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**Is the spread of knowledge the key to
decrease HIV/AIDS prevalence
in South Africa?**

*- A field study aimed to examine if HIV/AIDS knowledge
reduces individuals' risk behavior.*

Authors: Malin Asking & Anna Gruber

Supervisor: Per-Åke Andersson

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ABSTRACT

The thesis aims to measure the impact HIV/AIDS knowledge has on risk-related behavior among youths in rural areas of South Africa; a country with the highest HIV/AIDS prevalence in the world. The HIV/AIDS problem of South Africa is of enormous importance to thousands of people since it has affected the development of the country for decades. In November of 2014, a field study was conducted in Hluhluwe, a township located in a rural part of South Africa. In this thesis, previously research together with a chosen theoretical framework and gathered data is used in order to create a contribution to this field of study. Overall, the results from the study imply that HIV knowledge does not have a clear effect on youths' risk-related behavior; it is more likely other factors that determine an individual's risk-related behavior in this case. The fact that individuals live in a world with high HIV/AIDS prevalence might affect their life expectancy and future beliefs, and this in turn could affect their decision-making.

Key words: HIV/AIDS knowledge, Risk behavior, Sexual risk-taking, Non-sexual risk-taking, South Africa, Rural areas

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Authors: Malin Asking & Anna Gruber

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HIV, Human Immunodeficiency Virus, breaks down the cells in a body that it needs to resist infections, and so it weakens the immune system. The final stage of an HIV infection is AIDS, Acquired Immunodeficiency Syndrome, which is when the virus has destroyed so many cells that the body no longer can fight diseases. Not everyone who is infected with HIV proceeds to the final stage, AIDS, and if an individual get the appropriate treatment he or she could live for several years despite the infection. Many infections occur through sexual interactions since the virus transmits via body fluids like blood, semen and vaginal fluids. It is when the fluids get into contact with mucous membranes or tissue that has been damaged that the infection can occur. Mosquitos, air, toilet seats or saliva do not spread the virus and the virus can't survive outside the human body (U.S department of Health and Human Services, 2014)

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1 INTRODUCTION

South Africa has been struggling with high prevalence of HIV and AIDS for decades, and according to recent studies there are about 6.3 million people infected by, and living with, the virus in the country. The country has the highest HIV prevalence in the world with a national level of 17.9% in 2012, and the province of KwaZulu-Natal, where this study took place, has a HIV prevalence of 40%. According to the United Nations, individuals under 14 years of age, who are living with HIV/AIDS, were approximately 360,000 in 2013. At the same time, 5.9 million out of the 6.3 million infected by HIV/AIDS are individuals 15 and up. Many individuals are not born with the virus but receive the virus later in life, sexual interaction and blood transfusions are two common ways of transmission (UNAIDS, 2013; Avert, 2012).

The wide spread of HIV and AIDS in countries like South Africa is often associated with sexual risk-taking in terms of unprotected sex and different kinds of irrational behavior. Access to education and knowledge about HIV/AIDS should play an important role when looking at an individual's sexual behavior, especially in countries with a background like South Africa's regarding high HIV/AIDS prevalence. However, there are earlier studies made that point to the lack of effect when it comes to knowledge about HIV and information campaigns and the struggle to implement them in an African context (Bezabih, Mannberg & Visser, 2010; Green, 2006; Oster, 2012).

The HIV virus has had large effects on the development of Africa's economy in the long term; mortality and the cost of human lives result in economic consequences with decreases in productivity and in the labor market supply. The aggregate growth of Sub-Saharan African countries has been roughly reduced because of the high mortality due to HIV/AIDS, why it is very important to further study the effects that information campaigns and knowledge about the virus have in a microeconomic perspective (Dixon, McDonald & Roberts, 2002; Frölich & Vazquez-Alvarez, 2009). Sub-Saharan Africa has been hit hard by the pandemic and so has its workforce. This area might not be able to revive without assistance from the outside world, and it is important to highlight these economic consequences and the long term effects they might have (Dixon et al, 2002; UNAIDS, 2013). Something has to be made to lower the HIV rates and this study is an attempt to see whether education and the spread of HIV/AIDS information is the key to make that change.

More specifically, the purpose of this thesis is to address the issue of what effect knowledge about HIV/AIDS has on an individual's risk-related behavior in a world with high HIV/AIDS prevalence. Humans living in rural areas may have less access to education and information, which could lead to more risk-related or irrational behavior due to the lack of knowledge. Based on this preconception, the study took place at a rural location of South Africa with a low average standard of living.

According to researchers within the subject, there are diverse results when studying the effect of HIV/AIDS knowledge on individuals' risk-related behavior. There are researchers who believe in a negative relationship between HIV knowledge and risk-related behavioral patterns. The more HIV information an individual receives, the higher the chance is of caring about preventing against the disease (Anderson, 2012; Frölich & Vazquez-Alvarez, 2009). At the same time, several other researchers arguments against this and criticize the narrow approach of information campaigns about HIV/AIDS (Oster, 2012; Green, 2006; Mannberg, 2012). Based on these diverse findings about the effect of HIV knowledge and the high HIV/AIDS prevalence in KwaZulu-Natal, the following question will be studied:

“Does knowledge about HIV/AIDS have an impact on risk-related behavior of youths living in rural areas of South Africa?”

1.1 Earlier research

The distribution of information have been the major focus of HIV prevention during the last decade, and are assumed to be the most cost effective way to lower the HIV rates in Sub-Saharan Africa (Anderson, 2012; Frölich & Vazquez-Alvarez, 2009).

Bezabih et al. (2010) find empirical results which imply that youths from a family with a high household income, are less likely to engage in sexually risky activities. Their findings also indicate that youths with lower educational levels are associated with a higher degree of sexual risk taking compared to youths with higher educational levels. Besides this, they highlight the effect of knowing someone with HIV/AIDS, and that it actually might increase an individual's risk-related behavior. They also find that individuals who talk about HIV/AIDS at home are less likely to engage in risky sexual activities than individuals who do not talk about HIV/AIDS at home. Further on, the results by Peltzer et al. (2012), adds that a higher degree of mass media exposure results in an increase in HIV knowledge. This in turn

lead to a reduction in stigmatizing attitudes towards people carrying the disease and also a decrease in risk-related sexual behavior, in terms of higher levels of condom use and HIV testing.

Emily Oster (2012) highlights the lack of HIV knowledge as one of the possible explanations to the high prevalence rates of HIV in Sub-Saharan Africa. Unlike previously mentioned studies, she does not find any clear evidence that higher HIV knowledge would be a determining factor when it comes to differences in behavior. If anything, Oster (2012) finds that in areas with high HIV/AIDS prevalence, there are also higher levels of risk behavior. According to the findings, changes in risky sexual behavior are no more likely in an area with high degrees of knowledge than in areas with lower levels of knowledge. It is more a question about whether an individual lives in a world with or without HIV/AIDS presence, and the level of life expectancy.

In line with Oster's findings, other studies during the last decade have been starting to question the efficiency of HIV knowledge, and its ability to change an individual's risk behavior. Several attempts have been made with the ambition to lower HIV rates by implementing specific programs in countries with high HIV prevalence. A well known program is the ABC model, an approach that encourages individuals to Abstain (A) or delay sexual debut, Be faithful (B) to your partner and to use Condoms (C) (Green, 2006). This model has been successful in western countries like the U.S., but has had largely ineffective results in parts of Sub-Saharan Africa. Green (2006) explains these ineffective results with Sub-Saharan Africa's totally different epidemic pattern and its development compared to western countries. In countries like South Africa, the main way of transmission is heterosexual intercourse and the culture of polygamy, to take one example, makes it complicated to implement the ABC model since it contradicts the encouragement to be faithful to your partner (Oster, 2012, Green, 2006). Mannberg (2012) argues that HIV programs overall have been ineffective in Sub-Saharan Africa and Bezabih et al. (2010) suggest that HIV programs need to take a more holistic approach to be effective and not only focus on the information campaigns.

People who live in rural areas are less likely to be reached by mass media and information campaigns, and to be effective the information campaigns need to reach not only the urban inhabitants but also people living outside the cities (Peltzer et al, 2012; Frölich & Vazquez-Alvarez, 2009). Frölich and Vazquez-Alvarez (2009) highlight the gender perspective regarding the effect of information campaigns. They suggest that females are

more receptive to the given information, which in this context implies a lower risk-related behavior. On the other hand, Anderson (2012) finds that HIV information has stronger effect on males than on females in reducing risk-related behavior, and Bezabih et al. (2012) also find that females tend to behave more risky than males.

Poor economic circumstances and low future expectance might explain higher levels of risk taking, even in areas with a high prevalence of HIV/AIDS. When living under those circumstances, HIV might not be the worst daily threat and people do not care to protect themselves from HIV. Because of low future expectancy and a dysfunctional political and economic situation, people might not see the importance of investing in a future (Bezabih et al, 2010; Oster, 2012; Mannberg, 2012).

2 THEORETICAL FRAMEWORK

This part contains the theoretical framework used in this study. The theories will work as tools to analyze the results of the thesis, and contribute with an understanding of the subject HIV/AIDS prevalence and risk behavior.

2.1 Lifetime utility function in a world with or without HIV/AIDS prevalence

As theoretical framework for this study, Emily Oster's (2012) theory is part of the groundwork. It is being used to gain an understanding of an individual's behavior in terms of sexual risk taking in a world with HIV/AIDS. Oster creates this framework to analyze individual's decision-making regarding their sexual behavior in a world with high HIV/AIDS prevalence.

In the framework, an individual lives for a maximum of two periods. An individual is guaranteed to live in the first of the two periods, and then has a possibility to survive into the next period depending on whether the HIV virus infects the individual or not.

Oster (2012) begins by describing an individual's lifetime utility function in a world without HIV, which is shown by the equation below:

$$U_{tot} = u(\sigma_1) + pu(\sigma_2) \quad (1)$$

Equation (1) describes the total lifetime utility for an individual, in both period one and two. In each period, the individual gains utility from the number of sexual partners, which is depicted by the variables σ_1 for period one and σ_2 for period two. What distinguishes the period's utility functions from each other is the probability variable, p , which indicates the chance of surviving into period two.

Oster (2012) conducts a second lifetime utility function, equation (2), which describes the same type of utility function but for an individual who lives in a world with HIV. If an individual is infected with the HIV virus in period one, the probability of surviving into the next period is equal to zero.

$$U_{tot} = u(\sigma_1) + p(1 - \sigma_1\gamma\beta h)u(\sigma_2) \quad (2)$$

In equation (2), several variables have been added due to the HIV/AIDS prevalence. The utility for period one is the same as in equation (1), $u(\sigma_1)$. Further on, γ denotes HIV

knowledge; β , the transmission rate (calculated by the chance of getting the HIV infection per partnership); h , the HIV rate in the area. According to this, the probability part of equation (2) shows that the number of sexual partners together with HIV knowledge, transmission rate and HIV rate represent the perceived chance of getting the virus.

Oster's (2012) utility functions will provide an understanding that there is two mindsets depending on what world individuals grow up in, a world with or without HIV/AIDS. Individuals who live in a world where HIV/AIDS is a part of the daily life might not have the same life expectancy and future beliefs as individuals living in a world without HIV/AIDS presence.

2.2 *The impact of HIV knowledge*

In addition to Oster (2012), Mark D. Anderson's (2012) theory about the impact of HIV knowledge will be used within the theoretical framework. He presents multiple reasons to why it is not realistic to believe that the effect of exposure to education about HIV/AIDS on sexual behavior is strictly exogenous. First of all, the author highlights that all students do not have the HIV education as a mandatory part of the syllabus. This means that you might find a correlation even for students who have not had HIV education, which will indicate a false causal relationship. Further on, Anderson (2012) explains the problem that occurs with local socioeconomic differences. The differences might be correlated with youth sexual behavior and could limit the supply of HIV information. For instance, wealthier schools can afford better HIV education than schools in poorer areas and this could affect the outcome. Finally, errors might occur as a result of misreporting from the students, which will generate biased OLS estimates. Anderson (2012) targets the American school system, where the students are able to choose what classes to take and this determines whether they will achieve the HIV education or not. Despite the American approach, these assumptions will be suitable for the South African perspective of this thesis.

The ambition of Anderson's (2012) study is to observe the effect HIV information in school has on risk-related behavior among students. To accomplish this ambition, the following regression has been used:

$$y_i = \beta_0 + \beta_1 HIV_ED_i + X_i \beta_2 + \varepsilon_i \quad (3)$$

In the regression (3), risk-related behavior is measured as the dependent variable, y_i . To measure whether an individual has received HIV information or not, the author uses the dummy variable HIV_ED_i which equals one if the individual got the education and zero otherwise. The variable X_i demonstrates the vector of the equation that contains all the explanatory variables of the students. β_0 and ε_i represent the constant and the error term.

3 EMPIRICAL APPROACH

In this section, the empirical approach of the thesis will be presented. First the econometric model of the thesis will be illustrated, followed by a complete description of the gathered data and its variables. Lastly, a critical approach of the study provides an insight to the study's limitations and restrictions.

3.1 The econometric model

The econometric model used in this thesis is rooted in the theoretical framework of Anderson (2012) and is presented in equation (4). The model is designed to estimate the effect knowledge about HIV/AIDS has on the risk-related behavior of youths in rural parts of South Africa.

$$y_i = \alpha + \beta_1 HIV_score_i + \beta_2 fam_std_i + \beta_3 educ_i + X_i \beta_4 + \varepsilon_i \quad (4)$$

In the regression, y_i is the dependent variable that measures the risk level of each individual in the survey. A risk scale that involves measurements of both sexual and non-sexual behavioral patterns will determine the risk level of an individual. On the explanatory side of the regression, HIV_score_i represents the individual's level of HIV knowledge and will be the key explanatory variable of the analysis. Further on, fam_std_i expresses the respondent's self-estimated level of family standard and $educ_i$ is the total years of education. X_i is a vector that contains several observable characteristics used in the regression, and ε_i is the error term.

3.2 Data description

The data used for this thesis was collected through a survey in South Africa, during a field study in November of 2014. It was collected through questionnaires answered by youths in Hluhluwe which is a township located in a rural part of KwaZulu-Natal, a province that has one of the highest prevalence of HIV/AIDS in South Africa. The highest prevalence of HIV is concentrated among individuals aged 15 and up, and therefore youths between 15 to 35 years of age is the target group of the study. In South Africa individuals are considered youths until they are 35 years of age (AVERT, 2012; UNFPA, 2014).

The inquiry used contains multiple questions regarding family situation, education, health, HIV/AIDS and risk-taking, and it aims to see how HIV knowledge affects risk-related sexual and non-sexual behavior of youths. Some inquiries were distributed in schools and others during sessions for youths in the community. To reduce the biasedness caused by dishonest answers, local people working in the community distributed the inquiries to the adolescents participating in the study.

The total number of respondents is 104 and consists of youths between 15 and 35 years of age. The respondents are residents of the Hluhluwe area, which means that all respondents live in a rural part of South Africa, with all that implies. Respondents have been informed that participating in the survey is anonymous; this is made to ensure honest and reliable answers that can be used in the upcoming regressions.

To ensure that the gathered data contains information that makes it possible to answer the question studied, the questions used in the questionnaire are created specifically for this survey. In line with previous research and the theoretical framework, the questions are uniquely designed in this study to be appropriate for the sample, the area and the context. The only exception is the HIV knowledge score, where the questions involved are carefully selected from a reliable source with well-proven methods.

Besides this, the questions are designed to, as far as possible, with this study's restrictions in mind, reduce biasedness and be able to accomplish a reliable econometric study.

3.3 Variable description

This section contains a complete description of the variables used in the regressions, both dependent and explanatory. To be able to use the data that has been collected it has been converted into various variables, defined in table 2. In the end of this section, two tables will present summary statistics; in table 3, mean values of the dependent variables are presented, and mean values of the explanatory variables are depicted in table 4. The definitions presented in table 2 are used to interpret the mean values of table 3 and 4.

3.3.1 Dependent variables

Sexual risk-taking is a complex variable to measure; therefore the dependent variable in this field study is based on several statements regarding different types of risk situations

and attitudes. By including different type of risk situations, not only in terms of sexual risk-taking, the study aims to think outside the box and create a different approach than previous risk behavioral researchers. This approach is used to see if the effect of HIV knowledge on risk-taking differs depending on what risk variable is being used, sexual or non-sexual.

In the questionnaire, there are nine risk-based questions that are used to create a risk score from zero to nine. The first three are intended to focus on the non-sexual risk-related behavior of an individual, and those questions aim to capture the behavioral pattern of the respondent regarding seatbelt use, avoiding unsafe areas or getting in a car driven by someone who is intoxicated. The ambition of the following questions is to create an overview of the respondent's level of sexual risk taking. There are questions about the respondent's considerations concerning protection against HIV, importance of knowing your sexual partner, sexual activities and condom use. Finally, there is one question about how confident the individuals are about asking and informing their partner about the virus.¹

The risk score calculated from the questions is converted into a risk scale that will be used as the main dependent variable of this thesis. The risk scale is a variable that ranks an individual's risk-related behavior from one to three. If an individual has a score below three on the risk-based questions, it will be classified as "one", no risk-taking, on the risk scale. A score between four though six classifies as "two", low risk-taking, and a score above six classifies as "three", high risk-taking, on the scale.

Besides using the risk scale as the regression's only dependent variable, all questions used to create the score are being used separately as dependent variables as well. This is done to broaden the opportunities of studying the individuals' risk-related behavioral patterns. To be able to use them separately further explanation of the variables is required. They will be presented in Table 1 in the same order as the regressions (5) - (12) will follow in the Empirical results of the thesis.

All dependent variables are expressed in a three leveled scale, where level one represents no risk-taking; level two represents low risk-taking and level three represents high risk-taking. Each individual's risk level has been calculated based on his or her answers in the questionnaire.

¹ For complete questions and inquiry see Appendix.

TABLE 1*Dependent variables explanation*

Dependent variable	Explanation
<i>Sexual risk behavior</i>	
“Sex is a special thing”	If an individual thinks sex is something special and something that should be meaningful; agree equals no risk and disagree equals high risk.
“Know your sex partner”	If an individual thinks it is important to know/ be friends with the person he/she has sex with; agree equals no risk and disagree equals high risk.
“Care about protection”	If an individual thinks it is important to use protection against HIV during sex; agree equals no risk and disagree equals high risk.
“Important to know if partner has HIV/AIDS”	If an individual thinks it is important to know if sex partner has HIV/AIDS; agree equals no risk and disagree equals high risk.
“Comfortable asking/telling about HIV/AIDS”	If an individual feels comfortable asking/telling sex partner about HIV/AIDS; agree equals no risk and disagree equals high risk.
<i>Non-sexual risk behavior</i>	
“Seatbelt”	If an individual would use a seatbelt while in a car/bus; agree equals no risk and disagree equals high risk.
“Unsafe areas”	If an individual tries to avoid unsafe areas when walking at night; agree equals no risk and disagree equals high risk.
“Drunk driver”	If an individual would consider getting in a car driven by someone who is intoxicated; agree equals high risk and disagree equals no risk.

3.3.2 *Explanatory variables*

The main explanatory part used in the regressions of this thesis is HIV knowledge, measured by a calculated knowledge score from the answers in the questionnaire. By using the knowledge score as an explanatory variable, this thesis aims to find out the effect of different levels of HIV knowledge on an individual’s behavior. Like Oster (2012), this thesis uses facts about HIV/AIDS to reveal the respondent’s level of knowledge, but instead of using only two questions, like Oster did, the inquiry of this thesis contains 15 statements. The number of correct answers on these 15 statements about HIV/AIDS will create the HIV knowledge score. This score will be referred to as the variable “HIV knowledge” in the thesis, and contains statements about both HIV and AIDS. The HIV/AIDS statements of this section are retrieved from a questionnaire created by MIDSS (Measurement Instrument Database for the Social Science, 1997), and is developed as an instrument to investigate HIV knowledge of low-literacy youths. Using the MIDSS questionnaire is appropriate since it is conducted in a

rural area, where individuals might not have access to education to the same extent as individuals in wealthier areas.

Besides using the HIV knowledge score, the regression involves a vector of numerous explanatory variables. First of all, the vector controls for personal observable characteristics as gender, age, total years of education, number of siblings and standard of living. Furthermore, five variables regarding attitude towards the school's influences represents then school characteristics, and finally, there are three questions controlling for each respondent's personal HIV/AIDS experiences.²

3.3.3 Variable definitions and summary statistics

TABLE 2

Variable definitions

<i>Dependent variables</i>	
Risk score	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Use seatbelt while in a car/bus	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Avoid unsafe areas at night	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Would get in a car driven by someone who has been drinking alcohol/taken drugs	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Consider sex as a special/meaningful thing	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Important to know your sexual partner	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Care about protection against HIV during sex	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Important to know if sexual partner has HIV/AIDS	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
Feel comfortable asking/telling sexual partner about HIV/AIDS	= 1 if no risk behavior, = 2 if low risk, = 3 if high risk
<i>Explanatory variables</i>	
HIV knowledge	= Number of correct answer out of 15 possible
Gender	= 1 if male, = 0 if female
Age (4 age groups)	= 1 if 15-19 years old = 2 if 20-24 years old, = 3 if 25-29 years, = 4 if 30-35 years
Years of education (3 groups)	= 1 if 3-10 years, = 2 if 11-14 years, = 3 if 15-18 years
Number of siblings (4 groups)	= 1 if 0-2 = 2 if 3-5 = 3 if 6-8 = 4 if 9-11
Family standard (scale of 3 options)	= 1 if low, = 2 if average, = 3 if high
It is important to attend in school	= 1 if disagree, = 2 if unsure, =3 if agree
Attending in school will create a chance of living a healthy life in the future	= 1 if disagree, = 2 if unsure, =3 if agree
Consider living a healthy life	= 1 if disagree, = 2 if unsure, =3 if agree
Have had sex education in school	= 1 if YES, = 0 otherwise
Have received HIV information in school	= 1 if YES, = 0 otherwise
Knowing someone who has HIV/AIDS	= 1 if YES, = 0 otherwise
Someone in family has HIV/AIDS	= 1 if YES, = 0 otherwise
Knowing someone who died from HIV/AIDS	= 1 if YES, = 0 otherwise

² For complete questions and inquiry see Appendix

TABLE 3

Summary statistics: Mean values of the dependent variables on a three-leveled risk scale. Standard deviations are depicted within parentheses.

	Females	Males
Number of respondents	65 (62,5%)	39 (37,5%)
Risk score	1.18 (0.429)	1.18 (0.393)
Use seatbelt while in car/bus	1.31 (0.710)	1.16 (0.501)
Avoid unsafe areas at night	1.20 (0.536)	1.29 (0.611)
Would get in a car driven by someone who's been taken drugs	1.53 (0.882)	1.42 (0.793)
Sex is a special thing	2.58 (0.759)	2.38 (0.861)
Imp. to know sex partner	1.36 (0.743)	1.53 (0.797)
Would care about protection	1.12 (0.484)	1.03 (0.164)
Imp. know if sexual partner has HIV/AIDS	1.13 (0.492)	1.05 (0.229)
Feel comfortable asking/telling HIV/AIDS	1.22 (0.576)	1.30 (0.618)

To interpret the mean values, see complete definitions in Table 2.

TABLE 4

Summary statistics: Mean values of the explanatory variables, standard deviations are depicted within parenthesis.

	Females	Males
Number of respondents	65 (62,5%)	39 (37,5%)
HIV knowledge	11.72 (2.267)	10.29 (2.578)
Age	23.88 (4.026)	22.30 (3.398)
Years of education	12.60 (1.294)	12.70 (2.259)
Number of siblings	4.73 (2.735)	5.19 (2.520)
Family standard	2.06 (0.788)	1.97 (0.833)
Important attend in school	2.88 (0.488)	2.95 (0.320)
School will create healthy life	2.87 (0.454)	2.95 (0.320)
Consider living healthy life	2.83 (0.517)	2.90 (0.384)
Sex education in school	0.94 (0.246)	0.87 (0.339)
HIV information in school	0.98 (0.126)	0.92 (0.270)
Knowing someone with HIV	0.80 (0.403)	0.62 (0.494)
Someone in family has HIV	0.55 (0.503)	0.25 (0.441)
Know someone who died from HIV	0.86 (0.345)	0.40 (0.498)

To interpret the mean values, see complete definitions in Table 2.

3.4 Critical approach

As any other study, this thesis has its limitations and it is important to have a critical approach to the method used and the outcome of the study. Conducting a study abroad, in a developing country with a totally different environment, creates challenges hard to prepare for in advance. The difficulty to reach out to respondents, the strong hierarchic society and the many cultural differences sometimes limited the effectiveness of the study.

Within the restrictions of a bachelor's thesis, time is a determining factor together with a limited budget when using field study as method. Challenges regarding the method used are mostly linked to the questionnaire and the conduction of the survey. The fact that the respondents have English as secondary language could affect the understanding and interpretation of the questions asked which could result in measurement errors. To avoid the biasedness caused by our personal attendance, local people known by the youths distributed the questionnaires. However, our personal attendance might have been desirable since we would have been able to sort out misunderstandings due to the language barrier. Several questions in the inquiry have rating options where the respondent rates his/her answer on a scale. The outcome of these self-estimated answers might be hard to interpret correctly, self-estimations only express how each respondent experiences a situation and not a concrete fact.

In a study like this, there is always a desire to have the most appropriate and informative data. We tried to choose simple and direct questions to generate reliable answers, but a couple questions still had to be removed from the regressions due to missing values. It would obviously be interesting to extend the survey, both in number of respondents and in questions asked, to be able to further confirm some of the assumptions made. It would have been interesting to control for area fixed effects, which was the original intention, but this proved to be impossible due to practical limitations. Further on, influences from the surroundings and more information about the respondents' standard of living would have been preferable to make the results causally interpretable.

4 EMPIRICAL RESULTS

In this part of the thesis results of the study will be presented through tables and text. It is divided into three sections which all focus on different dependent variables. Firstly, the effects on the risk scale are being estimated. Secondly, the dependent variables included in the risk scale are used separately and divided into two different sections, sexual and non-sexual risk-related behavior.

4.1 The risk scale

Table 5 presents the results of the regression made on this study's main dependent variable, the risk scale. The findings are divided into four different regressions where numerous explanatory variables have been added gradually. In regression (1), HIV knowledge is the only explanatory variable and the estimate suggests a negative relationship. Regression (2) strengthens this suggestion with a HIV knowledge coefficient significant on the 10% level. The relationship is consistent throughout all four regressions and suggests that the more HIV knowledge an individual has, the less risky he/she behaves. However, the remaining regressions fail to confirm this with statistically significant coefficients. Interesting to notice is that when controlling for HIV information in school in regression (3), the effect of HIV knowledge reduces and is no longer significant. Instead, HIV information shows a relatively large estimate that also is highly significant on the 1 % level. This indicates that after controlling for school variables in regression (3), the significant effect of HIV knowledge in regression (2) might be overestimated. It first seemed like HIV knowledge had an impact on risk-related behavior, but this impact disappeared when controlling for the school characteristics, and especially HIV information. The HIV knowledge score measures an individual's knowledge about HIV/AIDS in the survey, while HIV information is a dummy variable that determines whether an individual has received any form of HIV/AIDS information in school. Anyhow, the effect of HIV information is not long lasting since it disappears after controlling for HIV/AIDS experiences in regression (4). However, the variable "HIV information" is not normally distributed since 95 % of the sample responded "yes" on the question, and therefore there are reasons to criticize the power and the meaning of the estimate.

When controlling for all explanatory observables in regression (4), there are a few

noteworthy coefficients. The gender coefficient, which is significant on the 10 % level, implies that males tend to have a more risky behavior compared to females. It claims that if the individual is a male, he has a 0.281 higher level of risk-related behavior on the three-leveled risk scale, compared to females. Regression (4) also shows a relationship between low risk-related behavior and youths believing that attending school will create a healthy life. This relationship grows stronger, and more significant, while controlling for more variables. If the respondent has this attitude, the risk behavior will decrease with - 0.506 on the risk scale.

TABLE 5

The impact of HIV knowledge on risk behavior. OLS estimates of the risk scale on HIV knowledge, family standard, education and control variables. Standard deviations are depicted within parentheses

	(1)	(2)	(3)	(4)
HIV knowledge	- 0.071 (0.059)	- 0.159 (0.084)*	- 0.096 (0.579)	- 0.077 (0.088)
Family standard		0.079 (0.062)	0.058 (0.054)	0.070 (0.070)
Years of education		0.034 (0.158)	- 0.087 (0.141)	- 0.185 (0.280)
Gender		- 0.006 (0.112)	0.023 (0.097)	0.281 (0.158)*
Age		0.071 (0.069)	0.005 (0.061)	0.013 (0.068)
Number of siblings		0.030 (0.055)	0.027 (0.049)	- 0.020 (0.067)
Imp. attend school			- 0.125 (0.164)	- 0.181 (0.173)
School create healthy life			- 0.344 (0.188)*	- 0.506 (0.212)**
Living healthy life			- 0.087 (0.136)	- 0.040 (0.187)
Sex education			0.146 (0.177)	- 0.065 (0.261)
HIV information			- 0.672 (0.237)***	- 0.432 (0.290)
Know someone HIV/AIDS				- 0.007 (0.179)
Someone in family HIV/AIDS				0.294 (0.124)**
Know someone who died from HIV/AIDS				0.227 (0.195)
Constant	1.343	1.102	3.510	3.792
R²	0.014	0.068	0.371	0.475
Observations	104	104	104	104

*Levels of significance: * = significant at 10% level ($p \leq 0.1$), ** = significant at 5% level ($p \leq 0.05$), *** = significant at 1% level ($p \leq 0.01$).*

If the individuals have someone in their family living with HIV/AIDS they seem to have a higher risk-related behavior; regression (4) shows a significant estimate of this by 0.294.

Besides these significant results, age and family standard appear to have a positive effect on the risk scale, which indicates a higher risk-related behavior. On the other hand, if the individual considers him/herself living a healthy life, have received HIV information or believes that attending school is of great importance tends to generate a lower risk behavior. Even though there is a lack of significant estimates in table (4) the r-squared steadily grows from 0.014 through 0.475 when controlling for additional characteristics. This suggests that 47.5 % of risk-related behavior is explained by the included variables in regression (4).

In regression (1) – (4) all the results are depending on the created risk scale. Upcoming regressions will use all variables that are foundation for the risk scale separately in each regression. This will further develop the results from regression (4), and make it possible to create a deeper analysis for this thesis.

4.2 Sexual risk-related behavior

Table 6 involves regressions that aim to observe relationships between knowledge of HIV and risk-related behavior. Since HIV primarily spreads through sexual activities, the regressions in this section have dependent variables that refer to sexual risk-taking. All regressions in this section, (5) – (9), are measured with a three-leveled risk variable going from no risk through high risk, similar to the risk scale.

According to the estimates of table 6, there are two statistically reliable results when it comes to HIV knowledge. These results can be found in regressions (5) and (6), but are unexpectedly pointing in opposite directions even though they are within the same subject and one would expect the variables to have similar outcomes. Regression (5) suggests that a higher HIV knowledge score leads to a less risky behavior. This is in contrast with regression (6), which instead suggests that a higher level of HIV knowledge generates a higher risk-related behavior. Remaining estimates on HIV knowledge in table 6 are showing the same relationship as regression (6), but these estimates are not reliable due to the lack of significance.

The lack of significance remains present when looking at the upcoming five explanatory variables, the personal observable characteristics. The coefficient on family standard in regression (5) is the only significant result that appears within these variables, and family standard is also the only variable that shows an ongoing positive relationship throughout all the risk-based variables.

TABLE 6

The impact of HIV knowledge on risk behavior. OLS estimates of sexual dependent risk variables on HIV knowledge, family standard, education and control variables.

	(5) Sex is a special thing	(6) Know your sex partner	(7) Care about protection	(8) Important to know if partner has HIV/AIDS	(9) Comfortable asking/ telling HIV/AIDS
HIV knowledge	- 0.465 (0.198)**	0.330 (0.162)**	0.019 (0.081)	0.002 (0.077)	0.074 (0.092)
Gender	- 0.489 (0.357)	0.438 (0.287)	- 0.019 (0.151)	- 0.083 (0.136)	0.156 (0.164)
Age	0.156 (0.154)	0.180 (0.123)	- 0.037 (0.064)	- 0.047 (0.058)	0.019 (0.071)
Years of education	- 0.176 (0.630)	0.297 (0.746)	- 0.085 (0.259)	- 0.003 (0.230)	0.344 (0.290)
Number of siblings	0.099 (0.151)	0.036 (0.121)	- 0.025 (0.064)	- 0.032 (0.056)	- 0.022 (0.070)
Family standard	0.315 (0.161)*	0.176 (0.126)	0.055 (0.065)	0.042 (0.058)	0.087 (0.072)
Imp. attend school	- 0.042 (0.388)	0.035 (0.313)	- 0.164 (0.160)	- 0.963 (0.142)***	0.087 (0.179)
School create healthy life	0.011 (0.475)	- 0.775 (0.386)**	- 0.422 (0.197)**	- 0.004 (0.176)	0.195 (0.219)
Living healthy life	0.017 (0.419)	0.080 (0.362)	- 0.191 (0.175)	0.012 (0.156)	- 0.275 (0.193)
Sex education	- 0.021 (0.587)	0.113 (0.470)	- 0.047 (0.242)	- 0.011 (0.215)	0.474 (0.271)*
HIV information	0.348 (0.651)	- 0.240 (0.522)	- 0.020 (0.270)	- 0.032 (0.237)	- 0.522 (0.301)*
Know someone HIV/AIDS	0.784 (0.404)*	- 0.648 (0.332)**	0.044 (0.165)	0.065 (0.147)	- 0.228 (0.185)
Someone in family has HIV/AIDS	- 0.275 (0.280)	- 0.212 (0.223)	- 0.048 (0.117)	- 0.117 (0.103)	0.046 (0.132)
Know someone who died from HIV/AIDS	- 0.746 (0.441)*	0.058 (0.352)	0.072 (0.181)	0.056 (0.163)	0.095 (0.203)
Constant	2.592	1.656	3.500	4.029	0.125
R ²	0.337	0.448	0.419	0.699	0.235
Observations	104	104	104	104	104

*Levels of significance: * = significant at 10% level (p≤0.1), ** = significant at 5% level (p≤0.05), *** = significant at 1% level (p≤0.01).*

Focusing on the school variables, the results do not show any robust trends, and in regression (5) there is no significance at all. However, there are a couple estimates in the other regressions worth highlighting. Believing that school will create a healthy life seems to decrease individuals risk-related behavior regarding the dependent variables in regression (6) and (7). When observing the risk-related behavior in regression (8), whether or not the individual thinks attending school is of great importance, seem to be the crucial variable. The result implies that believing in school attendance would decrease the risk-related behavior with almost a full step on the three-leveled scale, - 0.963, significant at the 1 % level.

The school variables in the last regression of table 6 shows that information about sex and HIV/AIDS have a significant influence on risk-related behavior. Youths who have had sex education as a part of the school syllabus are according to the results in regression (9) more risk-taking, compared to youths who have not got the sex education. Interesting is that in this regression, the individuals who also received specific HIV information in school seems to behave less risky. In this case, this means that those individuals are more comfortable asking, or telling, their potential sex partner about HIV/AIDS.

Finally, the regressions include variables concerning an individual's personal HIV/AIDS experiences and the effect on different risk-related behavior. It is hard to find a strong and robust relationship that remains throughout all the regressions. Anyhow, knowing someone that lives with HIV/AIDS has an impact on the risk behavior in regression (5) and (6). In regression (5), this relationship is positive and states that knowing someone with HIV/AIDS increases the respondent's risk-related behavior by 0.784 levels. Regression (6), on the other hand, states the opposite with a negative relationship and a decrease by - 0.648. This contradiction is noteworthy since the dependent variables of regressions (5) and (6) are within the same context.

4.3 Non-sexual risk-related behavior

In this section the relationship between HIV knowledge and risk-taking is presented, but this time in a non-sexual context. Previous researchers have usually used nothing but sexual measurements when it comes to study the relationship between risk-taking and HIV knowledge, or as Anderson (2012) used needle use as the only non-sexual measurement. The non-sexual risk approach of this study is used in order to apply another dimension to the thesis and within this field of research.

Starting with the main explanatory variable, all three regressions in table 7 show negative coefficients on the HIV knowledge score. These negative coefficients mean that more knowledge about HIV/AIDS would decrease an individuals non-sexual risk behavior. Regression (10) shows a significant coefficient on the variable, and suggests that an individual who have a higher knowledge score will use seatbelt to a greater extent. This cannot be further confirmed from the rest of the non-sexual variables in regressions (11) and (12), where no significant coefficients are depicted.

TABLE 7

The impact of HIV knowledge on risk behavior. OLS estimates of the non-sexual dependent risk variables on HIV knowledge, family standard, education and control variables. Standard deviations are depicted within parentheses.

	(10) Seatbelt	(11) Unsafe areas	(12) Drunk driver
HIV knowledge	- 0.212 (0.127)*	- 0.167 (0.127)	- 0.268 (0.174)
Gender	- 0.001 (0.229)	0.273 (0.229)	0.000 (0.308)
Age	0.032 (0.098)	- 0.074 (0.099)	- 0.216 (0.132)
Years of education	- 0.154 (0.400)	- 0.141 (0.406)	- 0.455 (0.728)
Number of siblings	- 0.159 (0.096)*	- 0.083 (0.098)	- 0.065 (0.130)
Family standard	0.261 (0.101)**	0.045 (0.101)	- 0.288 (0.135)**
Imp. attend school	- 0.995 (0.246)***	- 0.113 (0.251)	- 0.230 (0.337)
School create healthy life	0.088 (0.302)	- 0.819 (0.307)***	- 0.299 (0.415)
Living healthy life	0.053 (0.267)	0.060 (0.271)	0.123 (0.388)
Sex education	0.150 (0.375)	0.007 (0.379)	- 0.729 (0.505)
HIV information	- 0.612 (0.414)	- 0.017 (0.420)	- 0.716 (0.561)
Know someone HIV/AIDS	- 0.430 (0.259)*	0.129 (0.260)	- 0.444 (0.346)
Someone in family HIV/AIDS	0.364 (0.177)**	0.200 (0.180)	0.318 (0.240)
Know someone who died from HIV/AIDS	0.263 (0.279)	0.141 (0.283)	0.676 (0.378)*
Constant	4.693	4.315	6.346
R²	0.572	0.352	0.411
Observations	104	104	104

*Levels of significance: * = significant at 10% level ($p \leq 0.1$), ** = significant at 5% level ($p \leq 0.05$), *** = significant at 1% level ($p \leq 0.01$).*

In this non-sexual context, the personal observable characteristics show significant results on number of siblings in regression (10), with a negative relationship. It also shows significant results on family standard in regressions (10) and (12), but this time with mixed results, a positive coefficient in (10) and a negative in (12). These mixed results are quite interesting since both relationships involve individuals' approach regarding car safety. The relationship of regression (10) infers a higher risk behavior when family standard increases, in contrast with regression (12) where a higher family standard decreases the risk behavior.

Moving on to the school variables, this is where the two largest significant estimates of table 7 are found. First of all, the most noteworthy relationships are between the dependent variables of regression (10) - (12) and the explanatory variable "Important to attend school". In regression (10), the relationship is negative and highly significant at the 1 % level. This states that an attitude that encourages school attendance will result in a lower risk-related behavior; a one step increase in attitude would generate a full step downwards, - 0.995, on the individual's risk scale. This relationship is consistent throughout the other two regressions, (11) and (12), even though these estimates lack significance. Secondly, there is another estimate significant on the 1 % level when observing the variable "School will create a healthy life" in regression (11). This time, a one step increase on the "School will create a healthy life"-scale would generate a decrease on the risk scale with - 0.819.

Overall, regression (10) contributes with the highest amount of significant estimates, which continues when looking at the variables concerning HIV/AIDS experiences. Knowing someone who lives with HIV/AIDS seems to decrease the individuals' risk-related behavior with - 0.430. On the other hand, if the individuals have someone in their family living with the HIV/AIDS, this affects the behavior in the opposite direction and will create a higher level of risk-taking.

4.4 General results

Overall, the regressions present various significant results, but do not contain any clear causal relationships between HIV knowledge and risk-related behavior. Only in three of the nine regressions an impact of HIV knowledge is found, but with mixed results. The highest amount of significance is rather found within the control variables, more specific on the school characteristics but also within HIV/AIDS experiences and personal characteristics.

Gender, numbers of siblings, family standard and HIV experiences sometimes have a significant effect on risk-related behavior, but these are too inconsistent through the different regressions to see any robust relationships.

In the summary statistics, 95 % of the sample has received HIV information in school, and the average level on the HIV knowledge score is approximately eleven correct answers out of fifteen possible. Together with an average of 12.6 years of education for females, and 12.7 years for males, the sample can be seen as highly educated. Despite this highly educated sample the results show that the variable “years of education” does not, in any of the regressions, have an impact on risk-related behavior. On the other hand, it continuously appears significant estimates on particularly two of the five school characteristics, “Important to attend school” and “School creates healthy life”. Throughout all of the regressions, where these significant estimates appear, they are all pointing in the same direction, and states that agreeing with these statements decrease an individual’s risk-related behavior. Years of education might not have an obvious effect, but since there are significant results within the educational variables, the school does seem to play an important role in affecting youths’ risk behavior, and especially the attitude towards school seem to matter.

5 ANALYSIS & DISCUSSION

In order to interpret the findings of this study, the following section aims to discuss the similarities and differences with earlier research. Due to the methodology used in this study, personal experiences also contribute to the analysis and discussion.

5.1 The impact of HIV knowledge on risk-related behavior

The issue of this thesis is to investigate whether the level of HIV knowledge has an impact on risk-related behavioral patterns of South African youths, living in rural areas. According to the results of the study, regardless sexual or non-sexual context, there is no clear evidence that the level of HIV knowledge affects risk behavior. Several significant results are found throughout the regressions, but the lack of significant patterns and the mixed results makes it complicated to draw any obvious conclusions.

Similar to Oster's (2012) results, the overall outcome of this survey does not show evidence that the level of HIV knowledge affects individuals' risk-related behavior, even though the effect appears in some regressions. After controlling for HIV information in the main regression of the thesis, the significant effect of HIV knowledge disappears. This is an indication that the impact of HIV knowledge on individuals risk behavior is overestimated. The natural question to this overestimation is why HIV information has a stronger impact on risk-related behavior than pure knowledge about the virus. Possible is that, where you receive the HIV/AIDS information, in this case the school, is more essential than the possession of the specific facts of the knowledge score. Providing the HIV/AIDS information in school and through hierarchic and respected persons, like teachers and principals, seems to be of great importance and might be the one thing that actually affects an individual's risk-related behavior in this survey. Further evidence for this assumption is also found in the regression made on the variable "Comfortable asking/telling about HIV/AIDS", later in the results, that suggests that talking about the virus in school generates a lower risk behavior. This can also be related to the findings of Bezabih et al. (2012) that highlight the importance of talking about the virus at home. Our general conclusion from this is that talking about HIV/AIDS in a safe and respected environment, like at home or in school, has a decreasing effect on the individuals risk-related behavior. This reduces the taboo of talking about the virus and creates a less stigmatizing atmosphere, just like the effect of information campaigns according to Peltzer et al. (2012). These assumptions cannot be further significantly confirmed throughout the other regressions, since the effect of HIV information is not consistent. There is a need for

more specific and normally distributed data, and a larger number of respondents, to be able to further confirm this assumption.

The lack of impact of HIV knowledge is also seen in several of the regressions made when looking at the dependent variables separately. Within the sexual context, HIV knowledge has an impact, but there is a problem with drawing a clear conclusion because of mixed results. Regarding the non-sexual context, the results show lack of impact on almost all variables, and confirm the indication that HIV knowledge does not have a great influence of an individual's decision-making. These results are a bit surprising, since the more an individual knows about a disease, that dangerous and prevalent as HIV/AIDS, should affect this person's behavior in a conscious direction (Anderson, 2012; Frölich & Vazquez-Alvarez, 2009).

The purpose of using a sexual and a non-sexual perspective was to see the division between different risk-situations, but with the same explanatory variables. There are two regressions that show the largest amount of significant estimates, one has the sexual dependent variable "Sex is a special thing", and the other has the non-sexual dependent variable "Seatbelt". These two risk-situations are the ones that contain most explanations to an individual's risk-related behavior. In agreement with Anderson (2012) and Frölich & Vazquez-Alvarez (2009) both risk-situations show a clear impact of HIV knowledge on behavior, with a negative relationship. This negative relationship suggests that a higher level of HIV knowledge results in a decrease in risk-related behavior. This is interesting since the results suggest that more knowledge about the virus not only affects sexual risk-related behavior, but also the average risk-level of an individual. The fact that knowledge about HIV/AIDS actually does affect the respondents' risk behavior in a non-sexual context shows the relevance of including both risk-perspectives. It is obviously not the higher level of HIV knowledge that makes an individual use seatbelt to a greater extent, but rather the fact that the individual has a lower average risk-behavior. Due to the lack of significance and mixed results in remaining regressions, this statement is not further confirmed but it is still an interesting outcome.

The aim of this thesis is to see whether knowledge about HIV/AIDS has an influence on South African youths' risk-related behavior, from a sexual and non-sexual perspective. As presented in earlier research, the opinions and findings about the influence are diverse, and the same outcome appears within our results. Worldwide, there is today a high awareness about HIV/AIDS and how the virus is being transmitted, and that is also true when looking at

the sample of this study. Therefore, one could assume that the impact of the level of knowledge should play an important role, but as discussed, it is not that simple to explain what determines an individual's decision-making. With this said, the impact of the remaining determinants of the regression has to be involved in the discussion to help explaining what really affects an individual's decision-making in this case.

5.2 The impact of remaining determinants of risk-related behavior

The question studied focuses a lot on the main explanatory variable of the regression, "HIV knowledge". Since the variable does not show a clear effect on risk-related behavior, the need of further analysis is obvious.

When analyzing the impact of education and HIV knowledge from another perspective, it is interesting to involve years of education and the school characteristics into the analysis. According to national statistics from 2012, the mean years of education for an individual in South Africa were 8.5 years (UNDP, 2013); this confirms that the sample of this study is considered as highly educated with its mean of 12 years of education. Referring to Bezabih et al. (2010), the level of education should have a negative impact on the individual's risk-related behavior, which generate a lower risk-behavior. With this in mind, it is a bit unexpected that years of education do not show any effect on the respondents' risk behavior, whatsoever. Trying to understand this contradictory result, it is important to analyze what defines high education within the South African perspective of the survey. Even though the average respondent has 12.65 year of education, this does not reveal anything about the quality, result or the content of the education during these years. Many years of education for a respondent might imply that he/she has received 12 full years of proper education; but it might also imply that the respondent has attended school on and off during theses years, due to family situations common in rural areas. Another possible factor that could decrease the quality of the outcome during theses 12 years of education is the school environment. South Africa has, on average, 30.4 students per teacher and classroom (Brand South Africa, 2013). This average is calculated on a compilation of all parts of South Africa, both rural and urban, but where this study took place; the number of students per classroom could rather reach the amount of 90 pupils at the same time, which obviously affects the outcome of the education.

Since the years of education, and HIV knowledge, do not show a clear affect on risk-related behavior, the consistent relationship between the significant school characteristics and

risk behavior is even more essential. It argues that believing in the importance of school generates a lower risk behavior of an individual. The key to decrease an individual's risk-related behavior might not be the level of HIV knowledge, but rather the level of attention to the given information in school. Anderson's (2012) results imply that the quality of HIV/AIDS information depends on varied socioeconomic circumstances; wealthier areas can afford more resources, both in the context of quality and quantity. Since the survey is conducted in a rural part of South Africa, the theory made by Anderson (2012) can be applied. Even though individuals in the survey realize the importance of paying attention in school, and have many years of education, the outcome of the HIV/AIDS information and education might not be of the same quality as in wealthier areas. A consequence of this could be that even if youths in this survey see importance in attending school, the information that they receive is not good enough to affect their risk-related behavior. Within this perspective, the findings of this study make more sense.

The personal characteristics observed of this sample very rarely show significant results, but when they do, the gender variable suggests that males tend to act more risky than females, which is consistent with the results of Frölich and Vazquez-Alvarez (2009). This effect is only found within one regression and therefore, no importance is attached to this assumption about males being more risk-taking. The same argument is applied on the only significant estimate of the variable "number of siblings". Numbers of siblings appear to have an effect on risk behavior and make the individuals less risk-taking, but this only appears once in the non-sexual context. A possible objection to this is that more siblings in rural areas should logically affect the time spent outside the household because of family duties, and generate a loss of educational activities; this would possibly increase an individual's risk-taking due to the lack of HIV/AIDS knowledge, unlike the outcome of the estimate. The last significant characteristic, family standard, has an effect in three of the nine regressions. As mentioned in the result, no significant pattern explains how family standard affect individual's risk-related behavior. However, there is an overall positive relationship between family standard and risk behavior that continues all the way to the eighth regression but without significant confirmation. This suggests that a higher standard of living tends to generate a higher level of risk-taking. When analyzing this outcome, it is important to have in mind that the family standard of the respondents is self-estimated and does not measure the real household income. To claim that one have a high family standard might not necessarily have the same meaning in a rural context as in an urban. This is problematic when drawing

reliable conclusions, since self-estimated family standard depends on different individual factors, and the outcome of the survey might have been different if it would have been possible to measure the real household income.

The HIV/AIDS experiences are the variables that generate the most significant results in affecting an individual's risk-related behavior. Once again, the results are very contradictory with significant estimates in different directions and an impossibility of finding clear patterns. Having someone in family infected by the virus has a positive effect on sexual risk behavior and suggests a higher level of sexual risk-taking, in line with earlier research of Bezabih et al. (2010). What this thesis adds to the analysis here is that this positive effect also appears within the non-sexual context, and confirms that it is important not only to define risk-taking in sexual terms, but also in non-sexual, when analyzing the effect on risk-taking. These findings are a bit surprising; one can assume that having someone in family affected by the virus should, if anything, have a deterrent effect on individuals' risk-related behavior. It is interesting to apply the theoretical framework by Oster (2012) when analyzing this. Maybe these findings are not that surprising in a world where HIV/AIDS is part of the daily life and distinguishes peoples' future expectancies, compared to a world without HIV/AIDS presence. According to statistics from UNDP (2013) the general life expectancy in South Africa was 53.4 years of age in 2012, which can be considered as low compared to the global average life expectancy of 70 years of age (WHO, 2012). This could imply that the inhabitants of countries with high HIV/AIDS prevalence do not have the same beliefs in the future as people living in a world without HIV/AIDS. So, even if the respondents have someone in their family living with HIV/AIDS, it might not decrease the level of risk-taking since the individuals have a low future expectancy and do not see the importance of choosing a non-risky behavior.

5.3 Final discussion

The noisy findings of the impact of HIV knowledge on risk-related behavior can be reconnected to the arguments about a world with or without HIV/AIDS presence. A higher level of knowledge might not be an effective tool to decrease individuals' risk-related behavior, if they live in an environment where the disease is a part of the everyday life. Under these circumstances, HIV/AIDS might not be the most urgent problem that individuals confront. Having HIV/AIDS as part of the daily life, and a low life expectancy, might make

the individuals less concerned about their actions and how it will affect their future. We are not assuming that individuals living in a world with HIV/AIDS are characterized with a higher risk behavior, but the daily confrontations with the virus that appear creates plenty more risk-situations, compared to a world without HIV/AIDS. With this said, in agreement with Bezabih et al. (2012), the results of this thesis confirms the importance of taking a more holistic approach when it comes to reduce the HIV/AIDS prevalence. Education about HIV/AIDS is essential, but there might as well be other ways to lower the spread of the virus and to do it as effective as possible.

After this comprehensive discussion about the impact of HIV knowledge and the other determining factors on risk-related behavior, the final question that arises is if the results can be interpreted causally? Probably not, since there is a large probability of biasedness due to omitted variables and measurement errors. The econometric model created for this study focused a lot on HIV knowledge, family standard and years of education; three explanatory variables that did not affect the respondents' behavior as much as expected. To be able to generate more reliable, and less noisy, results there is a demand for a wider database. To find explanatory variables, hidden in the error term, there is a need for more questions regarding the respondents' family situation, like parents' educational background, real household income and if they have talked about HIV/AIDS at home. To further reduce the omitted variable bias it would be preferable to use a fixed effect model that controls for unobservable characteristics, as well as including the attitude of principals, teachers and parents since they seem to have an influence over the respondents.

Finally, doing this study in Hluhluwe resulted in more knowledge about the society, cultures and everyday life in the area. This insight contributed with an understanding that it, for future research, is important to include factors like culture, norms in the society and future beliefs; they seems to be of great importance when determining a youth's risk-related behavioral pattern in rural parts of South Africa.

6 CONCLUSION

The purpose of this study is to find out if knowledge about HIV/AIDS affects youths' risk-related behavior in rural areas of South Africa. The results of this thesis were achieved through a field study conducted in Hluhluwe, in November of 2014.

In general, like previous research within the field, the results of this study are diverse and it makes it hard to find any clear relationships. The results suggest that pure knowledge about HIV/AIDS does not have an obvious impact on risk-related behavior in this case. It is rather the impact of other educational variables and the fact that the individuals talk about the virus with trustful people in their surroundings that seem to affect their risk behavior. The attitude towards school is of great importance and there is a negative relationship between individuals who value the school and risk-related behavior. Another interesting finding is that a personal experience of HIV/AIDS in some cases increases an individual's risk-related behavior, and this is found within both sexual, and non-sexual, risk-taking.

To see if a higher level of knowledge affects average risk behavior, and not only sexual risk behavior, this thesis uses two perspectives to analyze individuals in different risk-situations, a sexual and a non-sexual. This proved to be relevant due to significant results within both perspectives and highlights the importance to include a non-sexual approach within the subject of HIV/AIDS.

Overall, there is a lack of impact when analyzing the effect of HIV knowledge on risk-related behavior. To sort out what determines an individual's risk behavior, in an environment that is characterized by many decades of high HIV/AIDS prevalence, is a complex matter. The main conclusion of this thesis, based on results of the study together with theoretical framework, is that the environment an individual exists in has a crucial impact on an individual's decision-making. Whether or not an individual lives in a world where HIV/AIDS is part of the daily life affects the life expectancy and their concerns about how their actions will affect the future. The culture and norms of the society seem to play an essential role and it is clear that further analysis is needed to understand the factors behind human behavior in relation to HIV/AIDS.

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8 APPENDIX

Health and education survey in South Africa 2014

This survey is part of our bachelor's thesis written at the University of Gothenburg in Sweden. The aim of this study is to find out how the people in South Africa relate to education, health, HIV/AIDS and future beliefs. It's an amazing experience for us to be here and have the opportunity to meet you and to be able to do this study!

The answers from the survey are anonymous and will be used to create an overall view. No one will know which answer is yours, so we hope that you feel comfortable answering the questions below.

We truly appreciate your honesty and that you are taking your time for this survey. This project is very important to us and it means a lot that you are willing to help us during our stay here in South Africa.

*Thank you!
Anna & Malin*

Gender Male Female

Age: _____

1) Total years of education (number of years): _____

2) Are you in school right now? Yes No

3) How many siblings do you have? _____

4) How do you consider your family's standard of living to be? Rate your answer between 1 to 6 were;
1 = very low/poor and 6 = very high/wealthy
1 2 3 4 5 6

The following five questions we would like you to answer by *rating* them between 1 to 6 were;

1 = Definitely **not** and 6 = Absolutely

5) Do you think it is important to attend in school?
1 2 3 4 5 6

6) Do you think attending in school will create a chance for you to get a well-paid job in the future?
1 2 3 4 5 6

7) Do you think attending in school will create a chance for you to live a healthy life in the future?
1 2 3 4 5 6

8) Do you think it's important to learn about health in school?
1 2 3 4 5 6

9) Do you consider yourself living a healthy life?
1 2 3 4 5 6

10) Have you in school ever talked about:

Dreams in life:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
The future:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Health:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Sex education:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
HIV information:	Yes <input type="checkbox"/>	No <input type="checkbox"/>

- 11) Where do you see yourself in 20 years (choose one answer)?
- Working with the same profession as my father/mother
 - Working with a profession as a result of my education
 - Another type of work
 - Still educating myself in school
 - Neither working nor educating myself in school
 - I don't know what my life will look like in 20 years
- 12) What's the likelihood that you will live until you're; (one answer per age category)
- 40 years old: Not likely likely Very likely
- 50 year old: Not likely likely Very likely
- 60 years old: Not likely likely Very likely
- 70 years old: Not likely likely Very likely
- 80 years old: Not likely likely Very likely
- 90 years old: Not likely likely Very likely

The next fifteen questions are statements about HIV/AIDS. Please answer with "true", "false", or "don't know":

- 13)
- There is a cure for HIV/AIDS True False Don't know
 - A person can get HIV from a toilet seat True False Don't know
 - HIV does not spread through coughing and sneezing True False Don't know
 - HIV can be spread by mosquitoes True False Don't know
 - A person can get HIV by sharing a glass of water with someone who has HIV. True False Don't know
 - A pregnant woman with HIV can infect her baby True False Don't know
 - All pregnant women with HIV will have babies born with AIDS. True False Don't know
 - There exists a treatment for HIV/AIDS that will slow down the infection. True False Don't know
 - You can tell if someone has HIV by looking at them. True False Don't know
 - A woman cannot get HIV if she has sex during her menstruation period. True False Don't know
 - The only way of not getting HIV is protected sex. True False Don't know
 - Showering after sex protects you from getting HIV. True False Don't know
 - There is a vaccine that can stop people from getting HIV. True False Don't know
 - A person can get HIV even if he/she has sex with a person only one time. True False Don't know
 - HIV/AIDS does not spread through blood True False Don't know

14) Do you know anyone who has HIV/AIDS?
 Yes No Don't want to answer

15) Does anyone in your family have HIV/AIDS?
 Yes No Don't want to answer

16) Do you know anyone who has died from HIV/AIDS?
 Yes No Don't want to answer

The following questions we would like you to answer by rating them from 1 to 6 were:

1 = Totally disagree and 6 = totally agree

- 17) "If I get in a car/bus, and there's a seatbelt, I would use the seatbelt"
 1 2 3 4 5 6
- 18) "When walking outside at night I try to avoid unsafe streets/areas"
 1 2 3 4 5 6

19) "I would consider to get in a car driven by someone who's been drinking alcohol/taken drugs, if I know the driver"

1 2 3 4 5 6

20) "I consider having sex as a special thing, and something that should be meaningful"

1 2 3 4 5 6

21) "It is important to know/be friends with the person you're about to have sex with"

1 2 3 4 5 6

22) "If you were going to have sex today you would care about protecting yourself against HIV"

1 2 3 4 5 6

23) "It is important to know if your potential sex partner has HIV/AIDS or not"

1 2 3 4 5 6

24) "I feel comfortable asking my potential sex partner if he/she has HIV/AIDS, or telling him/her that I have HIV/AIDS"

1 2 3 4 5 6

25) Have you had sex within the last 2 years?

- No, I haven't had sex
- Yes, I have
- Don't want to answer

26) If you've had sex within the last 2 years, did you use a condom?

- Yes, every time
- Yes, usually
- Yes, but very rarely
- No, I've never used a condom during sex
- Don't want to answer

We want to thank you for participating and finally we want to ask you two questions about your dreams in life!

27) What is your biggest dream in life described with one sentence?

28) On a scale of 1 to 6, how likely is it that you will fulfill this dream in question 27?

1 = Not likely at all and 6 = most likely

1 2 3 4 5 6