

Knowledge, Attitude and Practices Towards Pre-exposure Prophylaxis as an HIV Preventive Measure Among High School Adolescents in Eswatini – A Pilot Study

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Abstract

Eswatini has an HIV prevalence rate of 24.9% even with so many strategies that have been introduced to reduce HIV incidence. Measures that have been put in place include pre-exposure prophylaxis (PrEP), even with the introduction of PrEP its uptake has been poor with only 11% of the eligible population taking it. This study is aimed to assess the knowledge, attitude and practice towards pre-exposure prophylaxis as an HIV preventive measure among high school adolescents in Eswatini. A cross-sectional study was conducted among 11 high school adolescents in one of the high schools in the Hhohho region. Self-administered questionnaires were used to collect data. Data that was analyzed using SPSS version 31, Pearson correlation, Chi-square and regression analysis was done. Data did not support an association between knowledge on HIV and PrEP use ($F = 0.016$, $P = 0.770$). The odds of using PrEP were 0.36 (64%) less among those with poor knowledge about PrEP (AOR – 0.36, 95% CI = -0.318- (-) 0.03, $p = 0.23$) adjusting for PrEP. The results indicated there is no significant association between attitude towards PrEP and PrEP use ($X^2(4) = 7.639$, $p = 0.106$). There was no association between risky behavior and PrEP use ($r = 0.222$, $p = 0.511$). There is need for Eswatini to strengthen and evaluate its strategies that are in place to improve PrEP uptake and also develop programs and strategies that will cater for the needs and concerns of adolescents that will assist them to make informed decisions.

Keywords: Adolescents, Attitude, Eswatini, Knowledge, Practices, Pre-exposure Prophylaxis.

Introduction

There were 39 million people across the globe living with HIV in 2022. About 37.5 million were adults and 1.5 million were children below 15 years. There were 1.3 million new infections in 2022 showing a decline of 38% from the 2010 statistics. A large portion of people affected (5.5 million) were from Africa with over 170 000 new infections per year [1]. Eswatini has made great strides in its response to HIV. New HIV infections have fallen steadily over the years, from 14 000 in 2010 to

4800 in 2020, and were projected to drop to 4300 by the end of 2023.

The country's core set of HIV prevention strategies include increasing the uptake of high-impact services such HIV testing and counselling, HIV treatment, and prevention of mother-to-child transmission, post-exposure prophylaxis, condom use and voluntary medical male circumcision. In 2018, the country piloted the rollout of pre-exposure prophylaxis, the use of antiretroviral medication by HIV-negative people to reduce their risk of acquiring HIV [2].

In Eswatini, HIV remains the leading cause of death. An estimated one-quarter of people live with HIV, and nearly a third of women aged 15-49 are HIV-positive [3]. The kingdom has introduced PrEP as an HIV preventive measure to reduce the incidence of HIV in the country. Even with the introduction of PrEP there is poor uptake because of social stigma and discrimination directed to people taking PrEP. Shockingly, only 11 percent of eligible people take PrEP [4].

Adolescence is the period during which an individual's perception, as well as response gets colored sexuality [5]. Adolescence is the age of exploring and understanding sexuality. Sexual curiosity in adolescents leads to exposure to pornography, indulges in sexual activities and also increases the vulnerability for sexual activity. Sexual exposure during adolescence is a matter of serious concern due to the risk of transmission of sexually transmitted infections such as HIV. In many developing countries early, sexual exposure led to HIV infections [5].

Pre-exposure prophylaxis (PrEP) is medication that is given to prevent contracting HIV. It is reported to be highly effective if taken as prescribed [4]. PrEP reduces the risk of contracting HIV from sex by 99% and reduces the risk of being infected through injection, drug use by least 74%. Denovir Disproxil Fumarate (TDF) is recommended as the medication of choice as PrEP. There were 1.6 million people across the world who received oral PrEP in 2021, mostly from Eastern and Southern Africa [6].

As a desperate measure to prevent HIV infection through PrEP, Eswatini introduced other PrEP measures to increase its uptake in order to reduce the incidence of HIV. One measure introduced for males was event driven pre-exposure prophylaxis (ED-PrEP), where males who are HIV negative are expected to take 2 tablets of TDF and lamivudine (3TC) regimen 2 to 24 hours before having intercourse, then 1 tablet 24 hours after sex and last dose to be taken 24 hours after the second

dose. Also, for women who is HIV negative can use a PrEP ring (Dapvirine vaginal ring) has been introduced, this is for women who wish to prevent HIV acquisition through receptive vaginal intercourse. It can be put in the vagina and last for 28 days, thereafter it has to be removed and be replaced with a new one. Lastly, in 2024 cabotegravir long-acting injectable (CAB-LA) which is given every two months was introduced [7].

Overall, PrEP knowledge was low, although acceptance and willingness to use was high. Findings indicate missed opportunities for health professionals who engage with adolescents about PrEP, since few with a primary care physician had spoken to their physician about PrEP [8]. Sexual partners may also be a future point of intervention, since there was a high willingness to use PrEP when recommended by a sex partner and adolescents in a relationship more frequently reported being willing to take PrEP [8].

A study conducted in the US adolescents between the ages of 13-24 years there was an overall 76.2% increase in prescriptions over the time period. It is encouraging that prescribing rates have increased yearly. Most adolescents prescribed PrEP in 2021 were male (82.6%) and aged 18 to 19 years (87.8%), with the most noticeable increase in prescription patterns occurring among older adolescents [9].

Moreover, in another study in Kampala among women between the ages 14-24 revealed that 47.6% preferred oral PrEP; 30.6% started PrEP; and the main reason for declining as: low HIV risk perception (33.7%), dislike for daily pills (27.2%), not being ready (21.7%), preference for other methods (e.g. condoms [12.5%]), and concern about side effects (2.7%) and stigma (2.2%) [10].

There is little research that has been done that examines the attitudes, knowledge and practices of adolescents when it comes to PrEP as a preventive measure for HIV. Most of the studies done are concentrating on young adults yet there is strong evidence that the HIV

prevalence among adolescents is high and there is need to scale up preventive measures to reduce the incidence of HIV. If we continue to neglect this population we will be fighting a losing battle against HIV, thus the need to assess the knowledge, attitude and practices towards PrEP as an HIV prevention measure among high school adolescents in Eswatini.

Materials and Methods

This study adopted a cross-sectional study to determine the knowledge, attitude and practice towards Pre-exposure prophylaxis as an HIV preventive measure among high school adolescents. The study was conducted in one of the high schools in the Hhohho region of Eswatini. This school is one of the biggest schools in the region. It has two divisions the secondary (grade 8 & 9) and high school which comprises of grade 10 and 11. The school admits both genders of students regardless of age, race, religion, nationality or economic background. The choice of school as a study setting was because it contains a diverse student population, one of the schools with the largest number of students in the Hhohho region and has adolescents that meet the criteria for the required population. The study population were high school adolescents living in the Hhohho region of Eswatini, between the ages of 10-19 years. The inclusion criteria were the adolescents who were studying at a high school

level, resides in Hhohho region, willing to participate in the study and between the ages of 10-19 years. Using convenient sampling technique, 11 adolescents were recruited for this study. The school where students were selected was randomly selected from a list of 10 schools in the region. Data was collected using a self-reported questionnaire. The questionnaire was developed based on an outline of what needs to be measured. Literature review was conducted to determine any relevant concept and already existing tools, objectives of the study, the theoretical framework, in put on experts in the field and the help of supervisor. Data was analyses using Statistical Package for Social Sciences (SPSS) version 31.0. Data analysis used Chi-square, Parson's correlation and regression analysis (both linear and logistic). Ethical clearance was sort from the Eswatini Health and Human Research Review Board (EHHRRB). Permission to conduct the study in the chosen School was also obtained from Eswatini Ministry of Education. This was conducted in respect of the declaration of Helsinki. Parental and participants consent forms were signed before the commencement of the study. Confidentiality, privacy and anonymity were ensured throughout the study.

Results

Description of Socio-demographic Characteristics of the Adolescents

Table 1. Frequency and percentage of Socio-demographic characteristics of the Adolescents (N=11)

S. No.	Sociodemographic variables	Frequency (F)	Percentage (%)
1	Age (in years)		
	15-19 years	8	72.7
	10-14 years	3	27.3
	M±SD: 16.64±1.86		
2.	Gender		
	Male	1	9.1
	Female	10	90.9
3.	Place of residence		
	Urban	11	100
4.	Marital status		
	Married	1	9.1

	Single	8	72.7
	Cohabiting	2	18.2
5.	Level of education		
	High	11	100
6.	Religion		
	Christianity	8	72.7
	Islamic	0	0
	Bahai	1	9.1
	Traditional	2	18.2
7	Occupation		
	Scholar	11	11

Table 1 shows the frequency and percentage of Socio-demographic characteristics of Adolescents. Regarding the age, most (72.7%) respondents were aged between 15-19 years and 27.3% were between 10-14 years, with a mean age of 16.64 years and a standard deviation of 1.859 years. With respect to gender, almost all (90.9%) of the study respondents were females and only 9.1% were males. According to the place of residence, all respondents in the study reported that they were from the urban setting. Regarding the marital status, large proportion of the respondents were single. Majority (72.7%) of the respondents

were single, 18.2% were cohabiting, and 9.1% were married. Regarding the level of education, all participants were high school students. According to the adolescent's religion, almost all (72.7%) respondents were Christians, while 18.2% were traditional and the minority 9.1% was Bahai. With regards to occupation, all the participants were scholars.

Description of Knowledge regarding Pre-exposure Prophylaxis as an HIV Preventive Measure among High School Adolescents

Table 2. Frequency and Percentage of General Knowledge Regarding Causes of HIV/AIDS among High School Adolescents (N=11)

S. No.	Items	Frequency	Percentage
1	Unprotected sex	11	100
2	Sharing of needles and razors	11	100
3	Blood transfusion	11	100
4	Mother to child transmission	11	100
5	Hugging someone who is infected	11	100
6	Kissing	9	81.8
7	Causative organism of HIV	8	72.7

Table 2 illustrates the frequency and percentage of general knowledge regarding causes of HIV/AIDS among high school adolescents. All participants reported that a person can contract HIV from unprotected sex and can get HIV from sharing needles and razors, contract HIV from blood transfusion

unborn baby can contract HIV from the expectant mother and cannot attain HIV from hugging an infected person. The majority (72.7%) of the respondents reported that HIV cannot be acquired from kissing, and 81.4% of the respondents reported that HIV was caused by a virus. Majority (63.6%) of the participants

reported that HIV was not curable, and only 36.4% reported that HIV was curable. The

findings of this study reflected that the participants had good knowledge about HIV.

Table 3. Percentage of Knowledge about PrEP among High School Adolescents (N-11)

S. No.	Items	Yes	No	I do not know
1	Have you ever heard of PrEP	63.6%	36.4%	0
2	PrEP will reduce number of people contracting HIV	36.4%	0	63.6%
3	PrEP is used to prevent HIV	63.4	0	36.4%
4	PrEP is an antiviral	45.5%	0	54.5%
5	PrEP prevents sexually transmitted disease	18.2%	54.5%	27.2%
6	PrEP can be in a form of tablets, injection, ring	45.5%	9.1%	45.5%

Table 3 above demonstrates the percentages of knowledge about PrEP among high school adolescents. The study findings revealed that 63.6 % have never heard of PrEP. Furthermore 36.4% reported that PrEP would reduce the number of people contracting HIV. A majority of the participants (63.4%) revealed that PrEP is used to prevent HIV. More than half of the participants (54.5%) did not know whether PrEP was antiviral or not. Moreover, 18.2% revealed PrEP could prevent sexual diseases. Lastly, an equivalent of 45.5% reported that PrEP can be in the form of tablets, injection and ring and did not know whether PrEP was in the form of tablets, injection and ring.

Description of Attitude towards Pre-exposure Prophylaxis as an HIV Preventive Measure among High School Adolescents

Most participants (45.5%) reported they would take PrEP, while one third (27.2%) of the participants reported they would not take PrEP and did not know whether they would take PrEP or not. A large portion of the participants (54.5%) reported that they would encourage others to take PrEP, while 36.4% did not know whether they would encourage others and the

minority 9.1% reported they would not encourage others to take PrEP. More than half of the participants (63.6%) revealed that they thought PrEP was a good method of HIV prevention, while an equivalent portion of 18.2% reported PrEP was not a good method of HIV prevention and did not know whether PrEP was a good method of HIV prevention. The study findings revealed that 45.5 % of participants reported that PrEP would lead to risky behavior while an equivalent proportion of 27.3% did know whether PrEP would lead to risky behavior and did not know whether PrEP would lead to risky behavior. A majority of participants (54.5%) thought it was important to take PrEP, 9.1% did not know whether it was important to take PrEP and only 36.4% thought it was not important to take PrEP. The majority (54.5%) reported that they would support their partners if they took PrEP while 36.4% did not know whether they would support their partners if they took PrEP and the minority (9.1%) reported they would not support their partners if they took PrEP. Participants in this study demonstrated good attitude towards PrEP obtained attitude score above 50%. Table 4 summarizes participant's attitudes towards PrEP.

Table 4. Frequency and Percentage of Attitude towards PrEP among High School Adolescents (N-102)

S. No.	Items	Frequency	Percentage (%)
1	Would you take PrEP	5	45.5
2	Would you encourage others to take PrEP	6	54.5
3	PrEP is a good method to prevent HIV	7	63.6
4	PrEP would result in risky behavior	5	45.5
5	Do you think it is important to take PrEP	6	54.5
6	Would you support your partner if they took PrEP	6	54.5

Description of Practice towards Pre-exposure Prophylaxis as an HIV Preventive Measure among High School Adolescents

All the participants reported they have never taken PrEP. The main reasons for not taking PrEP were lack of knowledge (36.4%), afraid of side effects (18.2%) and 45.5% did not see the reason to take PrEP. Figure 1 illustrates the reasons for not taking PrEP.

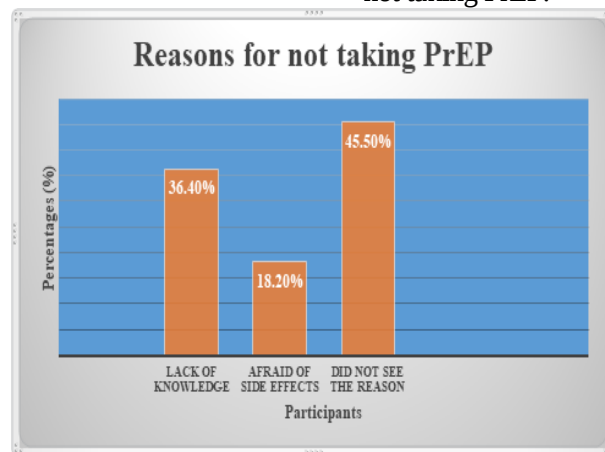


Figure 1. Bar Diagram Showing Reasons for not taking PrEP

Figure 2 illustrates that 27.3 % did not know anyone who was taking PrEP and the remaining

72.7% knew people who were taking PrEP.

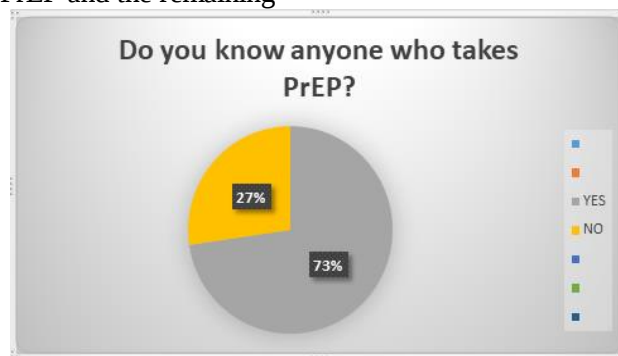


Figure 2. Pie Chart Showing Participants Knowledge of Anyone using PrEP

Figure 3 below depict that 45.5% of the participants did not have boyfriends or girlfriends while an equivalent proportion of 27.3% had

boyfriends or girlfriends and preferred not to say whether they had boyfriends or girlfriend.

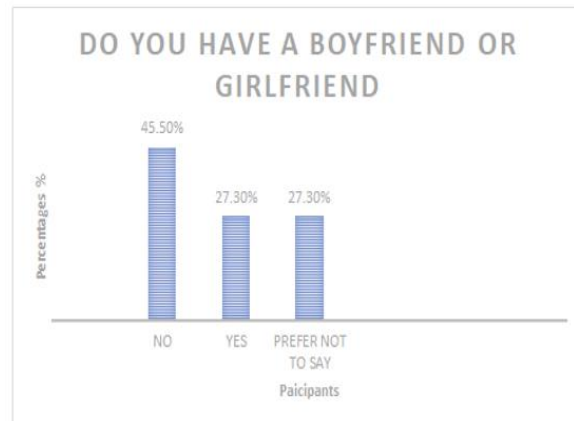


Figure 3. Bar Graph Showing Participants Status on having a Boyfriend or Girlfriend

Figure 4 elucidates that more than half of the participants 72.7% reported they were not

sexually active while 27.3% were sexually active.

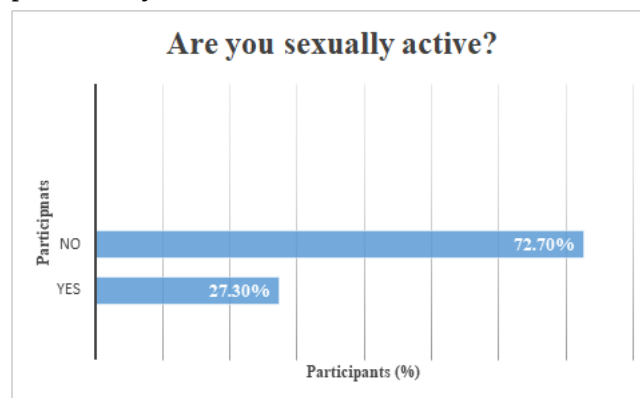


Figure 4. Bar Diagram Showing Participants Responses on being Sexually Active

Testing the Independent Variable on the Dependent Variables

Data did not support an association between dependent variable, knowledge on HIV and independent variable PrEP use ($F = 0.016$, $P = 0.770$). Knowledge of HIV was not a good predictor of PrEP use ($\alpha \leq 0.05$). The odds of using PrEP were 0.36 (64%) less among those with poor knowledge about PrEP (AOR = 0.36, 95% CI = -0.318- (-) 0.03, $p = 0.23$) adjusting for PrEP use ($\alpha \leq 0.05$). A Chi-Square test of independence was done to examine the relationship between attitude towards PrEP and PrEP use. The results indicated there was no significant association between attitude

towards PrEP and PrEP use ($X^2(4) = 7.639$, $p = 0.106$). A Pearson correlation analysis was conducted to examine the relationship between risky behavior and PrEP use. There was no association between risky behavior and PrEP use ($r = 0.222$, $p = 0.511$).

Discussion

In this study the mean age of the participants was 16.64 years (SD = 1.86). The majority of participants were females 90.9%. Majority of the participants (72.7%) were Christians and were single. Adolescents provided enough evidence that they had good knowledge about HIV as all the participants and scored above 70%. The participants were clear about the

ways of contracting HIV though it's surprising how some (18.2%) thought you could get HIV from kissing. Even though they seemed to have good knowledge about HIV it is with great concern that some of these adolescents did not know the causative organism of HIV (27.7%). This study revealed that there was no association between knowledge of HIV and PrEP use, this suggests that adolescents could know and understand HIV and still decide not to use PrEP to prevent contracting it. This study findings were consistent with findings of a cross sectional study conducted in Kamrup among adolescents between the ages of 15-25 which revealed that the majority, 52.5% of the participants, had good knowledge about HIV, majority, 79.6% of the study participants, knew about sexual mode of HIV transmission; and 64.3% knew about the mother to child transmission and knew about the HIV transmission through contaminated blood; furthermore 58.9%, knew about transmission through the use of contaminated needles and syringes and lastly 61.8% agreed HIV is not transmitted through touching, shaking hands, hugging, sharing utensils, coughing and sneezing [11]. This study findings also concur with the findings of a study done in Africa among young people between the ages of 12-25 which showed that, a majority of the respondents knew that HIV could spread through sexual intercourse, through blood transfusion (89%), from a mother to a child (85%) and by sharing needles and syringes (75%) [12]. This study suggests that there is need to continue with HIV education to ensure that adolescents gain a high level of HIV so they can be able to prevent themselves from contracting HIV. The government needs also to intensify strategies that will assist in ensuring the required knowledge reaches the adolescents.

The present study also revealed that PrEP knowledge in this study was good (64.7%). However, it is concerning that only 36.4% reported that PrEP will reduce the number of

people contracting which means that there is an urgent need to educate adolescents about HIV prevention measure if we are to reduce the incidence of HIV. Moreover, 18% thought that PrEP would prevent sexually transmitted diseases. The findings in this study are consistent with findings of a quantitative study done in Lesotho among youth which revealed that 71 % of participants were aware of PrEP, yet only 12.5 % had ever used it [13]. However, the findings of this study are in contrast with a study that was conducted in Southern spots among adolescents between the ages of 13-17 which revealed that knowledge was low, although acceptance and willingness to use was high. Their findings indicated missed opportunities for health professionals who engage with adolescents about PrEP [14]. A study conducted in New York suggested that adolescent knowledge of PrEP was suboptimal and presents barriers to adopting it. However, these adolescents were willing to accept PrEP if offered [15]. There was no association between PrEP knowledge and its use. An individual might have good PrEP knowledge but still decide not to use it.

Participants in this study demonstrated good attitude towards PrEP as they all scored above 50%. Moreover, some participants believed that it was important to take PrEP (45.5%) and a majority (54.5%) were willing to take PrEP. The findings in this study are contrary to multiple other studies. One study conducted in Spain [16] reported that the participants had a neutral attitude towards PrEP even with good understanding of HIV knowledge. In a study conducted in South Africa the findings stated that 73.1% of their participants had a negative attitude towards PrEP [17]. The finding in this study is proof that a positive attitude towards PrEP will lead to an individual seeking PrEP thus decreasing new HIV infections. Also, if a person has a positive attitude towards PrEP they will encourage others to take PrEP and support partners and relatives taking PrEP. Most importantly, a good attitude towards PrEP will

result in reduction of the stigma attached to PrEP. In a nutshell a good attitude towards PrEP is the cornerstone of reducing HIV infection through increasing PrEP uptake.

Additionally, all the participants in this study had never taken PrEP. The leading reasons for not taking PrEP were lack of knowledge, being afraid of medication side effects and did not seeing the need. This study finding is consistent with a study in Eastern, Southern and western Africa, the participants stated that the factors affecting their PrEP uptake were: fear of side effects, perceived stigma, PrEP use disapproval from parents and partners, healthcare providers stigma, isolated clinic set up, lack of resources and lack of partners support [18]. There is need to address the stigma and discrimination attached to PrEP by increasing awareness to PrEP among adolescents, addressing misconception about PrEP. These findings also concur with a face to face survey done in Malawi among adolescents ages 10-16 years which revealed that 80% were willing to take PrEP especially injections and there was a high proportion among those who had already started engaging in sexual activities. They further stated that they feared side effects of PrEP medication thus the reluctance in taking it [19]. The findings of a qualitative study conducted in Malawi among the adolescents and young women contradicts the above finding as PrEP uptake was relatively high, two-thirds (68.6%) used PrEP for 1 month or less after PrEP initiation, while 20.5% continued PrEP for 1 to 4 months and 11.0% continued for more than 4 months after first PrEP initiation. They further identified reasons for not taking PrEP as lack awareness, side effects of medication and stigma [20].

In an era where the prevalence of HIV is high in countries like Eswatini, the low uptake of PrEP among adolescents is discouraging as at this stage some adolescents have already started engaging in sexual activities with protecting themselves which will increase their risk of contracting HIV. There is a need to address the barriers of uptake of PrEP among this

population by creating targeted interventions to improve PrEP uptake and strengthen existing strategies that are put in place that will improve PrEP knowledge.

Conclusion

In a nutshell, this study highlighted major concerns that stand as barriers for Eswatini to win the battle against HIV. While the participants showed understanding about HIV, good knowledge about PrEP and good attitudes towards PrEP, disappointingly there is still poor uptake of PrEP yet the adolescents are sexually active. The adolescents further stated they did not take PrEP because they lacked knowledge and were afraid of side effects of the medication. These findings suggest that there is need to bridge the gap between knowledge, attitude and practice towards PrEP. This results simply identifies that good knowledge and attitude does not necessarily mean an individual will take PrEP, this signifies the need to address other factors that results in poor uptake of PrEP. Further studies are required to address others factors contributing to poor PrEP uptake in Eswatini. The same study needs to be replicated with a larger sample size to be able to generalize these findings.

Ethical Approval

This study was approved by the Eswatini Health and Human Research Review Board (EHHRRB). Approval number: FWA 00026661/ IRB 00011253. Approval date: 26 June 2025.

Funding

There was no form of funding associated with this study.

Data Availability

The datasets that were used for this study are available from the corresponding author upon reasonable request.

Author Contributions

Conceptualization, Zanele Simelane and Dr Joseph Jeganathan; Methodology, Zanele Simelane; Investigation, Zanele Simelane; Formal analysis, Zanele Simelane; Writing – original draft, Zanele Simelane; Writing – review and editing, Dr Joseph Jeganathan; Supervision, Dr Joseph Jeganathan.

Acknowledgement

I would kindly like to extend my sincere gratitude to my supervisor Dr Joseph Jeganathan for his endless support and guidance

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in completing this paper. My heartfelt gratitude to the participants for agreeing to take part in this study, there would be no study without them. I would also like to thank Eswatini Ministry of Education, head teachers and teachers at the school where the study was conducted for giving me permission on to conduct the study and their assistance and support. Lastly, to my family thank you for the continuous encouragement, support and prayers.

Conflict of Interest

There is no conflict of interest.

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