ARCADA

Pastors as Health Promoters

A Study on Theology Students' Knowledge and Perceptions
of Health Promotion in Seven African Countries

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MASTER'S THESIS	
Arcada	
Degree Programme:	Master's degree in global health
Identification number:	corzinet
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Title:	Pastors as Health Promoters A Study on Theology Students' Knowledge and Perceptions of Health Promotion in Seven African Countries
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Abstract:

The purpose of this study was to examine African Lutheran theology students' level of knowledge of pneumonia and diarrheal diseases along with their perceptions of pastors as health promoters and support needed for this task. A quantitative survey was constructed, piloted and then administered to seven theological institutions in different countries across the African continent. A total of 100 responses were received. The data was analyzed using descriptive statistics, chi square test of independence, ANOVA and independent samples T-test to find correlations between variables. The results showed that the overall level of knowledge of pneumonia and diarrheal diseases was low. The average score on this section of the survey was 62.5% with similar individual scores regarding both diseases. The majority, 71%, felt that a pastor could function as a health promoter. The most important ways of doing that were holding health promotion meetings in churches and acting as role models. Lack of information, lack of contacts to health officials and religious values conflicting with health promotion came up as the most significant hinders to health promotion work. The respondents felt they needed more training, materials for teaching and contacts to health officials and NGO's to better promote health. More research is needed on the effects of different interventions to educate pastors on health promotion. The results portray a picture of positive attitudes towards health promotion, but also identify obstacles, both in knowledge and in practice, that need to be addressed.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
ASA	American Statistical Association
Hib	Haemophilus influenzae type b
HIV	Human Immunodeficiency Virus
M	Mean
NGO	Non-Governmental Organization
S. pneumoniae	Streptococcus pneumoniae
SD	Standard Deviation
UNICEF	United Nations Children's Fund
WHO	World Health Organization

1   INTRODUCTION

In global health the topic of health promotion has been central for a long time. Already in 1978, in the declaration of Alma Ata, the World Health Organization (WHO) and its partners stated the need for "*healthcare and developmental workers, governments and the world community to promote health of all people of the world*" (UNICEF, WHO & International Conference on Primary Health Care, 1978). Since then health promotion has been researched, defined and mentioned in many central global health documents and goals. Today health promotion is recognized as not only the job of health care professionals, but involving others as well, especially the so-called opinion leaders of communities (Anshel & Smith, 2014). They can play an important part in obtaining these health promotion goals.

Religious leaders are an example of these opinion leaders. They tend to have highly respected roles in their communities and are looked up to and sought for advice not only on spiritual issues (Duff & Buckingham, 2015). An example of how religious leaders can affect health could be a partnership between the United Nations Children's Fund (UNICEF) and religious leaders in Sierra Leone. After offering local religious leaders training on vaccinations, the area's vaccination coverage rose from six percent to 75% in just two years (UNICEF 2004).

The role of religion and the church is different in Africa than that in Europe and even the United States. Christians in sub-Saharan Africa report highest numbers in the world when asked to evaluate the importance of religion, for example in Ethiopia 98% of Christians say religion is very important to them while the corresponding number in Finland is 12% (PEW, 2018). Church attendance is also high, on average 79% of adults in sub-Saharan Africa report attending church services weekly (PEW, 2018). Religious leaders are figures that people often come in contact with and seek advice from and they are among the most respected people in the communities (Downs et.al., 2017).

This thesis aims to examine how students of theology preparing to be pastors (to be referred to as pastoral students from here on) in seven African countries see their role as

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future health promoters. The focus is on two of the three most common causes of death on the continent: pneumonia and diarrheal diseases (WHO, 2016a). HIV is the second most common cause of death in Africa (WHO, 2016a), but it was omitted as more research exists on it and pneumonia and diarrhea have more similarities in treatments and prevention measures (WHO & UNICEF, 2013). The research questions are as follows.

- What is the level of knowledge of the pastoral students of prevention and protection from pneumonia and diarrheal diseases?
- What are the pastoral students' perspectives of pastors as health promoters?
- What kind of support, if any, do they feel they might need in performing health promotion?
- Which background factors, if any, influence respondents' level of knowledge and perceptions of health promotion?

The data for this thesis was gathered through a written survey sent to eight Lutheran theological universities (to be referred to as seminaries from here on) in eight African countries. Seven of these seminaries sent responses back. The survey was constructed based on current research and data. It was piloted and administered and then the data was analyzed using statistical methods.

2 BACKGROUND

The process of narrowing the subject from a general interest in religious leaders and global health to the above-mentioned research questions is described in figure 1. The ideas are presented in bold and the reasoning for how the subject was narrowed down below. The process of narrowing the subject involved investigating previous research as well as creating new connections and fostering existing ones to different theological seminaries on the African continent. According to the Lutheran World Federation (2018) there are over 20,5 million Lutherans in Africa and their churches have demonstrated a trend of growth in the past years.

Religious Leaders and Global Health
•Research shows need for education of religious leaders

Students preparing to become religious leaders & global health
•The generally higher influence of religion on people's lives in Africa

Students preparing to become religious leaders in Africa
•Need to reduce size of population to investigate. Contacts with Lutheran seminaries. Lack of research among Lutherans.

Students in Lutheran Pastoral Seminaries in Africa
•Need to specify the subject of Global Health.

Students in African Lutheran Pastoral Seminaries and their knowledge, perceptions and needs of prevention and protection from pneumonia and diarrheal diseases

Figure 1. Narrowing the research subject

According to the most recent data from WHO (2016a) the top three causes of death in Africa are lower respiratory infections (pneumonia), HIV/AIDS and diarrheal diseases. Pneumonia and diarrheal diseases were chosen as the topics for this study. HIV/AIDS is

the subject on which most research and public discussion already exists. Pneumonia and diarrheal diseases are also often discussed together and many of their treatments and prevention methods are similar (WHO & UNICEF, 2013). WHO and UNICEF (2013) have compiled *a Global Action Plan to end preventable child deaths from pneumonia and diarrhea by 2025,* which was used in the construction of the survey.

2.1 Health promotion

The WHO (1986) Ottawa Charter for health promotion was one of the first conferences focusing on the importance of health promotion and the means to apply it (WHO, 1986). They defined health promotion as "*the process of enabling people to increase control over, and to improve, their health"* (WHO, 1986). They identified three main actions that constitute health promotion: "advocate, educate and mediate" (WHO,1986). Figure 2 shows these actions along with the meanings they have for health promotion practices.
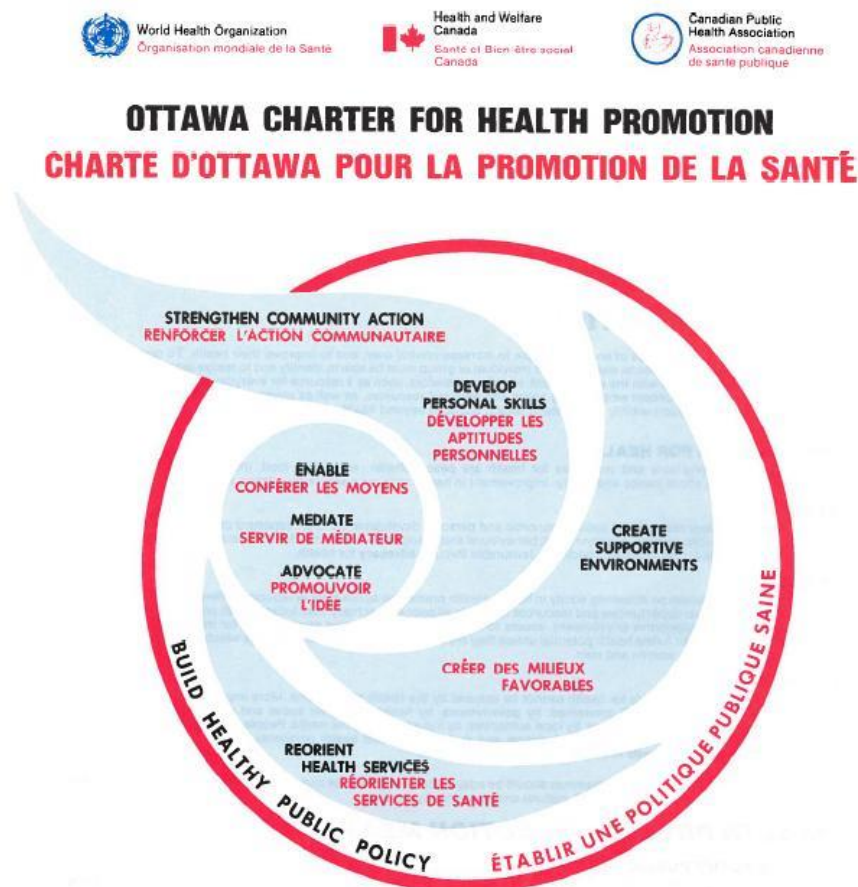

Figure 2. Ottawa charter for health promotion (WHO, 1986)

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Advocating can involve actions relating to politics, environmental factors, cultural beliefs and economics, but also advocation on the individual and personal level with people and their health-related needs (WHO, 1986). Mediating refers to the fact that health authorities can't take on the task of health promotion on their own, but a more comprehensive and multi-disciplinary approach is needed and mediation between the different actors is important (WHO, 1986). The third health promotion action is enabling all people to access healthcare and working towards equality and equity in the services offered (WHO, 1986).

The means to achieve health promotion goals are depicted in Figure 2 as the swirls. These include reorienting health services, creating supportive environments, developing professional skills and strengthening community action (WHO, 1986). As the focus of this study is on non-healthcare workers, the most relevant action regarding religious leaders is strengthening community actions and creating supportive environments. The Ottawa charter focuses this section on the different aspects of health in the broader sense: the balance between work and leisure and the importance of participation in and ownership of one's community (WHO, 1986). Pastors, as community leaders, can influence these as the next section will demonstrate.

2.2 Religious leaders as health promoters

Previous research has been done on religious leaders as health promoters. While most research focuses on cases within churches in the United States, the relevant background for this research was the studies done in low- and middle-income countries. A review of scholarly articles on the subject provided evidence to support the assumption that religious leaders can positively influence global health issues due to their ability to influence attitudes and behaviors and reach remote populations (Downs et. al., 2017).

There were several reasons why religious leaders were seen as influential members of the community when it comes to health issues. They were trusted (Choi, 2015), respected and seen as role models, also regarding health (Downs et.al., 2017). Religious leaders had opportunities to affect local politics and policies (Duff & Buckingham, 2015) and the chance to reduce stigma of illness (Shamsipour et.al., 2016). There were several ways in

which religious leaders could promote health. They could act as role models for the community (Mustafa et.al., 2017), preach and teach about health (Shamsipour et.al., 2016), collaborate with local health officials or NGOs (Choi, 2015) or influence local or national politics and policies (Duff & Buckingham, 2015). Holding health promotion meetings in churches (Wamaitha & Adam, 2016) and individual discussions with congregation members came up as ways to promote health as well (Choi, 2015).

Studies also identified factors that predicted how open religious leaders would be to health promotion work. These were younger age, level of adherence to cultural values (Choi, 2015), a holistic view of health (Walther, Proeschold-Bell, Benjamin-Neelon, Adipo & Kamaara, 2014), and a sense of a moral obligation to address health issues and speak for the vulnerable (Wamaitha & Adam, 2016). Obstacles for addressing health issues were also discussed. These included situations where religious values and health norms conflicted with one another (Downs et.al. 2017) and trusting God to heal preventing one from seeking medical help (Walther et.al., 2014). Other factors stopping health promotion included distrust in health officials, lack of contacts to health officials and lack of information (Duff & Buckingham, 2015; Sidibé Aja, Noble & Dinkel, 2018).

Several studies reported the need for more education of religious leaders in health issues and for providing educational material for them to use (Sidibé et al., 2018; Shamsipour et.al., 2016). Other recommendations included the need for more collaboration, the need for religious scholars to study health related subjects, the need for better organizational support for religious leaders, and the need to better measure and report results of health promotion collaborations between organizations and religious leaders (Duff & Buckingham, 2015).

These findings influenced the decision to work on this subject with students as they are still receiving their education. The seminary could be a natural place to offer education also on health promotion. Another thing that spoke in favor of working with students was the finding that age was in correlation with the likeliness to bring up health issues among religious leaders (Choi, 2015). The younger the leader, the better informed they were and the more likely they were to address health issues with the congregation members (to be referred to as congregants from here on) (Choi, 2015; Shamsipour et. al. 2016). Pastoral

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students are often young, and this would be a good time to provide information for future use in congregational work. Factors preventing religious leaders from promoting health were also used in constructing the survey, when it came to questions regarding types of support needed or obstacles in place of health promotion. The process of constructing the survey is described in detail in chapter 3.1.

2.3 Pneumonia and diarrheal diseases in Africa

It was important to choose health subjects that were relevant to the group of respondents spread across the continent. For this reason, choosing common diseases which are among the top causes of death in Africa seemed like a good approach. As explained before, pneumonia and diarrheal diseases were chosen because of their common factors in prevention methods and some common treatment principles (WHO & UNICEF, 2013). There was also more research already done among religious leaders and HIV/AIDS. Pneumonia and diarrheal diseases affect all population groups and are especially common in children: lower respiratory tract infections, i.e. pneumonia, are the most common cause of death in under five-year-olds (WHO & UNICEF, 2013).

2.3.1 Etiology

Pneumonia is defined as an inflammatory infection of the lungs, that can be caused by bacteria, most commonly *Streptococcus pneumoniae* or *Haemophilus influenzae* type b (Hib) or by viruses, most commonly respiratory syncytial virus, or by fungi (WHO, 2016b). The alveoli in the lungs fill up with fluid and sometimes pus causing the symptoms of breathing difficulties and shortness of breath associated with pneumonia (WHO, 2016b). Other symptoms include cough, fever (although pneumonia can also present without a fever) and wheezing in cases of viral pneumonia (WHO, 2016b). Treatment is antibiotics and, in severe cases, hospitalization (WHO, 2016).

Diarrheal diseases can be classified as acute watery diarrhea (including cholera), acute bloody diarrhea or dysentery and persistent diarrhea, which lasts over 14 days (WHO, 2017a). The symptoms are passing loose liquid stools three or more times per day (WHO,

2017a). It is usually caused by an infection in the intestinal tract, but malnutrition, contaminated water or food and poor hygiene can also be causes (WHO, 2017a). The infection can be caused by bacteria, viruses or parasites, the most typical causes being rotavirus and *Escherichia coli* (WHO, 2017a). Diarrhea can lead to dehydration and loss of electrolytes, which if not fixed, can lead to severe illness and death (WHO, 2017a). The essential treatment is rehydration with oral rehydration salts, but zinc and other dietary supplements may also be needed and hospitalization with intravenous fluids in severe cases (WHO, 2017a). It is important to provide nutrient rich foods to break to cycle of malnutrition escalated form diarrhea (WHO, 2017a). Risk factors for diarrhea include lack of safe drinking water and poor hygiene and sanitation conditions (Boschi-Pinto, Lanata, Mendoza & Habte, 2006). HIV can also be a risk factor in diarrheal diseases (Boschi-Pinto et.al., 2006).

2.3.2 Risk factors and prevention

Risk factors for pneumonia in Africa include indoor smoke pollution and overcrowded households (Mahdi & Klugman 2006). Traditional prevention interventions for pneumonia include the Hib conjugate vaccine and the S. pneumoniae conjugate vaccine (Mahdi & Klugman, 2006). HIV is also tied closely with respiratory infections as it weakens the immune system's ability to fight infection and up to 80% of lower respiratory tract infection caused deaths in Africa occur in children infected with HIV (Mahdi & Klugman, 2006). Therefore, preventing mother-to-child transmission of HIV is another key part of the prevention of childhood pneumonia in Africa, where the HIV epidemic has swiped over the continent in the past decades (Mahdi & Klugman, 2006).

Diarrheal diseases spread most commonly through drinking water contaminated with human or animal feces (WHO, 2017a). Proper sanitation arrangements are critical in preventing the spreading of diarrheal diseases as poor hand hygiene and contaminated, improperly stored or unhygienically prepared food can also be the source of a diarrheal disease (WHO, 2017a). The rotavirus vaccine is also an effective means of prevention (WHO, 2017a).

The WHO & UNICEF (2013) framework to prevent, protect from and treat pneumonia and diarrheal diseases, describes ways to reduce exposure and optimize treatment for these diseases. Figure 3 presents the different aspects of the model. When building the survey, especially the prevent and treat sections were used in formulating the questions. The model focuses on children, but this research has a more general perspective, which is why the child-specific parts were not emphasized in the survey.

PROTECT
Children by establishing good health practices from birth

- Exclusive breastfeeding for 6 months
- Adequate complementary feeding
- Vitamin A supplementation

PREVENT
Children becoming ill from pneumonia and diarrhoea

- Vaccines: pertussis, measles, Hib, PCV and rotavirus
- Handwashing with soap
- Safe drinking-water and sanitation
- Reduce household air pollution
- HIV prevention
- Cotrimoxazole prophylaxis for HIV-infected and exposed children

Reduce pneumonia and diarrhoea morbidity and mortality

TREAT
Children who are ill from pneumonia and diarrhoea with appropriate treatment

- Improved care seeking and referral
- Case management at the health facility and community level
- Supplies: Low-osmolarity ORS, zinc, antibiotics and oxygen
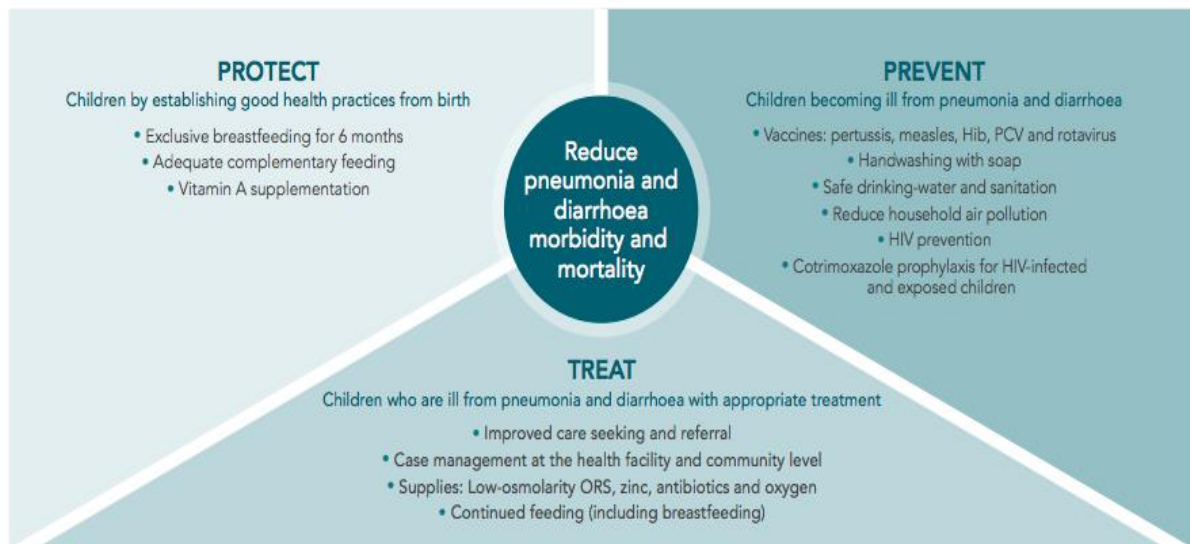- Continued feeding (including breastfeeding)

Figure 3. Protect, prevent and treat framework (WHO & UNICEF 2013)

3   DATA COLLECTION

The tool for collecting the data was a survey, that was constructed based on previous research, piloted and sent out as paper copies or pdf's for seminaries to print. Each seminary had a contact person who received or printed the surveys, handed them out with instructions and collected them. Completed surveys were scanned at the seminaries and sent back to the researcher via email, while the original copies were disposed of locally.

3.1   Constructing the survey

Several theoretical frameworks were applied in the construction of the survey. The book *Research Methods in Health Promotion* by Crosby, Salazar & DiClemente (2015a,b,c) provided a theoretical framework for constructing a survey-type research tool. Other sources were WHO factsheets on pneumonia (WHO, 2016b), diarrheal diseases (WHO, 2017a), HIV/AIDS (WHO, 2018a), ischemic heart disease (WHO, 2017b) and malaria (WHO, 2018b), which are the top 5 causes of death in Africa. These were used for questions about symptoms, treatments and prevention methods. The response options were built so that, for example in symptoms, the list covered all of the WHO listed symptoms for all of the 5 diseases and the respondents' task was to select the ones that apply to the specific conditions of pneumonia or diarrheal diseases. The questions measuring hand washing knowledge were derived from WHO (n.d.) hand hygiene material and a study by Sultana, Alam, Razzaque & Mahmud (2016) measuring hand hygiene knowledge and performance in university students in Bangladesh. In the section measuring the students' perceptions of their roles as future health promoters and support needed, data from the review of recent research on the subject was used. The response options were drawn from the conclusions of previous studies. The final version of the survey can be found in the end of this document, in appendix 2.

One factor to consider was the kind of data one gets from the questions based on how the question is formulated. Nominal data refers to individual values that cannot be put in a certain order and is common in health promotion research (Crosby et al. 2015b). In this survey, an example of nominal data were the *true or false* statements or questions where the respondents were to check off all the symptoms of pneumonia or diarrhea. Ordinal

data is often used to investigate a person's experience and options are arranged in a certain order of preference (Crosby et al. 2015b). In this survey ordinal data was gathered when investigating the respondents' perceptions of themselves as health promoters. An example question would be question 25 *A pastor can affect the health of the congregation members:* ☐ *strongly disagree* ☐ *somewhat disagree* ☐ *somewhat agree* ☐ *strongly agree.* Interval-data is used in health promotion research as well and it refers to continuous data which is organized into intervals (Crosby et.al., 2015b). In this survey the background question of age is an example of interval data.

Health promotion research is often done in the form of gathering self-reported data from participants (Crosby et.al. 2015b), which is also the method used in this survey. While there are many advantages to using self-reported variables, a few factors need to be taken into consideration. Crosby et.al. (2015b) warn that wording and format can affect the results along with the different forms of bias. These are the social desirability bias, i.e. wanting to appear in good light and the inaccurate and selective recall biases, which refer to participants not remembering their own behaviors accurately (Crosby et al. 2015b). In this survey there was a need to pay special attention to the social desirability bias and the wording and formatting in relation to it. The survey did not go into the respondents' personal behaviors, so the recall biases were less prominent. Crosby et.at. (2015b) emphasize that the formulation of the questions should be thoroughly thought out, so that each question measures only one thing. Behavioral anchors can be used to achieve this (Crosby et al. 2015b). In this survey question 28 on support systems used behavioral anchors asking the students to evaluate how much more likely they would be to act as health promoters if they had a certain form of support. The following chapters describe the survey questions explaining their background and theory behind them.

3.1.1 Socio-demographic data

This section gathered relevant background information about the respondents. Studies have shown that age and level of education are correlated to how likely religious leaders are to participate in health promotion (Choi, 2015) and education level is also linked to knowledge and practice of hand hygiene (Sultana et al., 2016). The first question asked responders to check off their age group and questions 4, 6, 7 and 8 dealt with educational

background, with the last two asking specifically about health education and education on health promotion. Questions 2 and 5 asked for the respondents' geographical background, both country of birth and in which country the respondent is studying. Comparing answers based on geographical background is a common thing in health promotion research (Crosby et al. 2015a). Sultana et al. (2016) also found that unmarried students had better hand hygiene practices than married ones, so the civil status of the respondents was added to the survey in question 3.

3.1.2 Knowledge of pneumonia

This section started off with three true or false -questions designed to test basic knowledge of pneumonia. It was important to find out how much the respondent knew and understood about the concept. Question 9 *Pneumonia is an infection of the lungs* (right answer: true) was simply checking to see if the respondent knew what pneumonia means. The next two questions dealt with basic concepts related to prevention of pneumonia. *10. Vaccines can't prevent from pneumonia* (right answer: false) and *11. Cooking indoors over an open fire can lead to pneumonia* (right answer: true) were derived from WHO prevention guidelines, which place high emphasis on reducing indoor air pollution and vaccinating (WHO & UNICEF, 2013).

The next question (12) asked to select all the signs and symptoms of pneumonia. The response options were the symptoms of all the top 5 causes of death in Africa: pneumonia (WHO, 2016b), HIV/AIDS (WHO, 2018a), diarrheal diseases (WHO, 2017a), malaria (WHO, 2018b) and ischemic heart disease (WHO 2017b). The correct responses for this question were: cough, difficulty breathing, sometimes presents with fever, fast breathing, wheezing and difficulty feeding (infants) (WHO, 2016b). This question was followed by the forms of prevention. *13. How can pneumonia be prevented? (select all that apply)* had response options also built from the ways to prevent each of the top 5 causes of death in Africa and the respondent's task here was to select the ones that apply to pneumonia. The correct responses were: vaccines, nutrient rich foods, breast feeding with infants up to 6 months old, reducing indoor air pollution (minimize smoke), hand washing with soap, education and raising awareness and stop smoking (WHO, 2016b).

3.1.3 Treatment of pneumonia

This section started with question 14, which asked the respondent to select all treatments of pneumonia. The options were again the treatments of the top 5 causes of death in Africa. The correct option was antibiotics, but hospital care is also a treatment option for severe cases and counted as the other correct answer (WHO, 2016b). Questions 15 and 16 dealt with seeking care for the disease. When planning the survey, some of the staff at participating seminaries brought up that it would be important for the students to know when to direct their congregants to seek medical care and where to seek it. Question *15. Where should a person seek professional medical care if they suspect they have pneumonia? (select one)* options included *always at the hospital, first at health care center* (correct option) and *no medical care needed* (WHO, 2016b). This question dealt with seeking care in general. It was also important to know when emergency hospital care would be needed. *16.When should a person go to the hospital if they have pneumonia? (select all that apply)* response options were: *always, if they have trouble breathing* (correct) and *if symptoms get worse* (correct) (WHO, 2016b).

3.1.4 Knowledge of diarrheal diseases

This section was quite similar to the one about pneumonia. It started with a *true or false* -question (17) on vaccines being able to protect from diarrheal diseases, with true being the correct answer. Next, question 18 asked to select the symptoms of diarrhea and had the same options as question 12. The correct answer was loose liquid stools. The option: *frequent passing of solid stools* is not a symptom of any of the top 5 causes of death in Africa, but it was added to the list, because it was specifically mentioned in literature as not being a symptom if diarrheal diseases (WHO, 2017a). The next question (19) dealt with ways to prevent diarrheal diseases and had the same options as question 13: the prevention methods of the top 5 causes of death in Africa. The correct options were: vaccines, breast feeding with infants up to 6 months old, hand washing with soap, access to safe drinking water, improved sanitation and education and raising awareness (WHO 2017a).

3.1.5 Treatment of diarrheal diseases

This section also began in the same way as the section on pneumonia. The respondents were asked to check all the treatments for diarrhea. The options were the same as in question 14. The correct responses were oral rehydration salts and zinc supplements (WHO, 2017a). Hospital care and intravenous fluids in hospital were also possible treatments for severe cases and thus correct (WHO 2017a.). The following two questions 21 and 22 about seeking medical care also mirrored the corresponding questions in the section in pneumonia (questions 15 and 16). The answer to the first one was the same as pneumonia: a person should first seek care at their health care center (WHO, 2017a). The second question asked when the person should go to the hospital. The responses were modified to fit diarrheal diseases and the correct options were*: if there's blood in their stool* and *if the symptoms get worse* (WHO, 2017a).

Questions 23 and 24 dealt with hand washing. These questions were important, because proper hand washing is one if the key ways to prevent diarrheal diseases and something that religious leaders can support in their activities with the congregation (WHO & UNICEF, 2013). Question 23: *Number the steps of proper hand washing in the correct order* was based on WHO (n.d.) instructions for handwashing and the pictures (see figure 4) were from a simplified version of the instructions by SafetySign (2018).

Figure 4. Hand washing (SafetySigns, 2018)

The correct answer was A, D, B, F, E, C. To find out more about how to study hand hygiene knowledge in university students a previous study done in Bangladesh by Sultana et al. (2016) was helpful. Question 24 had options for when handwashing should be done. These options were adapted from one of the questions Sultana et al. (2016) used in their survey. While there were no wrong answers here it was especially important to check off at least the response options when hand washing should always be done: *before meals, after coming from toilet, before preparing meals* and *after touching sick people* (Sultana et.al.,2016).

3.1.6 Perceptions of health promotion

This section moved on to deal with the second research question: the respondents' perceptions of themselves as future health promoters. The first question of the section: *25. A pastor can affect the health of the congregation members. (select one)* had the ordinal options of *strongly disagree, somewhat disagree, somewhat agree* and *strongly agree*. This question was designed to see if the students saw health promotion as part of their future work. The response options were such that the responders had to take a stand one way or the other, a neutral middle option was left out. The following question got more in-depth information on the ways in which health promotion could happen. *25.a. If somewhat or strongly agree, which are the most important ways for a pastor to affect congregants' health? (select max 3)* had options that came from the review on previous studies on religious leaders' ways to promote health (see chapter 2.2). The ways of health promotion documented in the previous research were listed as response options. The respondents also had a chance to specify other possible ways on an open *other, what* -option.

The next question: *26. Which factors would stop you from trying to affect congregants' health as a pastor? (select up to 3)* addressed possible hinders to promoting health. This was a question for everyone to answer regardless of their thoughts on health promotion. That was why the question was formulated as a hypothetical situation, but there was also the option of selecting that none of the options would stop the person from promoting health. The other options were from the review of previous studies: the factors that these studies had raised as hinders to health promotion were listed (see chapter 2.2). The respondents were given a chance to specify other objections both spiritual and practical.

3.1.7 Perceptions of support needed

This final section dealt with the third research question: what kind of support the respondents felt they need in their roles as health promoters. The first question, number 27, again, was a very general inquiry about need for support. It was followed with more in-depth questions. If the respondent felt they need support, they were asked to specify what kind of support they might need. The options came from the background data in the same way that the options for the two previous questions (see chapter 2.2). The support of the organization and leaders (managers / bishops etc.) can be very important, which is why this option was added to the list of sources of support. An Australian study showed that employees were more likely to participate in health promotion if they felt they had the support of both the higher levels of the organization and of their own managers and supervisors (Kilpatrick et al., 2017). For those who answered no, they were also given a chance to specify why they felt they did not need support.

The final question posed a hypothetical setting before the respondents and they were to evaluate how helpful different support models would be for them. *28. Would you be more likely to actively support your congregants' health if you had: (tick one box in each row)* also had ordinal response options: *it wouldn't affect my work at all, it would be of very little use, it would be of some use* and *it would be something I would use eagerly.* The different responses were rather similar to the ones in question 27a., but in this question everyone's opinion was heard, where as in question 27a. only the ones who had responded yes to question 27 elaborated on their opinions. The scale also provided more in-depth knowledge on how the respondents value different forms of support.

3.2 Piloting

To pilot the questionnaire, it was necessary to find people of similar background as the future respondents, but who would not take part in the actual survey. One area, that was especially important to consider, was the level of literacy and health literacy of the future respondents and pilot with people of similar background (Crosby et a. 2015a). With this in mind, the criteria for selecting people to pilot the survey with was that they were not

health care professionals and that they were of African background. The seminary students, as the future respondents of the survey, were not healthcare workers and it was important that the language of the survey was understandable for non-healthcare professionals. African origins would help ensure that the language used in the survey was universal. The survey was also piloted with one professor of theology in the United States to get feedback on the formulation of the questions relating to pastoral work.

The pilot was sent out to 8 people and 4 responses were received. The schedule was tight. The respondents had only one week to reply, and it was around Christmas, so that may have contributed to the low response rate. The answers were needed quickly because a visiting professor from Africa was in the United States then and was soon leaving for the seminaries. She had promised to take the surveys with her but could not print them out in Africa due to shortages in printer ink.

The respondents for the piloting were quite widely spread. One was a theology professor in the United States, the other three were non-healthcare university level students from Kenya, Madagascar and Sierra Leone. The questions that were modified after the piloting are listed in table 1.

Table 1. Revised survey questions

No.	Old question	Revised question
10.	Vaccines can't protect from pneumonia.	Vaccines **can** protect from pneumonia.
11	Cooking indoors over an open fire can't lead to pneumonia.	Cooking indoors over an open fire **can** lead to pneumonia.
12. 18.	frequent passing of formed stools	frequent passing of **solid** stools
15.	Where should a person seek professional medical care if they suspect they have pneumonia?	Where should a person **first** seek **professional medical care** if they suspect they have pneumonia?
16.	When should a person go to the hospital if they have pneumonia?	When should a person go to the **hospital** if they have pneumonia?
17.	Vaccines can't protect from diarrhea.	Vaccines **can** protect from diarrhea.
21.	Where should a person seek professional medical care if they suspect they have diarrhea?	Where should a person **first** seek **professional medical care** if they suspect they have diarrhea?
22.	When should a person go to the hospital if they have diarrhea?	When should a person go to the **hospital** if they have diarrhea?

Based on the feedback received from the piloting, the true – false -questions that were in a negative form were confusing for the respondents. The original intent had been to keep some statements that were false in this section, but after the pilot they were changed to the clearer form as shown in table 1. In the list of possible symptoms for pneumonia and diarrhea the option *frequent passing of formed stools* proved difficult to understand for someone out of the healthcare setting. The wording was therefore changed to *solid stools.* The questions regarding seeking treatment for pneumonia and diarrheal diseases were a bit unclear, so the important words that distinguished the questions from one another: *professional medical care* and *hospital* were bolded. The word *first* was also added to the question about seeking professional medical care to emphasize the difference between the two questions: the first asked about where to seek initial treatment and the second asked about hospitalization.

The handwashing question was seen as difficult and most respondents to the pilot commented on this. The respondents were granted a second correct option: closing the tap before drying hands to accommodate for possible cultural differences. Thus the option A, D, B, F, C, E was also considered correct when grading question 23 in the knowledge section of the survey.

Piloting is not only about finding the right wording for questions (Crosby et.al, 2015a). It is important to ask about the survey burden, which refers to how difficult and laborious the survey is to complete (Crosby et al. 2015a). In the pilot the respondents were asked to describe how long it took them to fill out the survey and how easy or difficult it was for them. The respondents reported the survey being easy to respond to and taking between 10 minutes to "*less than an hour*".

After the piloting was finished, the layout of the survey had to be finished to make it look professional and easy to comprehend. The layout of the survey could affect the level of commitment of the responders: the motivation to complete an unclear, messy survey would be less than that of a neat orderly one (Crosby et.al., 2015a). As completion of the survey was optional it was important to try to make the survey as easy and attractive to answer as possible (Crosby et al. 2015a). This included making sure the questions were not cut off to several pages and that each question had instructions on how to answer it.

Another way to add motivation to respond is grouping the questions according to subject (Crosby et al. 2015a). Headings were added in the survey to indicate to the respondents what subject the survey was focusing on at each point. There were seven headings all together.

3.3 Administration

The surveys along with the consent form were created into PDF documents and emailed to participating seminaries across Africa in January of 2019. Some were also printed and sent with a visiting professor. The contact people in each seminary printed out the forms and distributed them to the students. Once they were filled out, the contact people scanned the surveys and emailed them back to the researcher. The responses came within the course of spring 2019. The contact people were then instructed to shred original surveys.

The seminaries varied in size and form. All of them were affiliated with a Lutheran church. Some were linked to larger universities, others were smaller, more independent educational institutions. Most offered bachelor's and master's degree programs in theology, but some also had certificates and other types of courses. During the planning stage discussions were ongoing with some seminaries in Madagascar, but unfortunately the contact was lost, and they were not included in the survey. Also, the surveys were sent but never handed out in Congo and this came up too late for them to be given extra time to gather responses.

The participating seminaries varied in size. Three of them, Togo, Guinea and Republic of Congo, were mostly French-speaking. Fortunately, the University of Togo had a professional translator, who agreed to translate the survey into French for these students. Table 2 contains a summary of the number of students of theology in each seminary, the number of surveys that were handed out and the responses received.

Table 2. Administration of surveys

Country	Number of students in seminar	Number of surveys handed out	Number of surveys filled out and returned
Ethiopia	23	23	14
Ghana	11	11	11
Kenya	18	18	18
Sierra Leone	25	25	13
Republic of Congo	-	-	-
South Africa	19	18	9
Togo	25	25	7
Uganda	30	30	28
TOTAL	**151**	**150**	**100**

Having the right sample size is important for the reliability and validity of the research (Crosby et.al. 2015a). For this population of 151 students the ideal sample size with 95% confidence level and 5% margin of error was 109 responses (Qualitrix, 2019). For a margin of error of 6% with 95% confidence level the sample size would be 97, likewise with 90% confidence level and 5% margin of error (Qualitrix, 2019).

4 METHODOLOGY – A QUANTITATIVE STUDY

The study was conducted as a quantitative survey with the following research questions.

- What is level of knowledge of the pastoral students of prevention and protection from pneumonia and diarrheal diseases?
- What are the pastoral students' perspectives of pastors as health promoters?
- What kind of support, if any, do they feel they might need in performing health promotion?
- Which background factors, if any, influence their level of knowledge and perceptions on health promotion?

4.1 Variables

The independent variables are the variables the researcher uses to predict the dependent variable (Cunningham, Weathington, & Pittenger, 2013). In this study there were several independent variables: age, country of birth, civil status, level of education, country of university and previous education on health issues and health promotion. The dependent variable is the thing being tested (Cunningham et.al., 2013). The dependent variables in this study were the respondents' level of knowledge of pneumonia and their perspectives of their role as future health promoters. When examining the latter dependent variable, the respondents' knowledge on pneumonia and diarrheal diseases was also an independent variable. One of the questions for analysis was if the level of knowledge affected the respondents' perceptions of their roles as health promoters. Figure 5 shows the independent and dependent variables of the two research questions. The third research question, which examined the respondent's perspectives of support needed was included in the dependent variable 2, perspectives of health promotion.
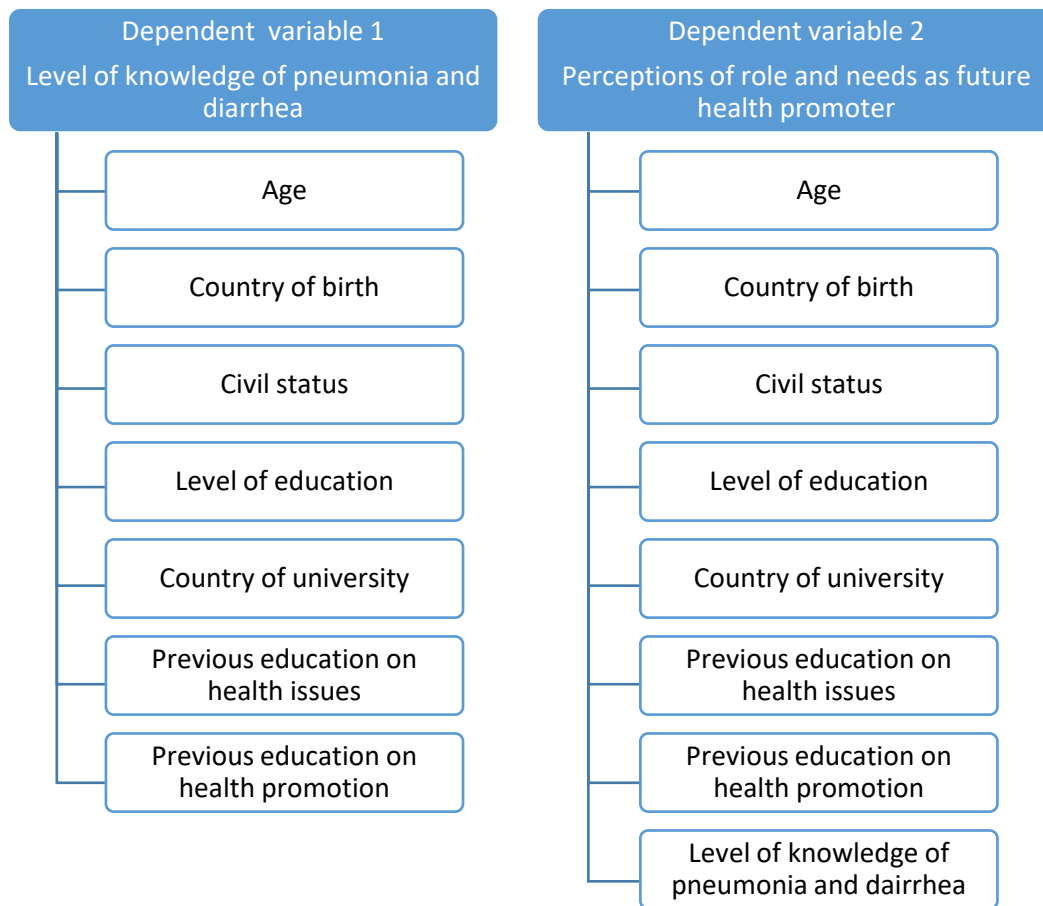
Dependent variable 1 — Level of knowledge of pneumonia and diarrhea	Dependent variable 2 — Perceptions of role and needs as future health promoter
Age	Age
Country of birth	Country of birth
Civil status	Civil status
Level of education	Level of education
Country of university	Country of university
Previous education on health issues	Previous education on health issues
Previous education on health promotion	Previous education on health promotion
	Level of knowledge of pneumonia and dairrhea

Figure 5. Independent and dependent variables

4.2 Methods of analysis

The data was analyzed using SPSS v25 for windows. The data was analyzed in two different phases according to the research questions. The first phase was grading the section of the survey regarding level of knowledge on pneumonia and diarrheal diseases along with knowledge of the prevention and treatment of these two. The responses were graded by giving one point for each correct answer and then converted into percentages of overall knowledge and knowledge of the different subtopics of each disease: knowledge of the disease and treatment, knowledge of prevention and knowledge of hand hygiene. This was calculated using excel. The data was analyzed using descriptive statistics such as frequencies, means and medians.

In the second phase the background data along with the percentages representing the levels of knowledge were entered into SPSS and the answers describing perceptions of health promotion and support needed were added. Descriptive statistics, such as frequencies, means, medians and percentages were used to demonstrate the variety of data gathered and relationships between them. The research questions could mostly be answered using descriptive statistics only. However, to examine some possible connections between variables different statistical analysis was conducted to find possible connections between variables and calculate the p-values when $\alpha=0.05$. Different methods of analysis were used for nominal and ordinal data.

The scores of the level of knowledge were analyzed with the analysis of variance (ANOVA) to find statistically significant differences between the different categories of background information and level of knowledge of pneumonia and diarrheal diseases (see figure 5, dependent variable 1). The ANOVA is only valid for data that is normally distributed (Barton & Peat, 2014). The level of knowledge was normally distributed, which was proved by the Shapiro-Wilk test, $p=0.230$. The distribution is normal when $p>0.05$ (Batron & Peat, 2014). However, the other assumption of ANOVA is that there must be homogeneity of variances (Barton & Peat, 2014). This criterion was not met in the Levene's test, so the Welch ANOVA was used for analysis.

To test for connections between the questions measuring the respondents' perspectives on health promotion and their background information (see figure 5, dependent variable 2) the chi-square test of independence was used. The chi square test is used to test for statistically significant connections between two categorical variables (Cunningham et.al., 2013).

The independent samples T-test was used to analyze possible connections between the level of knowledge and selecting certain responses for the questions regarding perspectives of health promotion. This test can be used when comparing a continuous scale variable with a categorical variable of two independent categories (Cunningham et.al., 2013).

4.3 Ethical considerations

Cunningham et.al. (2013) point out that research ethics should be carefully considered especially when the subject of the research is other people. Some basic ethical principles to consider are informed consent and confidentiality (Cunningham et.al., 2013). The research should also be collected and analyzed in a competent, accurate and valid way: the participants have a right to know what kind of study they are participating in and that it will be done according to best scientific practice (Cunningham et.al., 2013). Informed consent should include information on the purpose of the study, its voluntary nature and the privacy of the participants. (Cunningham et.al., 2013.) The cover letter and consent form for the survey can be found in appendix A. It described the purpose of the study and how the data gathered would be treated and disposed of after the study is complete. It also had the contact details of the researcher, so participants could ask further questions. The voluntary nature of participation was also stated on the form.

In addition to responsibility to the respondents and guaranteeing their privacy and voluntary participation, the researcher is also responsible to the research community, possible colleagues and future readers of the research or researchers (ASA, 2018). Accountability and integrity are core ethical principles in research (ASA, 2018). This includes valid gathering and interpretation of results without editing or leaving out things according to personal preferences (ASA, 2018). In this study all responses were accepted, even ones with only partially completed surveys. The data analysis was done without assumptions of the possible results and the results section was also checked by a professional statistician to make sure there were no incompetence-based errors.

Another ethical consideration was towards the respondents and the partnering universities. Not causing any harm for the participants is of course an important starting point for ethical research (Cunningham et.al., 2013) but there can be other considerations as well. As the respondents answer the survey and their thoughts on health promotion are triggered it would be fair to then provide them with some information so they could go on to check their knowledge on the diseases mentioned and perhaps promote health in their future work. The respondents did not receive the correct answers for the knowledge-section of the survey. However, an agreement was made with the seminaries that an info-sheet on

pneumonia and diarrheal diseases would be made by the researcher and distributed by the contact people at the seminaries so that the respondents and other students and staff might also receive something from participation in the research.

5 RESULTS

This section describes the results of the survey according to the research questions. The respondent's level of knowledge of pneumonia and diarrheal diseases will be addressed as well as their perspectives of health promotion and views of support needed. The data analysis to find possible connections between the variables will also be described.

Some respondents left a few questions or sections of the survey unanswered. This is why the N-number varies from question to question. Although 100 responses were collected, the number of responses to each individual question can be less. One respondent only filled out the first two questions on the knowledge section but then went on to fill out the perceptions -section so for that respondent an overall knowledge score was not calculated.

5.1 Background information

A total of 100 responses from seminaries in seven countries were gathered. The respondents came from 13 different countries. Figure 6 shows how the respondents' home countries were spread across the continent. The seven countries of the seminaries from which responses were received are written in bold.
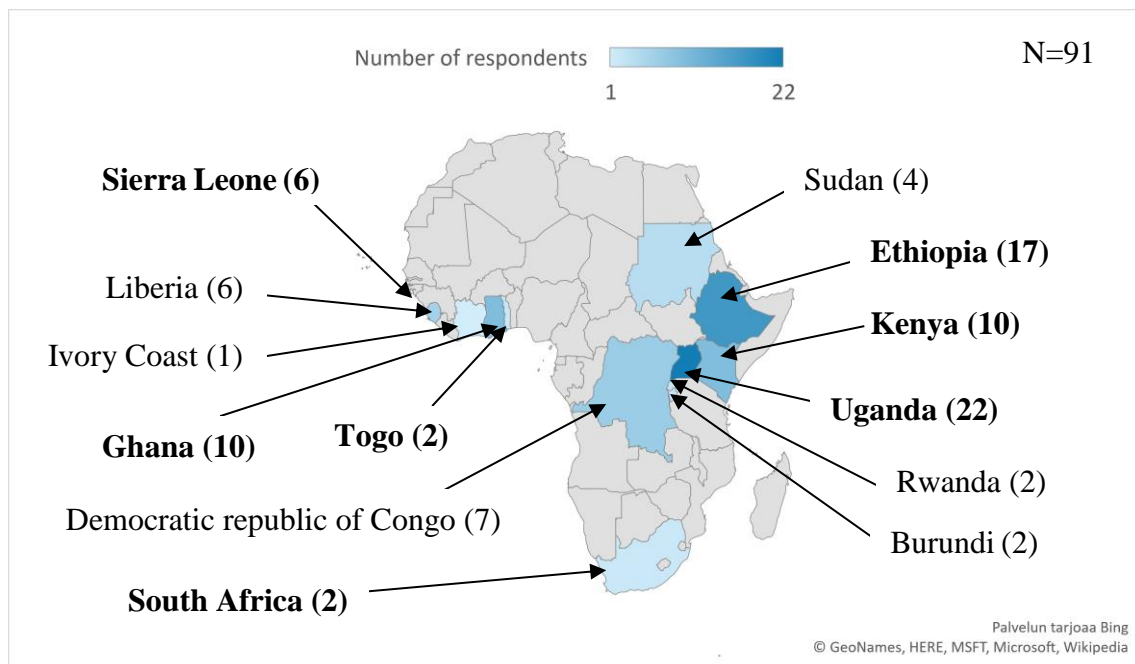

Figure 6. Countries of birth of respondents

The biggest age group among the respondents was the ones between 20 and 29 years of age. They accounted for 31% of the respondents. A fourth (25%) were 30-39 years old and the 40-49 years and 50 and over year-old groups each represented 20% of the respondents. Only 4% were under the age of 20. Regarding civil status 59% were married, 39% single and 2% widowed. The highest attainted degree for the majority (64%) of the respondents was from high school, 16% had a bachelor's and 7% had a master's degree. A few (6%) reported primary school as their highest attained degree. The time the respondents has spent studying in the seminary varied from less than one to seven years. Most (64%) had studied from one to three years. Figure 7 shows the variation of the number of years spent studying in the seminary.
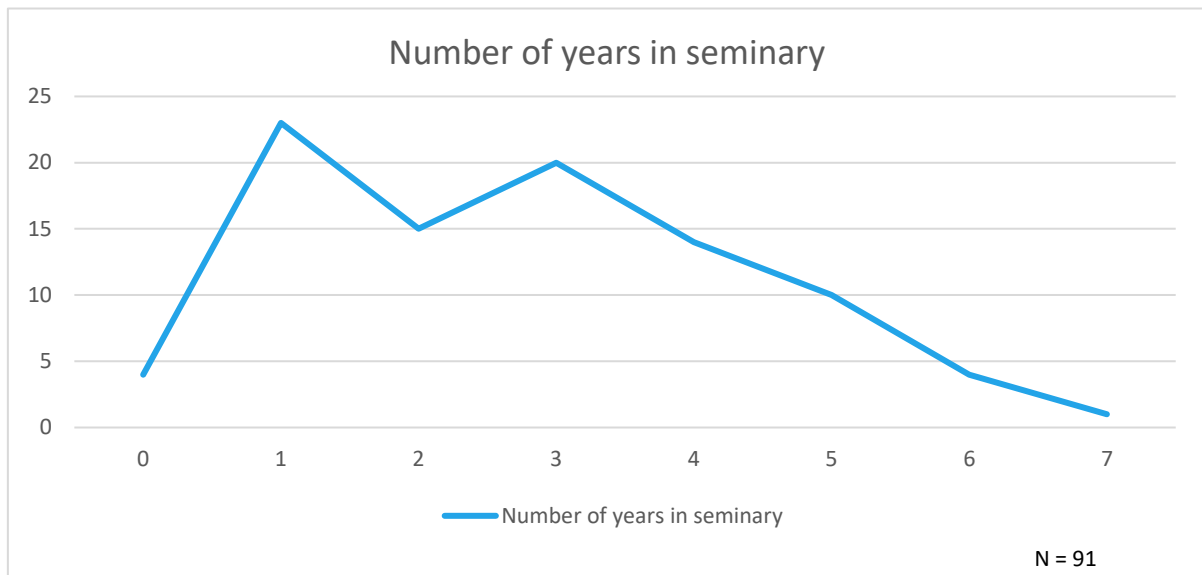
Figure 7. Number of years respondents had studied in the seminary

Most respondents (71%) had received previous education on health issues. The seminary had provided health education for 38% and 33% had received education elsewhere, such as in high school, church or community health events. The rest (29%) reported not having received previous education on health issues. Regarding education on health promotion 35% reported getting it in the seminary and 24% elsewhere. A significant group (40%) had not received education on health promotion.

5.2 Level of knowledge of pneumonia and diarrheal diseases

The overall average score for the section measuring the respondent's level of knowledge of pneumonia and diarrheal diseases was 62.5%. Scores varied from a low of 23% to a high of 100%. The median score was 62.7%. Figure 8 shows the frequencies of the scores. One respondent did not fill in the knowledge section, so N=99. When it came to the individual questions, number nine: *Pneumonia is an infection of the lungs: true or false* had the most correct answers: 94% got it right. The most difficult question was number 16: *When should a person go to the* **hospital** *if they have pneumonia? (select all that apply)*

☐ *always*

☐ *if they have severe problems with breathing*

☐ *if the symptoms get worse*

Only 43% selected the two correct answers (the last two). Other difficult questions, which were answered correctly by less than 50%, included question 22 *When should a person go to the* **hospital** *if they have diarrhea* (48%) and question 23 *Arrange the steps of proper hand washing in the right order* (45%). However, question 24 *When should hands be washed* was well known, 88% chose the correct options.
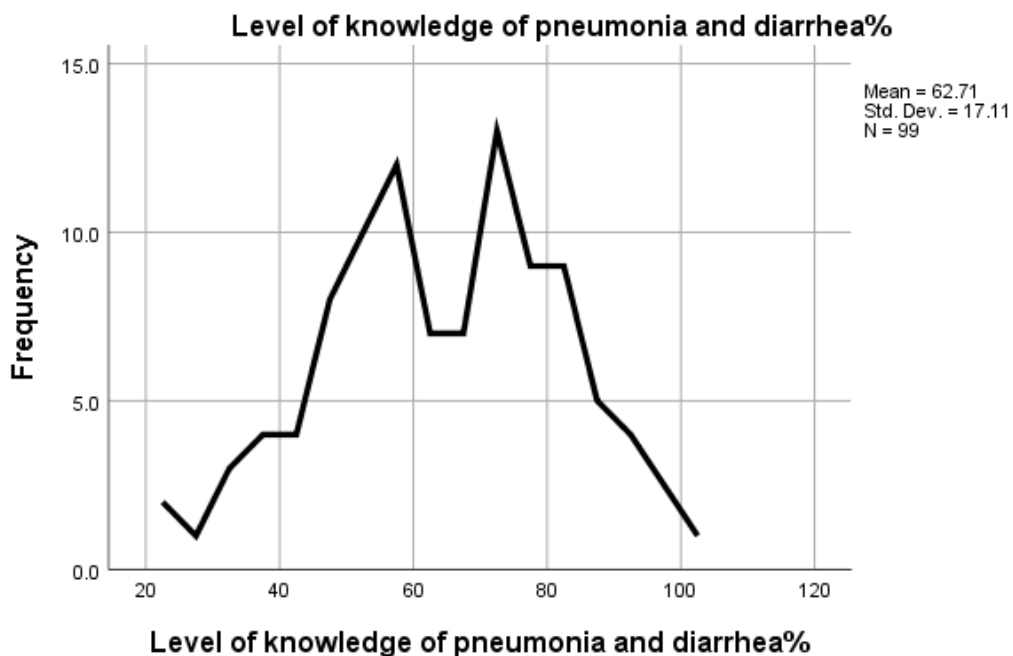

Figure 8. Scores on level of knowledge of pneumonia and diarrhea %

When looking at the diseases separately the overall average knowledge of pneumonia (57%) was slightly lower than the overall average knowledge of diarrheal diseases (60%). Interestingly, when divided up further into knowledge and treatment of pneumonia or diarrheal diseases and prevention of the two the scores were very similar, except for prevention of diarrheal diseases, which had an average score of 63%, while knowledge and treatment of pneumonia had 57%, prevention of pneumonia had 57% and knowledge and treatment of diarrheal diseases had 58%. The average score for hand hygiene was high, 78% even though the hand washing question was one with the least correct answers. This is because that question was only worth one point and the second hand hygiene question, which was one of the most well-known ones was worth four points.

When comparing the different age groups there was a statistically significant difference as determined by the ANOVA Welch's $F_{(4, 19.8)} = 6.101$, $p = 0.02$. The post hoc Games-Howell test indicated that the mean score for under 20-year old respondents (M=41, SD=10.13) was significantly lower than the scores for the age groups of 30-39 years of age (M=68.5, SD=11.87) with p=0.028 and 40-49 years of age (M=68.4, SD=16.46) with p=0.020. There was not a significant difference between any of the other age groups. None of the other background variables: country of seminary, country of birth, civil status, highest attained degree, number of years in seminary, previous education on health issues or health promotion provided statistically significant differences between groups.

5.3 Perspectives on health promotion

The majority of the respondents felt that a pastor could influence the health of his congregants. A total of 71% either strongly (46%) or somewhat (25%) agreed with the statement. 13% stated they strongly disagreed and 6% somewhat disagreed. However, all six of the respondents who said they somewhat disagreed with the statement and 11 of the 13 respondents who stated they strongly disagreed with the statement still continued to answer the question:

> **If somewhat or strongly agree,**
> *Which are the most important ways for a pastor to affect congregants' health? (select max 3)*

There is a chance that the question what misread, or the alternatives were misunderstood or perceived to be in a different order. Also, among the responses there were several where the respondent had first checked the strongly disagree box and then crossed it out and changed the answer to strongly agree. Perhaps the formatting of the question should have been better to avoid confusion. Nevertheless, the majority of the respondents did see health promotion as something that a pastor can do. The respondents then selected the ways in which a pastor could best support their congregants' health. The number of respondents who selected each response is shown in figure 9.

The most popular options were holding health promotion meetings in churches (67%) and acting as a role model (61%). The least selected response was influencing local or national politics, which was selected by 21% of respondents. The options of preaching and teaching (51%), collaborating with health care officials or NGO's (46%) and holding individual discussions with congregants (44%) all received similar numbers of responses. There were a few who gave additional suggestions, most of which fell under preaching and teaching, holding meetings or collaborating with health care officials. One respondent suggested "*touching people while praying*".
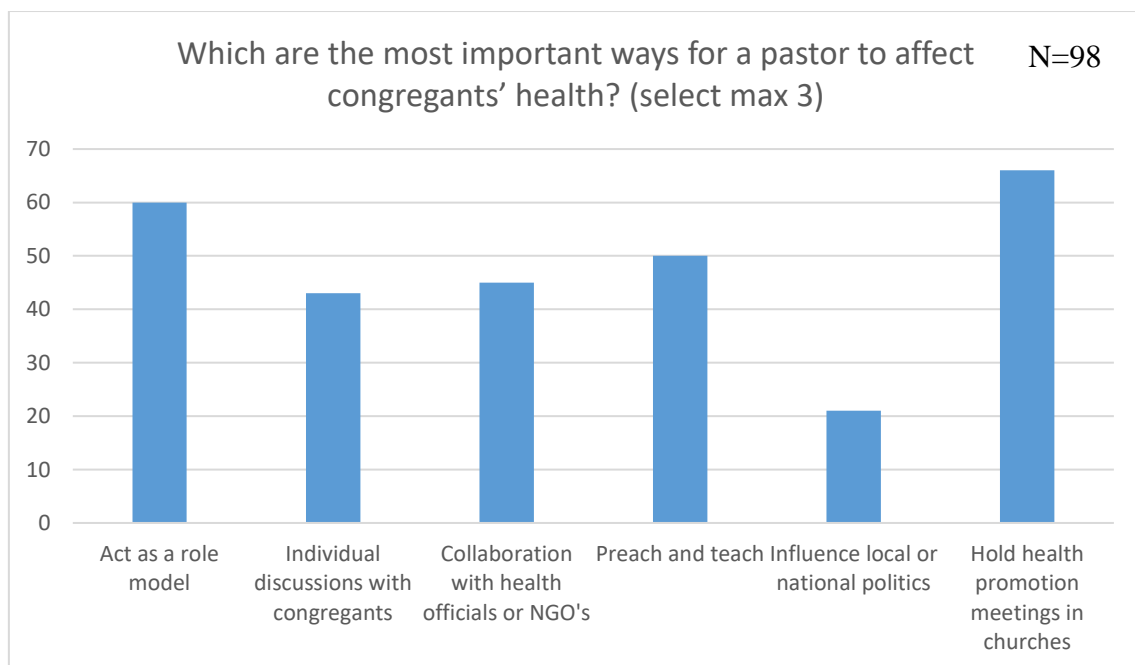

Figure 9. Ways to support congregants' health

The second question measuring respondents' perspectives on health promotion, number 26, asked: *Which factors would stop you from trying to affect congregants' health as a pastor? (select max 3).* The most commonly selected response was lack of information, which was selected by 50% of the respondents. Religious values being in conflict with health promotion was selected by 43% of the respondents and lack of contact to health officials by 42%. A third (33%) identified distrust in health officials as a factor that would stop health promotion and 28% selected the option that people should trust God to heal instead of seeking medical care. Only 9% selected the option that none of the mentioned factors would stop them from promoting health. Figure 10 shows the distribution of responses. Each respondent was instructed to select max three options but if more were selected, these were counted as well.

Several respondents also wrote responses in the "*other, what*" category. The spiritual objections included answers like "*discouraging blood transfusions*" and "*demonic factors*". Other objections included answers like "*lack of material*", "*poverty*", "*bad laws*", "*lack of time and finances*", "*bring health facilities nearer, mobile clinics, ambulances*", "*uneducated people*" and "*lack of experience*".
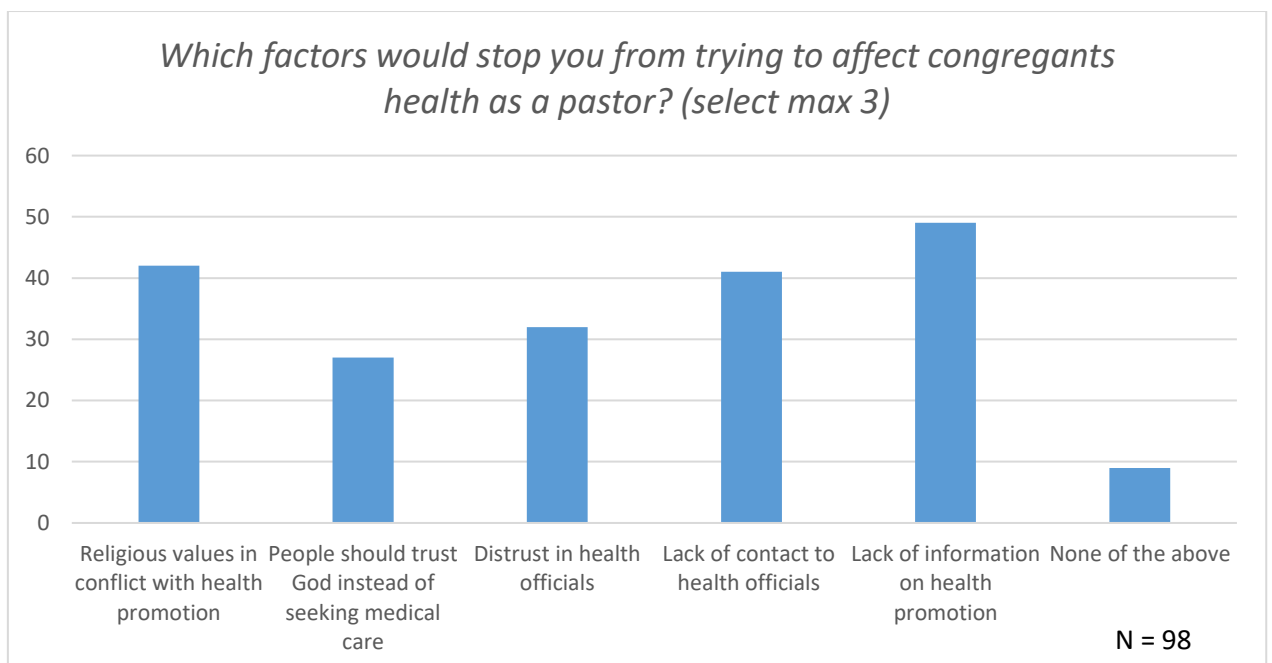

Figure 10. Factors stopping respondents from practicing health promotion

The chi-square test of independence was used to find correlations between background data and perceptions on health promotion and some statistically significant connections were found.

In the case of "preach and teach" there the chi square test showed that there was a statistically significant connection ($X^2(2)=14.974$, $p=0.001$) between the highest attained degree and selecting "preach and teach" as a way to promote health. The respondents with a primary or high school degree were less likely to select this option, while respondents with a bachelor's degree or higher selected this option more often than the expected values suggested. Another statistically significant ($X^2(2)=11.190$, $p=0.004$) connection was found between the number of years spent in the seminary and the likelihood to select the option "act as a role model". The respondents who had studied in the seminary for two years or less were more likely to select this option than the respondents who had studied for five years or over. The respondents who had previous education on health issues were also statistically significantly ($X^2(1)=4.793$, $p=0.029$) more likely to select "hold health promotion meetings in churches" as a method of health promotion than the ones who didn't.

The second question referred to factors that would stop the respondents from promoting health. In this section the chi square test found statistically significant connection between having received previous education on health issues and selecting "lack of contact to health officials" ($X^2(1)=6.739$, $p=0.009$) or "lack of information" ($X^2(1)=6.589$, $p=0.010$). In both cases the respondents who had received previous education on health issues were more likely to select the options "lack of contacts" or "lack of information" than the ones who hadn't received previous health education.

Another statistically significant correlation was found between the highest attained degree and selecting the options "people should trust God to heal instead of seeking medical care" ($X^2(1)=4.021$, $p=0.045$) and "distrust in health officials" ($X^2(1)=8.275$, $p=0.004$). The respondents with a bachelor's degree or higher were more likely to select these options than the ones who had a primary school or high school diploma. Figure 11 shows an example of how the expected counts differed from the actual responses in the chi square test. The example is for education and distrust in health officials.
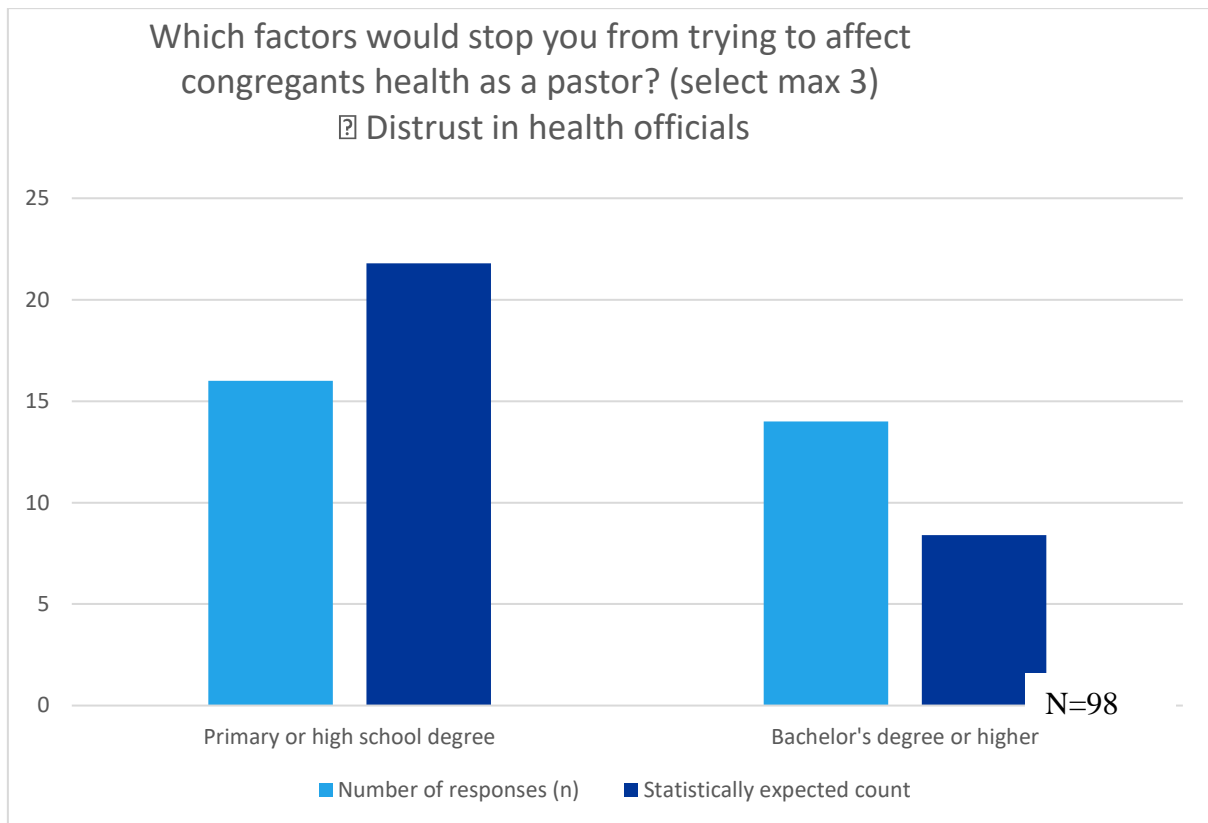
Figure 11. Chi square test results for selecting "distrust in health officials" and highest attained degree

When examining possible connection between the respondents' level of knowledge of pneumonia and diarrheal diseases and their perceptions of health promotion with the in-dependent samples T-test, several statistically significant connections were found. In question 25a. *Which are the most important ways for a pastor to affect congregants' health?* respondents who had higher scores on their level of knowledge, were more likely to select options *act as a role model, collaborate with health officials* and *preach and teach.* For question 26 *Which factors would stop you from trying to affect congregants' health as a pastor?* the respondents with higher levels of knowledge were more likely to select *distrust in health officials.* Table 3 summarizes the results of the T-tests.

Table 3. Independent samples T-test for level of knowledge on pneumonia and diarrheal diseases and views on ways to promote congregants' health.

Option	Selected M ± SD	Not selected M ± SD	t	p
25.A. Role model	67.4 ± 16.1	55.7 ± 16.1	-3.52	0.001
25.A. Collaborate with health officials	66.9 ± 16.0	59.6 ± 17.4	-2.15	0.034
25.A. Preach and teach	67.3 ± 13.6	58.3 ± 19.2	-2.69	0.008
25.A. Hold health promotion meetings	66.5 ± 16.1	55.6 ± 16.8	-3.08	0.003
26. Distrust in health officials	67.8 ± 13.7	60.6 ± 18.1	-2.00	0.049

5.4 Need for support

Nearly all, 98%, of the respondents selected the *yes* option to question 27 *Do you feel you need support in promoting health in congregants*? Only two respondents selected the *no* option. Of the possible options for the kind of help needed, training was the most popular response with 80% of respondents selecting this option. Health-related material and contacts to health officials/NGOs were also popular options with 74% and 66% of respondents selecting these options respectively. Support from leadership was selected by 37%, and support from colleagues by 31%. About one in four (26%) felt they needed theological material. A summary of the responses is depicted if figure 12. The respondents who had answered no to the question on the need for support were asked to specify the reason for not needing it. In that section one respondent selected the option *no need for health promotion* and 3 felt they had sufficient knowledge on health promotion already.
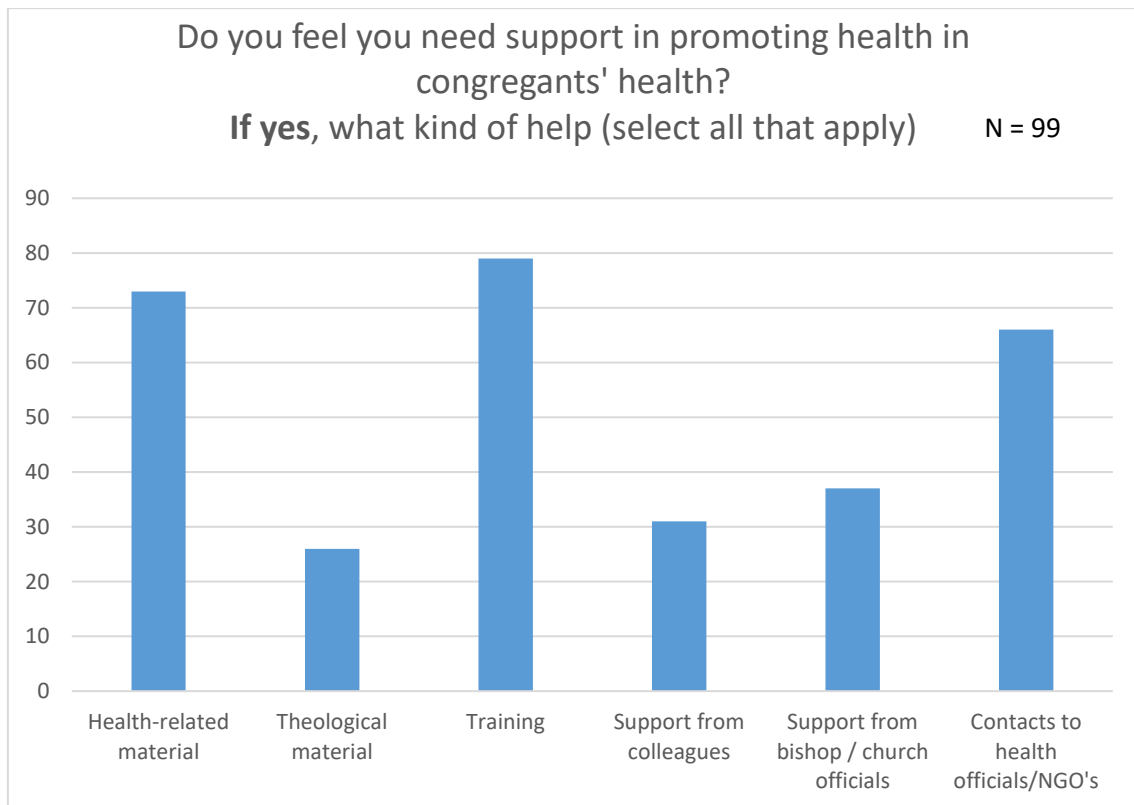
Figure 12. The types of support needed for health promotion as a pastor

The second question in this section measured the likelihood that an intervention would affect the respondents' work regarding health promotion. The response options included a scale of one to four, assessing how likely the respondent would use a certain intervention. Having more health education during theological studies was found somewhat (31%) or very useful (38%) by 69% of the respondents. Visits from outsiders such as NGO's or health officials were perceived as somewhat useful (21%) or very useful (42%) by 63% of the respondents. More than half, 60%, of the respondents felt written material to use in teaching would be helpful (44%) or of some (16%) use to them and likewise 60% selected "support from other pastors and bishops with 30% selecting this to be somewhat useful and 30% very useful. Having written material to hand out to congregants was the least selected option. Still 54% felt it would be somewhat (24%) or very useful (30%). Figure 13 provides a summary of all the options selected.
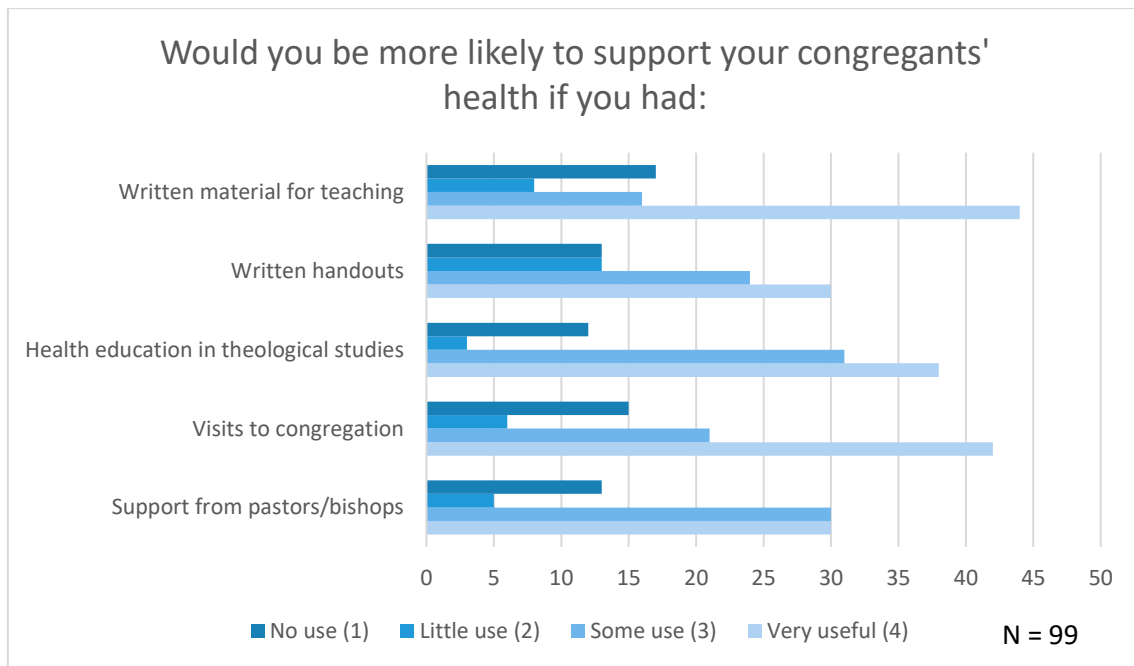
Figure 13. The usefulness of different form of support in health promotion

The chi square test showed that the only statistically significant connections were found between having received previous health education and selecting certain modes of support. Those who had received health education previously were more likely to select the option of needing health-related material ($X^2(1)=10.735$, p=0.001) than the ones who had not received previous health education. They were also more likely to select the options of *theological material* ($X^2(1)=4.853$, p=0.028), *support from colleagues* ($X^2(1)=5.248$, p=0.022) *and support from bishop / church leadership* ($X^2(1)=4.224$, p=0.040) as the kinds of help they would need in promoting congregants' health.

The other statistically significant connection was between those who had received previous education on health promotion. They were more likely to select *support from colleagues* ($X^2(1)=5.075$, p=0.024) and *support from bishop / church officials* ($X^2(1)=4.250$, p=0.039) than respondents who had not had previous education on health promotion.

The independent samples T-test showed that in general, respondents with higher levels of knowledge were more likely to recognize types of support they needed than the ones with lower scores. In the question *Do you feel you need support in promoting health in congregants' health? If yes, what kind of help (select all that apply)* the respondents who

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selected any of these options had statistically significantly higher levels of knowledge than the ones who did not select them. Table 4 summarizes the results of the T-test.

Table 4. Independent samples T-test for level of knowledge on pneumonia and diarrheal diseases and views of types of support needed in health promotion work

Option	Selected M ± SD	Not selected M ± SD	t	p
27.A. Health-related material	67.1 ± 15.5	50.4 ± 15.6	-4.72	0.000
27.A Theological material	72.1 ± 14.7	59.3 ± 16.7	-3.46	0.001
27.A. Training	64.9 ± 16.4	54.1 ± 17.6	-2.56	0.012
27.A. Support from colleagues	72.7 ± 12.1	58.1 ± 17.2	-4.56	0.000
27.A. Support from bishops / officials	70.6 ± 15.1	58.0 ± 16.6	-3.78	0.000
27.A. Contacts to health officials	66.7 ± 16.2	54.6 ± 16.3	-3.51	0.001

5.5 Summary of results

The first research question was on the level of knowledge of the respondents regarding pneumonia and diarrheal diseases. On this section of the survey respondents had an average score of 62.5%. This would be equivalent to a D, the lowest passing grade, in the standard American A-F grading system and a seven in the Finnish grading scale from four to ten (Arvosanalaskuri, n.d). The scores varied, the lowest being 23% and highest 100%. The median score was 63% and the mode, the most common value, was 58%. There was no great difference between knowledge of pneumonia and knowledge of diarrheal diseases. The youngest, under 20-year-old respondents had lower scores than the over 30-year-olds.

The second research question addressed the respondents' perspectives of health promotion. The majority (71%) felt that a pastor could affect congregants' health. Their views on the ways to do that were holding health promotion meetings in churches (67%) and acting as a role model (61%). Respondents who had previous education on health issues favored the first option while respondents who were new to the seminary favored the

latter option. Preaching and teaching (51%) was also selected by over half of the respondents and was favored by the respondents with a bachelors' degree or higher.

When asked to identify factors that would stop them from promoting congregants' health, lack of information was selected by 50% of the respondents and lack of contact to health officials by 42%. These were selected especially by respondents who had previous health education. Religious values in conflict with health promotion was selected by 43%. Distrust in health officials (33%) and people should trust God to heal instead of seeking medical care (28%) were selected especially by those respondents with higher education.

The third research question focused on the types of support needed for health promotion. Nearly all (98%) of the respondents felt they needed support in various forms such as training (80%), material (74%) or contacts to health officials or NGO's (66%). Regarding material the respondents especially wished for material for themselves to use in teaching while material to hand out to congregants was selected by fewer respondents. The respondents with previous education on health issues or health promotion and who had higher levels of knowledge on the diseases were more likely to recognize several forms of support than the ones with no health education or a poorer level of knowledge.

Figure 14 shows a summary of the independent variables which had a statistically significant correlation with the dependent variable. The ones where a correlation was found are highlighted in grey. The table found in appendix 3 shows the exact forms of all correlations found and their statistical justifications.
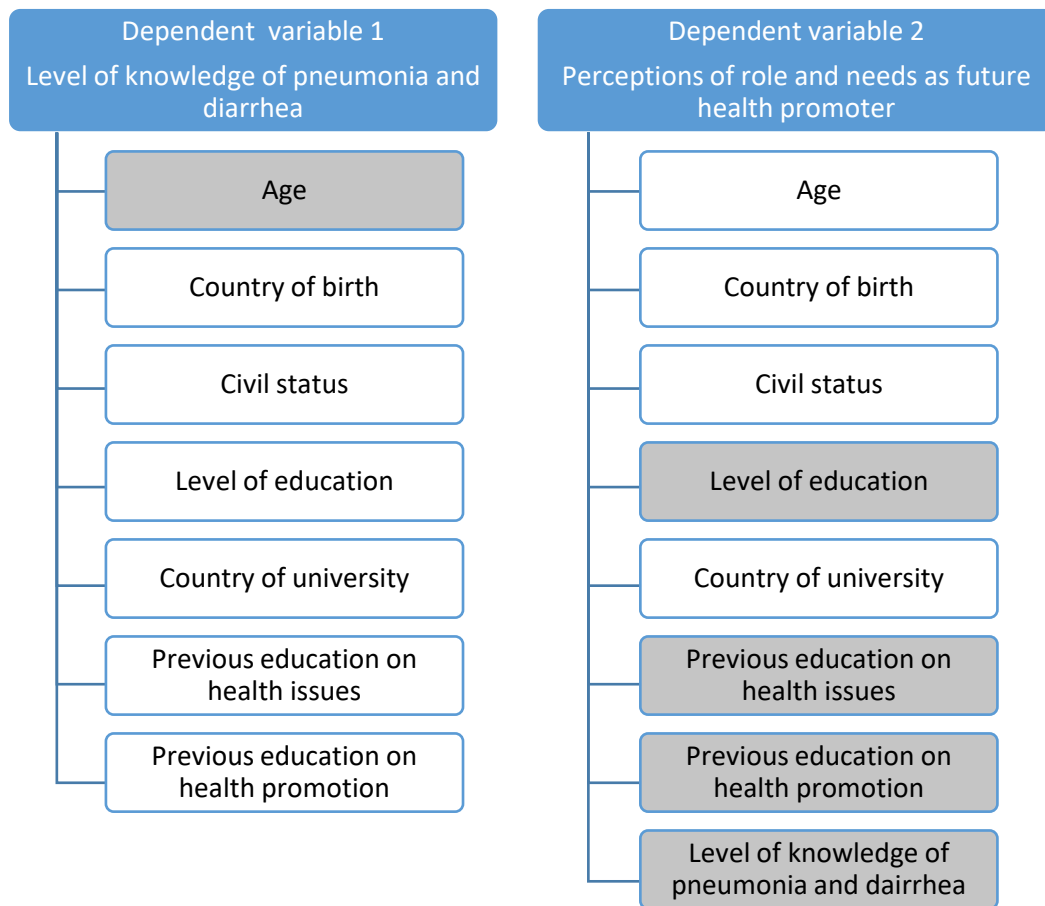
Dependent variable 1 Level of knowledge of pneumonia and diarrhea	Dependent variable 2 Perceptions of role and needs as future health promoter
Age	Age
Country of birth	Country of birth
Civil status	Civil status
Level of education	Level of education
Country of university	Country of university
Previous education on health issues	Previous education on health issues
Previous education on health promotion	Previous education on health promotion
	Level of knowledge of pneumonia and dairrhea

Figure 14. Summary of correlations found

7 DISCUSSION

The first research question dealt with the level of knowledge of these two diseases and it was found to be similar for both. The respondents average score on knowledge of pneumonia was 57% and diarrheal diseases 60% with an overall average score (including also hand hygiene) of 62.5%. No studies were found on this exact subject, but a study on Muslim clerical students' knowledge of HIV found that 37% had good knowledge (>80%), 46% had moderate knowledge (40-80%) and 17% had poor knowledge (<40%) (Shamsipour et.al., 2016). In this study 14% had good knowledge if judged with the same matrix, 76% moderate knowledge and 10% had poor knowledge. So, while the level of good knowledge was lower in this study, there were significantly more respondents in the category of moderate knowledge. In both studies, health was not intended to be the respondents' primary area on expertise, but they would nevertheless be expected to have knowledge on health issues. It could be that the vast awareness campaigns on HIV contributed to higher scores in Shamsipour et.al.'s (2016) study, while the level of poor knowledge was similar in both studies.

Studies on the level of knowledge of pneumonia in Africa have been done, especially regarding caregivers' knowledge of childhood pneumonia. In these studies levels of knowledge have also been low. A study in rural Ghana found that two thirds of respondents had never heard of pneumonia and of the ones who had heard of it 58% could not name any of its symptoms (Abbey, Chinbuah, Gyapon, Bartholomew & van der Borne, 2016). Another study in six sub-Saharan African countries found that 30% of caregivers could name a symptom of pneumonia (Noordam, Sharkey, Hinssen, Dinant & Clas, 2017) and in Cameroon only 13% were aware of a vaccine against pneumonia (Libwea et.al., 2014).

Regarding diarrheal diseases, slightly higher levels of knowledge have been reported. A recent study in Ethiopia found that 92% could define diarrhea as passing of loose stools (Workie, Sharifabdilahi & Addis, 2018) while an older study also done in Ethiopia found that overall level of knowledge regarding treatment, symptoms and prevention of diarrheal diseases was 38% (Merga & Alemayehu, 2015). A third study in Ethiopia found 63% of respondents to have some knowledge of diarrheal diseases, while 35% could name

the symptom of passing loose watery stools (Agenehu, Zeleke, Goshu, Ortibo & Adinew, 2019).

Comparing the results from this survey to these previous studies of levels of knowledge of the two diseases shows that the scores from this survey were on average slightly higher. Nevertheless, these scores can not be considered as high or adequate levels of knowledge, but perhaps the difference in results point to a difference in focus groups. Pastoral students may be higher educated than some of the caregivers from these other surveys. The majority (64%) of respondents in this study had a high school degree but were working on higher degrees now in their studies. Only 6% reported primary school as their highest education, while 26% already had attained a bachelor's degree or higher. Another conclusion to make from these results lies in the importance of educating pastors (and other religious leaders) who will then go out to communities, such as the ones where the beforementioned studies were done. Seen as the general level of knowledge on these common, preventable diseases is poor, religious leaders can be ones to bring new, current knowledge.

One concerning detail in the knowledge-section was the poor knowledge on hand washing. The question asking to arrange steps of proper hand washing in order was only known by 45%. This was even after the respondents were allowed two possible answers: closing the tap after drying hands and closing the tap before drying hands. If only strictly correct answers were taken into consideration there were only 7 correct answers, which would amount to 7.1% of all responses. Moreover, all of these strictly correct responses were from two universities: Uganda and Togo. Perhaps these institutions had handwashing instructions in restrooms? A previous study with university students in Bangladesh showed that 22.5% demonstrated the correct steps of handwashing (Sultana et.al., 2016). If judged by strict measures this study produced a poorer result. On the other hand, a factor to consider is how well the respondents were familiar with this type of task of organizing scrambled pictures into the right order. It could be that the question itself was not so clear for the respondents. Another factor to consider is lack of resources such as soap and even running water. Some students may come from backgrounds where taps are not in use and water shortages can affect educational institutions as well.

Shamsipour et.al. (2016) found a negative correlation between age and level of knowledge of HIV/AIDS in that younger respondents had higher levels of knowledge. In this study a correlation between age and level of knowledge was found as well, but it pointed to under 20-year-olds having lower scores than those between 30 and 49 years of age. The scores were again lower for those aged 50 and over. This could perhaps have to do with the kind of sexual awareness campaigns related to HIV that target youth especially, whereas most campaigns on pneumonia and diarrheal diseases in Africa focus on little children and their parents, where the age group of 30-49 could have received education in their possible roles as parents. The fact that other background factors did not correlate with level of knowledge was also slightly surprising, especially concerning previous education on health issues. It seemed as though the previous education affected attitudes and perceptions more than the actual levels of knowledge. Previous studies have also linked other background factors such as civil status to levels of knowledge (Sultana et.al., 2016). These sorts of correlations did not come up in this study, nor was there great differences between the different countries and seminaries.

The second research question was on the respondents' views of pastors as health promoters. The majority 71% felt that a pastor could affect congregants' health. This is consistent with previous studies, for instance in Shamsipour et.al.'s (2016) study 60% of the students believed they could play an important part in informing people about HIV, and Downs et.al. (2017) found that educating religious leaders in Tanzania on preventing HIV infections through male circumcision increased its rate by 23.3%. Not only do religious leaders seem to have some confidence in their opportunities to promote health, there also is evidence that it can and does happen.

When asked about ways in which they could promote congregants' health, holding health promotion meetings in churches (67%) and preaching and teaching (51%) were widely selected and are in many ways tied together as forms of direct and formal means of promoting health. Educating people directly and preaching sermons on health-related issues came up also in Shamsipour et.al.'s (2016) research as well as in as study done in Mali on pastors' and imams' views on health promotion (Sidibé et.al., 2018). When comparing to the WHO (1986) model of health promotion (see chapter 2.1) teaching and holding meetings falls under advocation. Other ways such as enabling health equity for example

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by affecting local and national politics and policies were less selected (21%). It seems as though advocating is the main way these respondents saw themselves promoting health although mediating via collaboration with local officials was also selected by many (45%). Health promotion through acting as a role model is more difficult to place on the WHO health charter, but it was also mentioned in several previous studies (Mustafa et.al., 2017; Sidibe et.al., 2018). It came up as the second most popular response in this study.

Respondents who had previous education on health issues or higher education in general were more likely to select health promotion meetings and preaching and teaching, i.e. the directly interpersonal ways of advocating, as methods of health promotion. This seems to make sense: having received education themselves could make them more likely to want to educate others. In spite the fact that their level of knowledge was not higher, the respondents with more educational background seemed to see the value in directly educating more than ones who did not have this background. The respondents who were only beginning their studies were more likely to favor the option of acting as a role model. Upon speculation perhaps gaining more knowledge and confidence through their studies helps students also to directly address congregants in these issues? Speaking publicly teaching and preaching in different circumstances and on different subjects are after all a large part of a pastor's job and surely something that is learned in the seminary.

As mentioned, previous research supports leading by example as a means of health promotion, though it is more difficult to measure. A study on role models' effects on adolescents in USA found that having a role model, who was personally known by the adolescent correlated with higher grades and self-esteem (Yancey, Siegel & McDaniel, 2002). Although this does not specifically address health promotion through role models, the results do point to close, personally known role models having a positive effect on the person. In the best scenario a pastor could be that kind of a person.

Lack of information was the most commonly selected reason that would prevent respondents from promoting congregants' health. In Downs et.al.'s (2017) study the need for more information was also recognized and Shamsipour et.al.'s (2016) study showed 88% felt that lack of information was a hinder for them to promote health. Though this study's numbers were not as high, lack of knowledge was still selected by half of the respondents

out of many possible options. Interestingly, the respondents with previous health education were more likely to select this option. Perhaps having previously received education also helps a person to see where he or she is lacking in knowledge.

This came up later in the study as well, when respondents with previous health education and higher levels of knowledge could identify more needs of support than respondents without this kind of education or lower levels of knowledge. This can feel quite logical. The more someone learns of a subject the more he or she realizes how much more there is to know. And on the other hand, blindness to one's own lack of knowledge combined with high confidence in one's abilities is a phenomenon studied in psychology and known as the Dunning-Kruger effect (Dunning & Kruger, 1999).

Religious values being in conflict with health promotion was selected by 43% as a hinder to health promotion. Previous research also points to this phenomenon for example Downs et.al. (2017) point out that the most successful health promotion programs in churches are those that were congruent with church doctrine. Duff & Buckingham (2015) advise religious leaders to consider the "do not harm" -principle when navigating situations where these kinds of conflicts between religious and health promotion values occur. In this study respondents with a bachelor's degree or higher were more likely to select the option that people should trust God to heal instead of seeking medical care. This seems like a surprising result. Perhaps a higher education (in theology possibly) represents a stronger connection and higher commitment to certain religious values? A recent study in Israel found similar results. Nakash, Lambez, Cohen and Nagar (2019) studied patients in mental health clinics and trust towards health providers. They found that religious people expressed more distrust towards the providers and also highlighted the more significant role of a higher being in the process of healing (Nakash et.al., 2019).

Respondents with a bachelor's degree or higher and those with better level of knowledge on pneumonia and diarrheal diseases were also more likely to select distrust in health officials as a factor stopping health promotion. Both of these seem slightly surprising when looking at them form a western point of view. It is of course difficult to assess the forms of health care each of the respondents was familiar with as they came form many countries around the African continent. Previous experiences could affect these answers.

General unrest, corruption and uncertainty can lead to distrust in governments and thus in health officials. A WHO (2012) report on perceptions of health systems in Africa showed that many rural communities especially had a rooted distrust in health officials. Less than half of the respondents in the WHO (2012) report always trusted the health care system, while 40% sometimes trusted and 14% never trusted it. These results can point to a larger phenomenon of distrust in health care, which the results of this study would then also highlight.

Regarding the type of support needed in order to better promote their congregants' health, training was the most selected option, which is also strongly supported by previous research (Choi, 2015; Duff & Buckingham, 2015; Downs et.al., 2017; Shamsipour et.al., 2016; Sidibé et.al., 2018). Support from leadership has been seen as a valuable form of support in previous studies (Sidibé et.al., 2018), but in this study it was one of the less selected options, with only 37% reporting it would help them in the task of health promotion. The respondents with previous education on health issues or health promotion reported needing support more than the respondents without this educational background. As mentioned previously, the respondents with previous health education were also more likely to see direct interpersonal advocating as a means of promoting health. These sorts of activities might require more support and collaboration from colleagues as well as supervisors and bishops as there are many more practicalities involved than in promoting health as a role model for instance.

Health related material to use in teaching was the second most selected form of support. The fact that material and training were so highly selected and that almost all of the respondents felt they needed support on health promotion points to a self-awareness that they did not now have all of the tools needed for this task. The respondents seemed to want to improve their knowledge, more respondents wanted material to use for their teaching (44%) than just material to hand out to congregants (30%). This could be seen as a sign of desire to educate oneself on health matters and not just leave it to flyers and health officials. Though the respondents wanted more training (78%), there was less support for this training taking place during their theological studies, with 38% strongly supporting it and 30% somewhat supporting it. It could be that the time of religious studies is already quite consumed by other things that need the students' attention and separate

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training sessions and seminars might be more effective ways of reaching religious leaders and holding their attention.

8 CONCLUSIONS

This study shows that students training to be pastors believe they can help their congregants and promote their health through various ways, especially through their own lives and actions as role models and by holding meetings and teaching. In order to do this training and written material for the pastor to use for educating himself and as a reference from which to teach others were seen as the most valuable forms of support. Training is certainly necessary as this study also showed that the respondents' levels of knowledge of the diseases chosen for this study, pneumonia and diarrheal diseases, were poor.

When examining connections between background variables and perceptions on health promotion, education in its various forms was the only one that had statistically significant correlations. This was true of the level of education in general as well as the specific health education and level of knowledge on the diseases in question. As previous studies have also concluded, education is a key element in involving religious leaders, pastors in this case, in health promotion.

8.1 Strengths, limitations

This study provides new information about the way pastoral students see their role as health promoters in their future jobs in African countries. The data is largely coherent with previous studies as seen in chapter 6. The perspective is new as no recent studies were found that had this particular target group and aim.

The sample size (100 responses received) was relatively close to the ideal (109 responses), which adds to the reliability of the results. There are however other institutions with which contact was not established or maintained when recruiting universities to join the study. Thus, the sample size may not be reflective of African Lutheran theology students as a whole but must be limited to these institutions.

The fast schedule in getting the survey ready to be sent out made piloting happen quickly and with few respondents. Ideally there should have been more time for recruiting people

to pilot the survey with. A few questions were possibly still difficult to understand for the respondents. This issue is further discussed in the next subchapter.

8.2 Reliability and validity

The reliability of a research project refers to the consistency of the data, so that if the test were to be repeated, similar results would be obtained (Cunningham et.al., 2013). Reliability can be affected by problems with the test itself or with the circumstances (Cunningham et.al., 2013). The first would be called a bias error, as it is consistent each time the test is used, while the latter is called measurement error and it can change from time to time (Cunningham et.al., 2013). Many things can cause these errors. Cunningham et.al. (2013) names a few such as participants becoming tired and losing interest or not understanding a question or being distracted by things in their environment. These conditions and their effects can vary for different respondents (Cunningham et.al., 2013). Additionally, the researcher can make errors in handling the data (Cunningham et.al., 2013).

In this research project there were several variables, which were difficult to control. Since the researcher could not be physically present at the survey administrations, the extent of environmental and respondent -related errors are difficult to determine. Instructions for the survey administration conditions were sent out the contact people, who administered the survey, but it is difficult to know what the conditions onsite actually were. In most of the seminars the number of responses was less than the number of surveys handed out. This could be a sign that the voluntary nature of the survey was emphasized, as the instructions had said to do. However, in Ghana and Kenya all of the students responded to the survey. The level of focus that the respondents had is also difficult to assess. There were 3 cases where the respondent had left several pages empty, which could show a lack of interest or concentration. There are also signs of the data being reliable. For example, the level of knowledge was normally distributed, which points to the test following the expected pattern. Normal distribution was determined with the Shapiro-Wilk-test, see chapter 4.2.

Validity refers to the extent to which the research measured the thing it was supposed to measure (Cunningham et.al., 2013). The survey should have face validity, meaning it

should seem valid to the respondents, but the content should also be valid (Cunningham et.al., 2013). It should measure the phenomenon it is interested in in sufficiently many and varied ways (Cunningham et.al., 2013). The validity of the survey was first tested by running a pilot survey with people who represented different traits of the respondents: their cultural and educational backgrounds. The questions were modified after the piloting.

When examining the results there were certain questions that seemed like perhaps, they were not completely understood by the respondents. For example, the question asking respondents to arrange the correct order of hand washing was one of the most difficult ones for the respondents. This can be due to lack of knowledge, but it can also be that the way the question was formatted was unclear or an unfamiliar style of question for the respondents. Another question that may not have been entirely valid was the question asking the extent to which the respondents agreed with the phrase: "A pastor can affect the health of his congregants" This question is discussed in chapter 5.3. Most of the respondents who strongly disagreed still went on to answer the following questions that were only meant for those who strongly or somewhat agreed. This particular question was then left out of the ANOVA and chi square analyses, because the validity and reliability of the data from this question was uncertain.

8.3 Recommendations

The results of this study can be used to plan and design interventions for educating students of theology, or others preparing to become religious leaders in the African context, on health promotion. It can provide concrete ideas for tools and educational needs. The results can also be used to deepen the understanding of the role of religious leaders in health promotion in Africa. Further research is needed on the effectiveness of different programs and health promotion interventions done by religious leaders. Another interesting area of research would be the health promotion practices in place in religious groups in Africa form the points of view of the leaders, congregants and health care officials.

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APPENDIX 1 COVER LETTER AND CONSENT FORM

Dear student,

Thank you for your interest in this study. The purpose of this study is to examine Lutheran theological students' knowledge and perceptions of health promotion regarding pneumonia and diarrhea. Your contribution is very valuable.

My name is Tiia Corzine. I am completing my master's degree in Global Health as a joint degree between Arcada and Diak universities in Finland and Baraton University in Kenya. This research is part of my master's thesis, which is on the subject of African Lutheran pastoral students as future health promoters.

Please read through the following information and instructions and sign the consent before responding to the survey. If you have any questions, please find my contact details below.

- Participation in this survey is voluntary.
- Filling out the survey takes approximately 10 minutes.
- The survey is anonymous: neither the researcher nor any of the seminary staff will know who answered what. You will not write your name on the survey sheets.
- These consent forms will be gathered separately from the surveys and will not be linked to your answers.
- Results of the survey will be published in my master's thesis and be communicated to the participating seminaries.
- After the research is complete, the surveys and consent forms will be properly disposed of.
- Each participant is to fill out the survey alone and without help.

Thank you again for your participation!

I have read and understood the information above and consent for my responses to this survey to be used as material for Mrs. Corzine's master's thesis research.

_____

Signature   Date and place

APPENDIX 2 SURVEY

SURVEY ON HEALTH PROMOTION & PNEUMONIA AND DIARRHEAL DISEASES

BACKGROUND

1. Age (select one)

   ☐ under 20   ☐ 40-49

   ☐ 20-29   ☐ 50 or older

   ☐ 30-39

2. Country of birth: _____

3. Current civil status (select one)

   ☐ married   ☐ single

   ☐ divorced   ☐ widowed

4. Highest attained degree (select one)

   ☐ Primary school   ☐ Masters

   ☐ High school   ☐ Doctorate

   ☐ Bachelors

   ☐ other, what: _____

5. Country and city of seminary: _____

6. Number of years of seminary studies completed: _____

7. Have you received education on health issues in your studies? (select all that apply)

   ☐ yes, in the seminary

   ☐ yes, elsewhere, where: _____

   ☐ no

8. Have you received education on health promotion in your studies? (select all that apply)

   ☐ yes, in the seminary

   ☐ yes, elsewhere, where: _____

   ☐ no

KNOWLEDGE OF PNEUMONIA

Select true or false

9. Pneumonia is an infection of the lungs

☐ True   ☐ False

10. Vaccines can protect from pneumonia

☐ True   ☐ False

11. Cooking indoors over an open fire can lead to pneumonia

☐ True   ☐ False

12. Which are symptoms of pneumonia? (select all that apply)

☐ cough

☐ difficulty breathing

☐ fever, if chosen please specify (select one)

    ☐ always presents with fever

    ☐ sometimes presents with fever

☐ fast breathing

☐ wheezing

☐ difficulty feeding (infants)

☐ loose liquid stools

☐ difficulty seeing

☐ frequent passing of solid stools

☐ swelling

☐ fever, headache & chills

☐ pain or discomfort in the center of the chest

☐ difficulty walking, dizziness

☐ pain or discomfort in the arms, the left shoulder, elbows, jaw, or back

13. How can pneumonia be prevented? (select all that apply)

☐ vaccines

☐ nutrient rich foods

☐ breast feeding with infants up to 6 months old

☐ reducing indoor air pollution (minimize smoke)

☐ hand washing with soap

☐ access to safe drinking water

☐ improved sanitation

☐ use of condoms

☐ education and raising awareness

☐ mosquito nets and sprays

☐ stop smoking

TREATMENT OF PNEUMONIA

14. Which are treatments for pneumonia? (select all that apply)

☐ antibiotics

☐ oral rehydration salts

☐ hospital care

☐ zinc supplements

☐ intravenous fluids in hospital

☐ antiretroviral drugs

15. Where should a person first seek **professional medical care** if they suspect they have pneumonia? (select one)

☐ always at the hospital

☐ first at health care center

☐ no need for medical treatment

16. When should a person go to the **hospital** if they have pneumonia? (select all that apply)

☐ always

☐ if they have severe problems with breathing

☐ if the symptoms get worse

KNOWLEDGE OF DIARRHEAL DISEASES

17. Vaccines can protect from diarrhea. (select one)

☐ True   ☐ False

18. Which are symptoms of a diarrheal diseases? (select all that apply)

☐ cough

☐ difficulty breathing

☐ fever, if chosen please specify: (select one)

 ☐ always presents with fever

☐ sometimes presents with fever

☐ fast breathing

☐ wheezing

☐ difficulty feeding (infants)

☐ loose liquid stools

☐ difficulty seeing

☐ frequent passing of solid stools

☐ swelling

☐ fever, headache & chills

☐ pain or discomfort in the center of the chest

☐ difficulty walking, dizziness

☐ pain or discomfort in the arms, the left
   shoulder, elbows, jaw, or back

19. How can diarrheal diseases be prevented? (select all that apply)

☐ vaccines

☐ nutrient rich foods

☐ breast feeding with infants up to 6 months old

☐ reducing indoor air pollution (minimize smoke)

☐ hand washing with soap

☐ access to safe drinking water

☐ improved sanitation

☐ use of condoms

☐ education and raising awareness

☐ mosquito nets and sprays

☐ stop smoking

TREATMENT OF DIARRHEAL DISEASES

20. Which are treatments for diarrheal diseases? (select all that apply)

☐ antibiotics

☐ oral rehydration salts

☐ hospital care

☐ zinc supplements

☐ intravenous fluids in hospital

☐ antiretroviral drugs

21. Where should a person first seek **professional medical care** if they suspect they have diarrhea? (select one)

☐ always at the hospital

☐ first at health care center

☐ no need for medical treatment

22. When should a person go to the **hospital** if they have diarrhea? (select all that apply)

☐ always

☐ if there's blood in their stool

☐ if the symptoms get worse

23. Arrange the steps of proper hand washing in the correct order. (Write letters in boxes in order)

1.	2.	3.	4.	5.	6.

24. When should hands be washed (select all that apply)?

☐ before meals   ☐ before preparing meals

☐ after meals   ☐ after money exchange

☐ after coming from toilet   ☐ after blowing nose

☐ when coming home   ☐ after touching garbage

☐ after handshaking   ☐ after touching sick people

☐ before going to bed   ☐ after combing hair

☐ after getting up from bed   ☐ after cleaning home

☐ after using public transport   ☐ after washing dishes

☐ after touching animals   ☐ after doing laundry

☐ only when the hands are visibly dirty

PERCEPTIONS OF HEALTH PROMOTION WORK

25. A pastor can affect the health of the congregation members. (select one)

☐ strongly disagree   ☐ somewhat disagree   ☐ somewhat agree   ☐ strongly agree

    a. **If somewhat or strongly agree**,

Which are the most important ways for a pastor to affect congregants' health? (select max 3)

☐ Act as role model   ☐ Influence local or national politics and policies

☐ Individual discussions with congregants   ☐ Hold health promotion meetings in churches

☐ Preach and teach

☐ Collaborate with local health officials or NGO's (non-governmental organizations)

☐ Other, what: _____

26. Which factors would stop you from trying to affect congregants' health as a pastor? (select max 3)

☐ Religious values that conflict with health promotion

☐ People should trust God to heal them instead of seeking medical care

☐ Other spiritual objection, specify: _____

☐ Distrust in health officials

☐ Lack of contact to health officials

☐ Lack of information

☐ None of the above

☐ Other, what: _____

PERCEPTIONS ON SUPPORT NEEDED

27. Do you feel you need support in promoting health in congregants?

☐ yes   ☐ no

   a. **If yes**, what kind of help (select all that apply)

☐ health-related material   ☐ support from colleagues

☐ theological material   ☐ support from bishop / church leadership

☐ training   ☐ contacts to health officials / NGO'

☐ other, what _____

   b. **If no**, what is the reason (select all that apply)

☐ no need for health promotion

☐ sufficient knowledge on health promotion

☐ other, what: _____

28. Would you be more likely to actively support your congregants' health if you had: (tick one box in each row)

	It wouldn't affect my work at all	It would be of very little use	It would be of some use	It would be something I would use eagerly
Written material for yourself to use in teaching				
Written material to hand out to congregation members				
More health education during your theological studies				
Visits to congregation from outsiders (visitors, local health authorities, NGO's)				
Support from other pastors and bishops				

Thank you for your time!

APPENDIX 3 SUMMARY OF CORRELATIONS FOUND BETWEEN VARIABLES

Independent variable	Question and response option	Group	Correlation	Test used to prove connection	Statistical value	Significance (p)
Age	Level of knowledge	Under 20-year-olds	Lower than 30-49-year-old	ANOVA Welch	F(4,19.8) = 6.101	0.02
Level of education	*Preach and teach* as form of health promotion	Bachelor's degree of higher	More likely to select	Chi square	X²(2)=14.974	0.001
	People should trust God to heal instead of seeking medical care stopping health promotion	Bachelor's degree of higher	More likely to select	Chi square	X²(1)=4.021	0.045
	Distrust in health officials stopping health promotion	Bachelor's degree of higher	More likely to select	Chi square	X²(1)=8.275	0.004
Number of years in seminary	*Act as a role model* as form of health promotion	2 years or less	More likely to select	Chi square	X²(2)=11.190	0.004
Previous education on health issues	*Hold health promotion meetings in churches* as form of health promotion	Had previous education	More likely to select	Chi square	X²(1)=4.793	0.029
	Lack of contact to health officials stopping health promotion	Had previous education	More likely to select	Chi square	X²(1)=6.739	0.009
	Lack of information stopping health promotion	Had previous education	More likely to select	Chi square	X²(1)=6.589	0.010

	Health-related material as form of support	Had previous education	More likely to select	Chi square	X²(1)=10.735	0.001
	Theological material as form of support	Had previous education	More likely to select	Chi square	X²(1)=4.853	0.028
	Support from colleagues as form of support	Had previous educated	More likely to select	Chi square	X²(1)=5.248	0.022
	Support from bishop / church leadership as form of support	Had previous education	More likely to select	Chi square	X²(1)=4.224	0.040
Previous education on health promotion	*Support from colleagues* as form of support	Had previous educated	More likely to select	Chi square	X²(1)=5.075	0.024
	Support from bishop / church leadership as form of support	Had previous education	More likely to select	Chi square	X²(1)=4.250	0.039
Level of knowledge on pneumonia and diarrhea	*Act as a role model,* *collaborate with health officials* and *preach and teach* as forms of health promotion	Higher level of knowledge	More likely to select	T-test	-3.52 -2.15 -2.69 -3.08	0.001 0.034 0.008 0.003
	Distrust in health officials stopping health promotion	Higher level of knowledge	More likely to select	T-test	-2.00	0.049
	Health-related material, Theological material, Training, Support from colleagues, Support from bishops / officials, Contacts to health officials as forms of support	Higher level of knowledge	More likely to select	T-test	-4.72 -3.46 -2.56 -4.56 -3.78 -3.51	0.000 0.001 0.012 0.000 0.000 0.001