlying causes that makes people suffer from obesity?
8. Which is the biggest risk group to suffer from obesity?

Attitudes and perceptions towards cardiovascular diseases and obesity

9. Is there any reason why diseases as heart attack, stroke and heart failure should not be given priority?
10. Do you think these diseases is a problem in the society today? Why or why not?
11. Are there anything positive with being obese? For example, it may be an indicator of good health or is it beautiful?
12. Do you think that other people think it can be positive? Why?
13. Do you ever think of exercise and diet to prevent these diseases?
14. Do you think there is healthy and unhealthy food? If yes, what is healthy food and unhealthy food for the body?

Information and strategies

15. Where do you get information about nutrition, diet, and lifestyle? In schools, hospitals, radio, etc.?
16. What does the information say?
17. Are you aware of any existing strategies to address problems with heart attack, stroke, heart failure and obesity? For example, information fairs, marathons, gym?
18. From whom does these strategies come from? Government, local organizations, health care, society?
19. What do you think prevents people in Babati from changing lifestyles, to live a healthier life?
20. What do you think needs to be done to decrease the burden of these diseases?

Interviews with health personnel

1. Do you feel that it is an increasing number is patients with NCDs?
2. What kind of people suffer from cardiovascular diseases and obesity today? Which is the biggest risk group?
3. Do you have the impression that patients are aware of the associated risks with cardiovascular diseases and obesity?
4. If they are not aware of the risks, why do you think it is like that?
5. Where do you get information about nutrition, diet and lifestyle? In schools, hospitals, radio, etc.?
6. What does the information say?
7. Do you believe that it is given enough or too little information about cardiovascular diseases and obesity?
8. What diseases is prioritized?
9. Do you believe that cardiovascular diseases and obesity provides a double burden on the health care system, along with infectious diseases?
10. What motivates patients to change diets and life style?
11. What do you think prevents people in Babati from changing lifestyles, to live a healthier life?
12. Does the health care have any strategy/strategies to work preventively with this problem? If yes, what kind of strategy/strategies?

13. Are there other strategies that do not come from the health care? If yes, from whom and what kind of strategy/strategies?
14. What problems do the health care face when dealing with the problems of non-communicable diseases? Economic barriers, lack of expertise, etc.?

Interview with environmental and health officer

1. How do you see of non-communicable diseases (NCDs) in Babati today as cardiovascular diseases and obesity for example?
2. Do you have the impression of that people in Babati knows about the risk factors that causes cardiovascular diseases and obesity?
3. What kind of strategy/strategies do the government have today to prevent NCDs?
4. Are there any targeted group of this/these strategy/strategies?
5. What is the expected result of the strategy/strategies?
6. Are you aware of any local organizations, the society or else that works with prevention of these diseases? If yes, how do they work to prevent these diseases?
7. Where do you get information about nutrition, diet and lifestyle? In schools, hospitals, radio, etc.?
8. What does the information say?
9. Health politics in Babati today, what is prioritized? Any diseases prioritized?
10. What problems do the government face when dealing with the problems of non-communicable diseases?
11. According to you, what is the biggest challenge of facing the problems with NCDs today in Babati?