A Retrospective Analysis to Review Access of HIV Self-testing During SARS-COV-2 Lockdown in Eswatini Community Settings, Eswatini: Quantitative Methods Study

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Abstract

The HIV self-testing (HIVST) program was introduced to reach people living with HIV who are still undiagnosed and also to ensure that HIV-negative individuals get access to effective HIV prevention services. HIV self-testing offers a discreet and convenient way to test, with the potential to reach individuals in need of HIV testing services but who may not otherwise test. The purpose of this study was to uncover access to HIVST during the first SARS-COV-2 lockdown period in 2020. This was a cross-sectional design approach that applied the RE-AIM framework principle. The study used historical data from the four regions in Eswatini (Shiselweni, Manzini, Lubombo, and Hhohho). These regions were selected based on ensuring adequate coverage and representativeness. Data were analysed using bivariate logistic regression analysis in Stata15 to assess the association between categorical variables, and the level of significance was set at a P-value less than 0.05. The results showed a total of 6158 clients were reached with HIVST kits. A total of 3031 (50%) were females, and 3127(51%) were males, and more outcomes were based on risk profiles and age. It is concluded that HIVST is one key strategy in reaching males who ordinarily lag when it comes to HIV testing services in Eswatini. These results show that access to HIV self-testing during the lockdown period in Eswatini illustrated positive advances as it reached the most at-risk population groups and has a potential for extended sustained use to benefit specific high-HIV-risk population groups.

Keywords: Access, HIV-Self testing, Risk, SARS-COV-2, Population.

Introduction

According to Global AIDS Strategy (2021-2026) [1] "Despite the remarkable progress in the global HIV response, new HIV infections and AIDS-related deaths remain unacceptably high". According to the Global AIDS Strategy (2021-2026) [1] "HIV epidemics continue to grow in countries and communities where the benefits of science and human rights are still not reaching those being left behind". Letting go of some services will not help at all as HIV still affects us as a pandemic as well. More people are still getting new infections and others live with HIV unknowingly because they have not been reached by testing services. This means that it is still very important to take HIV as a serious concern while we are all up in arms with the Covid-19 response globally and nationally. The low-income countries like Eswatini will struggle to let go of one disease they have to head on with both pandemics.

Many countries in similar settings as Eswatini have not managed to achieve the UNAIDS HIV case finding (First 90) targets. Eswatini adopted the WHO guidelines for HIV case finding, treatment, and prevention known as 'test and start'. This was in a bid to identify new HIV cases and immediately put them on treatment as soon as at diagnosis. HIV Testing Services (HTS) is the entry point for HIV preventive and

Received: 28.01.2022 Accepted: 26.06.2022 Published on: 30.09.2022 *Corresponding Author: t1975mdluli@gmail.com treatment services in Eswatini. They promote general and key population awareness about HIV status, and promote linkages of HIVnegative people to prevention services and HIVpositive people to care and treatment services. HTS is a necessary step for enrolment into HIV treatment, which in turn reduces morbidity and mortality in people living with HIV (PLHIV) but also reduces the risk of HIV transmission linkages to the treatment of HV-positive remains the most crucial step to ensure viral suppression and healthily life.

Although the recent Swaziland HIV Incidence Measurement Survey (SHIMS 2017) [2] results indicate a reduction in new HIV infections by over 40%, Eswatini remains hardest hit by the HIV epidemic, with about 27% of the population (15-49 years old) being HIV infected with HIV (SHIMS 2017) [2]. In 2012, the Ministry of Health (MOH) adopted the treatment-as-prevention framework, which aims to reduce HIV transmission among antiretroviral clients on anti-retroviral treatment (ART) as soon as they are diagnosed with HIV. This is in line with the UNAIDS 95-95-95 strategy, which sets the ambitious cascade targets which are that 95% of PLHIV should know their HIV+ status, 95% of those knowing their HIV-positive status should be on ART, and 95% of those on ART should be virally suppressed (viral level is reduced to an undetectable level).

Considerable efforts have been made in Eswatini to reduce the HIV testing gap. The Ministry of Health (MOH) is working together with partners in the public and the private sector to reach the UNAIDS 95-95-95 goal by 2030. In 2018 in Eswatini: 92% of people living with HIV knew their status, 86% of people living with HIV were on treatment, and 81% of people living with HIV were virally suppressed. Of all adults aged 15 years and over living with HIV, 87% were on treatment, while only 76% of children aged 0–14 years living with HIV were on treatment (UNAIDS, Eswatini, 2021) [1].

Additionally, an HIV self-testing program was introduced in the same years to reach people living with HIV who are still undiagnosed and to ensure that HIV-negative individuals get access to effective HIV prevention services within the country. This was possible through increasing coverage and uptake of HIV testing through the distribution of HIV self-testing kits. The goal of the HIVST program is to increase access to HIV testing and to link people to prevention services and treatment. After some pilot programs which took place in 2017 to evaluate HIVST experiences in Eswatini, MOH has adopted selftesting as an additional screening modality and included it in the national HIV Management Guidelines of 2018.

The magnitudes of gains made in HIV testing services were at serious threat during the SARS-COV-2 lockdown period. This required urgent, highly effective interventions in a bid to sustain the gains that had been made in HIV testing services in the country. HIV self-testing was one of the options that were low-hanging fruit for immediate adoption using novel distribution channels to allow continuity in HIV testing services. HIV self-testing offers a discreet and convenient way to test, with the potential to reach individuals in need of HIV testing services but who may not otherwise test. For many years informal HIV self-testing was common, particularly among health workers, but its potential as a strategy for reaching the first 90 targets had yet to be explored.

According to a PSI report (2020) [3]," In 2015, the UNITAID Self-Testing Africa (STAR) Initiative began the largest Evaluation of HIV self-testing". The STAR Initiative's first phase generated crucial information about how to distribute HIVST products effectively, ethically, and efficiently. Implemented initially in Malawi, Zambia, and Zimbabwe, the first phase of the STAR Initiative was designed to address critical challenges to the development of the HIVST market. The STAR Initiative's second phase built on the evidence generated in the first phase to scale access to HIVST across sub-Saharan Africa and expanded implementation to three additional countries, Eswatini, Lesotho, and South Africa, with the aims of generating largescale experience and evidence, contributing to reaching the first 90 targets, creating an enabling environment, and catalyzing a global market. (STAR Initiative, Unitaid, and World Health Organization, 2018)

The focus of the research is to conduct a review of access to HIV self-testing during the lockdown period in Eswatini community settings. Additionally, also determine population groups who accessed during the lockdown period in 2020. The ultimate focus is to produce information for the development of a policy brief to support the endorsement of HIVST as an efficient tool for access to prevention services by most of the population at risk, especially men in Eswatini.

According to the STAR Initiative and WHO (2018) [4] report "The STAR Initiative is continuing to generate evidence on sustainable, effective, and cost-effective strategies to deliver HIV self-testing until mid-2020. This supports advances and shifts towards the full implementation of HIV self-testing. As more countries and states take up HIVST, the results will showcase its use and how it can be upscaled to benefit the population that may require the test the most.

Moving forward, the STAR Initiative, governments, and communities will be taking HIV self-testing to scale and identifying the most effective, efficient, and sustainable models for mobilization, distribution, and linkage to prevention and care" (STAR Initiative, UNITAID, and World Health Organization, 2018) [4].

Problem Statement

Despite its small population size, Eswatini has the highest HIV prevalence and incidence in the world (Eswatini Global Fund report 2020) [5]. Eswatini in 2018: 210 000 people were living with HIV. "HIV incidence per 1000 uninfected —the number of new HIV infections

among the uninfected population over one year-among all people of all ages was 8.62. HIV prevalence-the percentage of people living with HIV-among adults (15-49 years) was 27.3%" (WHO, 2020) [6]. Women are disproportionally affected by HIV in Eswatini: of the 200 000 adults living with HIV, 120 000 (63.16%) were women. According to UNAIDS (2021) [1], New HIV infections among young women aged 15-24 years were more than quadruple those among young men: 2400 new infections among young women, compared to fewer than 500 among young men. The discrepancies in HIV infection rates in both males and females could be that women are presented with more opportunities to test for HIV than men. Men are traditionally known to have very low health-seeking behavior. As long as they are not sick, they shall not see the need to undergo any health care service, including HIV testing services. Seidler, Dawes, Rice, Oliffe, & Dhillon, 2016 [7] state that "In societies where traditional masculinity remains the dominant identity for men, healthcare is strictly seen as a feminine construct where females who are usually being described as weaker vessels, require health services regularly while men are resilient and do not need health care services or are not often referred to as "fallen ill" "as quoted by Osasumwen F. O et al. (2019) [8].

Additionally; (UNICEF Eswatini, 2020) [9] states that Eswatini has the highest HIV prevalence globally, with a prevalence rate of 27 percent among the 15–59-year-old. Eswatini recorded its first Covid-19 case in March 2020, and the first wave hit the country in early May 2020. This immediately changed the story of Eswatini to having suddenly added pandemic which came with many restrictions that warranted that people needed to stay at homes and limit movements. Health care facilities were immediately required to have reduced client flows with physical distancing, hand hygiene, and masks being enforced by the law. This became the most difficult period in Eswatini's history HIV response.

HIV Self-testing Advances and Implications during Covid-19 Period

HIV self-testing implementation has the potential to affect human rights as people are reached with services, thus, client-centered approaches with highly sound, ethically approved strategies are required, and most importantly, during the times of SARS-COV-2. The SARS-COV-2 pandemic has released advances in evidence in the last 2 years. The realization is that only a few studies were published on Covid-19, but this has changed as all efforts are now geared towards finding the solutions to minimal knowledge availability on self-testing and Covid-19 response. McMahon J. 2020 [10] supports this when he states that "Covid-19 has led to accelerated research efforts globally and highlighted the importance of community engagement op[and leadership in the Covid-19 response". To achieve positive outcomes with the double pandemic, it is important to have a positive impact on the Covid-19 response as well as the HIV response. HIV self-testing has the potential to sustain HIV testing advances with the added benefit of allowing individual clients to test in the comfort of their own homes with the possibility the support from loved ones if they wish. Several global bodies support the strategy, and this is an assurance that, indeed HIV self-testing is critically important. PAHO/WHO, (2020) [11] stated during the virtual launch of the "In Your Hands" Caribbean HIV self-testing campaign vesterday, partners advocated for self-testing policies to be developed and implemented as part of a comprehensive strategy to ensure that HIV diagnosis does not decline during the Covid-19 pandemic". [12] mention that "HIV self-testing (HIVST) is a useful strategy to promote HIV testing among key populations. This study aimed to understand HIV testing behaviors among men who have sex with men (MSM) and specifically how HIVST was used

during the coronavirus disease 2019 (Covid-19) measures in China when access to facility-based testing was limited". All the evidence supports the importance of using HIV self-testing during the Covid-19 period to sustain the gains as well as reach the targeted population groups. When WHO issued the guidance on HIV self-testing during World AIDS day in 2016, Dr. Gottfried Hirnschall, the Director of the WHO Department of HIV, mentioned that "By offering HIV selftesting, we can empower people to find out their own HIV status and also to notify their partners and encourage them to get tested as well," He "This should lead to more people knowing their status and being able to act upon it. Self-testing will be particularly relevant for those people who may find it difficult to access testing in clinical settings and might prefer self-testing as their method of choice."

"HIV self-testing is a human-centered approach that is one of the ways to ensure sustained provision of HIV Testing services for a diverse population group and setting"[12]. Several studies have been undertaken to prove this concept are, like the Lebanon study on community-led HIV-ST for men who have sex with men, serves as an example of introducing a self-care intervention as part of a community-led effort, this was undertaken by [14]. They found that HIVST was very effective, especially during Covid-19.

It will be crucial for programs to support program adaptations using positive messaging to instil confidence in clients who may otherwise be fearful of accessing routine services due to Covid-19 infection risk.

Materials and methods

Methodology

Study Design

This was a cross-sectional design approach that applied the RE-AIM framework principles to understand the reach, efficacy, adoption, implementation, and possibly recommend the maintenance of the interventions on HIV selftesting that took place during the initial SARS-CoV-2 lockdown period in Eswatini in 2020. The RE-AIM model was developed in 1999 in response to a need to have a framework to evaluate the potential for, or actual, public health and population impact [15] The study design was adopted to explore HIV self-testing access in Eswatini during the lockdown period; using the RE-AIM framework, which has a greater focus on the intervention setting level and on what the program did during the period. Additionally, RE-AIM emphasizes the potential implications for delivering the intervention in applied settings and assessing implementation for different program components across diverse intervention staff and locations. Interventions implemented require Evaluation to foster policy changes that will ensure sustained positive gains. The RE-AIM model was chosen for an effective, thorough analysis of public health impact. King [16] state that the RE-AIM provides a practical framework for planning and evaluating practice change interventions to assure their external validity.

This involved gathering historical data from national HIV self-testing and HIV testing registers as a quantitative retrospective study to determine access to HIV self-testing distribution during the SARS-COV-2 lockdown period. The cross-sectional design is a type of observational research that analyses data of variables collected at one given point across a sample population or a pre-defined subset. The study used the available already collected data set, which was abstracted and cleaned from the national registers. It is well known that these studies are helpful in the assessment of the health needs of a particular population and are very useful in enlightening the planning and allocation of health resources in specific health areas for evidence and future considerations. The dimension of reach analysis helped understand who was reached with the intervention. This further gave illustrations of How many people would ideally Individual were exposed to HIV and require the intervention of HIV self-testing

during that crucial period in Eswatini. The reach also ensured that illustrations clarified the number of clients who received the HIV selftesting kits and were at risk of HIV acquisition. This further showed if those who received the intervention were the most deserving and representative enough of the population. Efficacy was also illustrated on the possible benefits that came with the intervention of HIV self-testing distribution in Eswatini. This looked at the impact of the initiative on intended outcome results. The further analysis outlined the intended outcomes of ensuring reasonable access to HIV testing services when the conventional services were not available in the country. The effectiveness analysis also did not leave out further reasoning on possible negative consequences and limitations of the intervention for future reference. The adoption dimension of RE-AIM, focused on the settings which were included and involved in the study and if they are representative of the national picture. In detail, further looked at the number of settings, their similarities, differences, and representativeness were illustrated to make further inferences and recommendations based on outcomes. Implementation dimension analysis looked at whether the implemented activities were successful, and success required rating access and effectiveness of the intervention based on the outcomes of the qualitative findings. Were required activities of our initiative the successfully implemented? This further meant uncovering if the initiative of HIV self-testing was required then. What costs could be accounted for in the implementation, and was the implementation acceptable to the population it served.

Maintenance as the last pillar in the RE-AIM model, required justification of the long-term effects of the initiative and its sustainability status. Key information illustrated the possible lasting effects of the intervention under study, which was HIV self-testing distribution access for population groups in Eswatini. Several questions were answered which consistent support availability from possibly involved organizations. the most crucial, which was not determined in the study, was if there is enough funding to maintain the initiative, but means were made to refer to resources to inform this component, which could not be answered directly by the study.

Study Setting

The study used historical data from the four regions in Eswatini (Shiselweni, Manzini, Lubombo, and Hhohho). These regions were selected based on ensuring adequate coverage and representativeness. This data was documented in the HIV self-testing and HIV testing registers during the intended study period of interest. HIV self-tests were distributed in these regions during the initial lockdown period in Eswatini in 2020.

Study Population

All clients who received HIV self-test kits for HIV testing services during the lockdown period from April to August 2020. The clients were identified in HIV self-testing registers and logbooks in the four regions.

Inclusion Criteria

All clients documented in the registers identified in April to August 2020 were included in the study. Excluded clients were those with incomplete information required to make a sound analysis of the reach, efficacy, adoption, implementation, and maintenance of RE-AIM components.

Intervention

Eswatini had made great strides in ensuring that all population groups can access HIV testing when at risk, and these gains required sustaining not to lose the momentum towards the 95, 95, and 95 UNAIDS targets goals by 2030. The HIV self-testing distribution strategy during the SARS-CoV-2 lockdown period was responding to an urgent need to sustain HIV testing services safely and equitably. When Covid-19 started rising in Eswatini and the national Covid-19

response, in collaboration with the Ministry of Health, had to make drastic decisions to ensure safety for both clients and healthcare providers. The only viable, safe option available was HIV self-testing for the public to assess at convenient areas and spots. The locations for access to the kits were pharmacies and shops. The data sets analyzed included abstraction from the registers into an excel database to analyze the outcomes. The intervention was solely based on understanding the type of clients who accessed HIVST kits during the period and making inferences on their profiles to understand the reach, effectiveness, adoption, and maintenance levels of the intervention. This intervention was the first of its kind in the country thus, it required methods that will inform all the dimensions in the RE-AIM methodology using quantitative analysis and literature to back findings.

Data Processing

Extracted certain variables of interest from the national HIV self-testing register entries at the outlets; these included the region, sex, age, HIV risk assessment profile, and HIV testing history. The data was then edited manually to detect omission and ensure uniform coding, after which the data was then entered into the computer for further analysis. Information on the client was coded using a unique number to ensure the clients confidentiality who accessed the services. Simple descriptive proportions were calculated to illustrate the implementation approach's reach, efficacy, adoption, implementation, and maintenance in the settings. The analysis focused on the available descriptive data for the region, sex, and region. Further independent risk factors for ever tested, never having tested for HIV were measured using bivariate logistic regression analysis in Stata15 to assess the association between categorical variables, and the level of significance was set at a P-value less than 0.05. Logistic regression also called a logit model, is used to model dichotomous outcome variables. In the logit model, the log odds of the outcome are modeled as a linear combination of the predictor variables. This was applied in this step of data processing to give associations and significance of outcomes. For the binary responses' variables, the linear probability model was used to describe conditional probabilities using odds ratio outcomes.

Results

Results Introduction

The Ministry of Health in Eswatini was suddenly faced with an epidemic on top of an existing one. HIV control strides had advanced in the years, and thus sustaining was crucial through access to HIV testing services for the population at risk of HIV. When SARS-CoV-2 hit the global community, including Eswatini, this meant extraordinary means were required to be put in place to sustain access to some of the critical HIV control activities like HIV testing. HIV self-testing as a novel strategy that only needed a test kit and allowed an individual to have it conducted at home in their own space meant that access to HIV testing could be

sustained using pharmacies and shops as outlets to distribute to people who were busy with their shopping. The targeted population groups during the SARS-CoV-2 lockdown period were any individual who required an HIV test but, due to restrictions and limited patient flows in health care facilities, could not get there for HIV testing service. The results below using the RE-AIM methodology dimensions focus shall outline the based on implementation results reach. effectiveness. adoption, and maintenance recommendations pillars. Some of the pillars were limited by available data to ensure in-depth analysis, which was a limitation of the study.

Descriptive Results

Disaggregation By Sex

The results show that a total of 6158 clients were elicited from National HIV self-testing registers from April 2020 to July, with 3031 (49%) being females and 3127(51%) being males (Table 1). This was found to be significant at a P-value = 0.00 (Table 1) with an odds ratio of 1.34 (1.17-1.53).

 Table 1. Disaggregation By Sex

| Variable | Participants, n (%) | Never tested for HIV, n (%) | Ever tested for HIV, n (%) | Odds ratio (95% CI) | P-value |
|----------|------------------------|-----------------------------------|-------------------------------|------------------------|---------|
| Male | 3127 (51) | 589 (57) | 2538 (50) | 1.00 | N/A |
| Female | 3031 (49) | 447 (43) | 2584 (50) | 1.34 (1.17-1.53) | 0.00 |

Disaggregation By Age

Most of the clients who received HIV selftests were within the age group 25–34 years, which forms the most at-risk population to HIV as they are at reproductive age (Table 2). This was not significant as most of them had tested for HIV before this showed a P-value =0.37 and an odds ratio of 0.93 (0.79-1.09). Testing services are mostly assumed to benefit those who have never tested, but the results here showed otherwise.

| Variable | Participants, | Never tested | Ever tested for | Odds ratio (95% | P-value |
|----------|---------------|----------------|-----------------|------------------|---------|
| | n (%) | for HIV, n (%) | HIV, n (%) | CI) | |
| 15-24 | 1469 (24) | 316 (31) | 1153 (23) | 0.63 (0.53-0.76) | 0.00 |
| 25-34 | 2808 (46) | 442 (43) | 2366 (46) | 0.93 (0.79-1.09) | 0.37 |
| 35+ | 1874 (30) | 277 (27) | 1597 (31) | 1.00 | N/A |

Table 2. Disaggregation By Age

Disaggregation By Region

By location and region of HIV, self-testing was distributed in the four regions, Manzini region with a total of 3871 (48%), Hhohho 2623 (33%), Shiselweni recorded 928 (12%)

distributions and Lubombo region at 575 (7%). When it comes to HIV testing history, Hhohho and Lubombo region showed an odds ratio of 0.42(0.35-0.49) and 0.21(0.17-0.27) with a high level of significance at P value = 0.00 (Table 3).

| Variable | Participants, | Never tested | Ever tested for | Odds ratio | P-value |
|------------|---------------|----------------|-----------------|------------------|----------------|
| | n (%) | for HIV, n (%) | HIV, n (%) | (95% CI) | |
| Hhohho | 2262 (37) | 501 (48) | 1761 (34) | 0.42 (0.35-0.49) | 0.00 |
| Lubombo | 433 (7) | 154 (15) | 279 (5) | 0.21 (0.17-0.27) | 0.00 |
| Manzini | 2517 (41) | 266 (26) | 2251 (44) | 1.00 | N/A |
| Shiselweni | 946 (15) | 115 (11) | 831 (16) | 0.85 (0.68-1.08) | 0.18 |

Table 3. Disaggregation By Region

Disaggregation By Region

HIV risk exposure status showed that 73% of those who used the kits were exposed to HIV from having many sexual partners who were more than one sexual partner. This shows a relationship between several sexual partners and need to be tested for HIV and higher testing rates compared to those with one or fewer sexual partners. Odds ratio 0.62 (0.52-0.73) and P-value =0.00 (Table 4).

Table 4. Disaggregation By Risk Profile

| Variable | Participants, | Never tested | Ever tested for | Odds ratio (95% | P-value | |
|--------------------------------|---------------|----------------|-----------------|------------------|---------|--|
| | n (%) | for HIV, n (%) | HIV, n (%) | CI) | | |
| Many par | tners | | | | | |
| No | 1506 (24) | 181 (17) | 1325 (26) | 1.00 | N/A | |
| Yes | 4597 (75) | 834 (81) | 3763 (73) | 0.62 (0.52-0.73) | 0.00 | |
| Unprotected sex after negative | | | | | | |
| No | 286 (5) | 97 (9) | 189 (4) | 1.00 | N/A | |
| Yes | 5743 (93) | 838 (81) | 4905 (96) | 3.00 (2.33-3.88) | 0.00 | |
| Contact with human blood | | | | | | |
| No | 5551 (90) | 928 (90) | 4623 (90) | 1.00 | N/A | |
| Yes | 500 (8) | 56 (5) | 444 (9) | 1.59 (1.19-2.12) | 0.00 | |

Disaggregation by Anticipated Results

Proportion predicted a positive result with a P value= 0.33 and odds ratio of 0.67 (0.29-1.52) (Table 5).

Before handing over HIVST kits, everyone who underwent the HIV risk assessment also

further made assumptions of their expected HIV test result. 3909(76%) reported not being able to predict their HIV results with a P value= of 0.00 an odds ratio of 1.36 (1.17-1.58), and very insignificant

| Variable | Participants, | Never tested | Ever tested for | Odds ratio | P-value |
|--------------|---------------|----------------|-----------------|------------------|---------|
| | n (%) | for HIV, n (%) | HIV, n (%) | (95% CI) | |
| Non-reactive | 1473 (24) | 298 (29) | 1175 (23) | 1.00 | N/A |
| Reactive | 29 (0) | 8 (1) | 21 (0) | 0.67 (0.29-1.52) | 0.33 |

Table 5. Disaggregation by Anticipated Results

Discussions

Intervention Reach

Reach is measured by the magnitude of the people exposed and served by the intervention. Further ascertains if the population group is representative and the most in need of the intervention. The results show that a total of 6158 clients were elicited from National HIV self-testing registers from April 2020 to July from the four regions in Eswatini. Eswatini has a population of 1.3 million people and an estimated 220 000 people living with HIV, and an incidence rate of 9.37/1000 population. This still shows a high need for HIV testing services and further solidifies the intervention need during the lockdown period to ensure sustained HIV testing services using nontraditional methods. The overall number of clients reached with HIV self-testing kits distribution was 3031 (50%) females and 3127(51%) males (Table 1) who were reached with HIV self-testing distribution during the period under study. The results illustrate the total number and proportions reached with HIV self-testing by sex population group. The equitable reach by sex shows a classic case of having both sexes in a position to reactive the intervention of HIV self-testing. Slightly more males also show a good reach for a population group that would be less likely to access facility HIV testing.

The Figure shows the current national statistics to illustrate the situation and the need for reaching people with HIV testing services. HIV testing service as a gateway to all other HIV services is very crucial and requires all innovations to ensure the population in need of the service has free access to the service.

| Epidemiological HIV data | Value [range] | |
|---|---------------|---------------------|
| Estimated number of people living with HIV | 220 000 | [200 000 - 230 000] |
| Estimated number of children aged 0 to 14 living with HIV | 15 000 | [13 000 - 17 000] |
| Estimated number of women (15+) living with HIV | 130 000 | [110 000 - 140 000] |
| Estimated adult (15-49) prevalence | 27.2% | [24.9% - 29.1%] |
| Estimated number of deaths due to HIV | 3 900 | [3 400 - 4 400] |
| Estimated number of children dying due to HIV | <1000 | [<500 - <1000] |
| Estimated number of people newly infect- ed with HIV | 8 800 | [7 300 - 11 000] |
| Estimated number of children newly infect- ed with HIV | <1000 | [<1000 - <1000] |
| Estimated incidence rate per 1 000 unin- fected population | 9.37 | [7.76 - 11.32] |

https://www.who.int/hiv/data/Country_profile_Swaziland.pdf

Figure 1. WHO, 2017 Eswatini HIV Country Profile?

The main targeted population group was those who were at self-perceived risk of HIV, and they needed to access HIV testing services when the conventional way of HIV testing services was not easy to reach. The results show that a total of 1036/6158 (17%) reached had never tested for HIV before in both sex groups, slightly higher proportions from the male group. Never-tested indicator in HIV services is a public health concern as an epidemic. The results show highly equitable distributions amongst the most at-risk groups who are those who have never been tested in the past and are classified as new testers. This is highly recommended for any public health intervention to be able to reach a good proportion of the most at risk. The Ottawa Charter emphasized the importance of building healthy public policy as a central pillar of health promotion action. Gender and equity have often been a key focus of public health policy development and implementation at local, national, and international levels [17].

Most of the clients who received HIV selftests were within the age group 25-34 years which was a total of 2808, accounting for 46% of the overall distributions in all age groups, as shown in Table 2 below. This is almost half of distributions made all in the period. Interestingly, is that this age band group forms the most at-risk population for HIV as they are at reproductive age and are trying to find life partners and are also looking forward to having children. This meant that this age group was highly likely to need the testing services due to their increased likelihood of exposure to possible unsafe sex. This was not significant as most of them had tested for HIV before this showed a Pvalue =0.37 and an odds ratio of 0.93 (0.79-1.09) Table 2. CDC (n.d) [18] mentions that "addressing HIV in youth requires that young people have access to the information and tools they need to make healthy decisions, know their HIV status, reduce their risk for getting HIV, and get treatment and stay in care if they have HIV". HIV testing services access using nonconventional means like self-testing could be the answer to reaching the last mile on this specific age group. The youth are not all happy to visit healthcare facilities to access some healthcare services, it is very promising to see that this modality is showing a high promise that the access is highly possible and possibly more acceptable and enticing to this specific age group.

Looking at the high level of reach, statistical calculation of reach calculates the people exposed or served and the people ideally exposed or served. This intervention as it was entirely based on risk assessment before handing off an HIVST kit, meant 6158/6158 (100%) of all that received the HIVST were at risk as per their assertions and self-reports when enquired at the point of distribution. The risk levels differed according to the national classification of risk, which was the number of sexual partners, unprotected sex after a negative test, contact with human blood, and risk perception. When comparing characteristics between those exposed vs. those ideally exposed or vs. the whole population, the results show that in the space of 3 months, over 6 158 people at risk were reached with the service. This means that in a year, if assumptions are made, a total of over 24 632 individuals at risk would be reached, which accounts for 24632/100 000 (24%) of the population at risk. This illustrates a highly significant reach per the standard 100 000 population reach in a year. This means that if using the 9.8 % estimated incidence rates of HIV, this would be surpassed in a year by using the intervention. This is with the clear limitation that not all at-risk would test HIV positive at the end, but an anticipated assumption is that their probabilities are much higher than a non-at-risk population group. Notably, some schools of thought could argue that if the analysis continued beyond the three months of the initial lockdown period, the number of distributions would increase because clients would be talking about the service, and the service points would now be widely known, and uptake thus increases to reach more at-risk population groups.

The HIVST distribution was not mandatory but was highly voluntary and based on the risk. Clients not meeting the criteria of risk as per the national guideline's standards were not given the HIVST as these were highly targeted for the specific at-risk population. Available resources to support reach included human resources who were the distributors at the outlets. The furniture and transport were all supported by MOH supporting partners under the PEPFAR-funded projects. Stakeholders who ensured that this intervention was a success included MOH and the national, regional health management teams who lead all regional health projects in the country.

Intervention Effectiveness

Effectiveness measure in public health ascertains that the intervention did achieve the intended outcomes. Further, shows if the outcomes were indeed coherent and consistent across the sub-group populations. Additionally, effectiveness analysis aims to uncover unanticipated consequences and attempts to understand if the benefits of the intervention outweigh and risk or consequences.

The intended outcome was the distribution of HIVST to reach the priority population groups during the first SARS-COV-2 lockdown period in 2020 in the Eswatini period using pharmacies and shops countrywide. This intended outcome was successful in that several shops and pharmacies distributed kits in Eswatini. The impact was continued and uninterrupted access to HIV testing services using non-conventional means to counteract the negative effects of Covid-19. The effects had the potential to impede all efforts toward HIV testing services in Eswatini, where people at risk could not access the services. This intervention also added the aspect of the use of a test kit in the comfort of the client's space at home, and anytime they were ready to conduct the test. The limitation was the results of use which was not collected in this study for a deeper understanding of the results and interventions.

The main subgroups of interest were males and females, and the most age groups by age and risky behavior, which is what the results are showing. The risk profiles for the group that accessed the HIV self-testing kits were classified by many sexual partners, which meant any number beyond one sexual partner, unprotected sex, which meant sex without the consistent use of condoms and contact with human blood which may expose an individual to HIV. These are the subgroups classified as high risk for HIV and the outcomes are consistent with that; the results outline these groups and their findings and meaning to rate the effectiveness of the interventions of HIV self-testing access for them.

| Never tested for HIV | | | | | |
|----------------------|------|------|--|--|--|
| Gender | n | % | | | |
| Female | 447 | 43% | | | |
| Male | 589 | 57% | | | |
| Grand Total | 1036 | 100% | | | |

Table 6. Never Tested History

One of the main outcomes which were interrogated was ever tested and never tested showed that a total of 1036/6158 (17%) of the overall recipients of HIVST reported having never tested for HIV before, which was one key variable of interest to determine the high need for testing services. The graph on the right shows that males had a higher rate of never having tested before when compared to the female group. The 14 % difference rate of testing between these groups shows that the male population group is less likely to test than the female group. This outcome shows the already known gap of male health-seeking behavior, and this is uncovered from this evidence as well. Any intervention that can increase the acceptability of testing amongst males at risk would ensure the reach of epidemic control and reduced incidence rates of HIV as these men can access treatment for treatment and prevention services.

Interestingly, Table 1 in the main table shows an equitable distribution amongst sex groups. This shows that when the reach by sex was analyzed in detail, the results showed a highly comparable and balanced distribution of the HIV self-test kits, and no gender or sex was disadvantaged by reach. This further highlights the effectiveness of the implementation to cover the gap of males not testing for HIV. To rate the need for intervention, it is important that it effectively reaches groups of interests that would not normally be reached with other normative modalities. As mentioned, those men were equally reached by the HIVST distribution, which means that maintaining the strategy cannot be questioned as a highlight modality for reaching comparable access to HIV testing services as females. Funders usually look at the need for an intervention and use evidence to back any possible intervention. This is usually rated as benefit and cost evidence. The benefit of having more men reaching testing services would reduce significant HIV transmission rates. It is known that men in the Southern African region are more likely to have more than one sexual partner, and this means having one man access testing services, and if they know their HIV status, many new infections would be averted. Another interesting finding to support any testing approach that would entice a certain lagging group in testing is that amongst those who ever tested, the situation differed from showing an equitable number between both genders. From the overall total of 5122 who reported having ever tested, 2538 (50%) came from the male group and 2584 (50%) came from the female group with an odds ratio of 1.34 (1.17-1.53) and P=value of 0.00. This supports the notion that if the male group can access the service of testing, they will make use of the service. The differences in the findings from never tested and ever tested highlight the need for equitable access to testing services to avoid unequitable access for certain population groups. This assumption may mean that males are negatively resourced when it comes to making HIV testing services acceptable for them. The thoughts that they have poor health-seeking behavior may be true and so means must be made to support this need by bringing services that are more reachable and acceptable for me. The findings in this study prove this notion from the results of 6158 where again the proportional distribution was 3127 (51%) for males, and 3031 (49 %) for females, indicates that if the service is there slightly more or equally males will uptake the service. Even though the use and results were not ascertained at the end of this research it is highly laudable that comparable access was achieved at the point of HIVST distribution.

A total of 3125 men who accessed the HIVST kits, both never and ever tested, had the opportunity to know their current and new HIV status. This means that if those who responded that they had more than one sexual partner, several female partners would be protected from possible infection or even passing it on to their male partners, who would now know their current HIV status. According to HIV Gov (nd) [18], Knowing your HIV status gives you powerful information to help you take steps to keep you and your partner(s) healthy. If you test positive, you can take anti-retroviral therapy to treat HIV. People with HIV who take HIV medicine as prescribed can live long and healthy lives. There's also an important prevention benefit. If you take HIV medicine daily as prescribed and get and keep an undetectable viral load, you have effectively no risk of transmitting HIV to an HIV-negative partner through sex. If you test negative, you have more prevention tools available today to prevent HIV than ever before (US Department of Health and Human Services., n.d) [19]. For people who do not have HIV and are testing HIV negative from the HIV self-test, condoms are the easiest way to prevent HIV transmission, and this indirectly protects them from getting HIV from continuous exposure that comes with unknown HIV status. For those at greater risk of HIV, PrEP (preexposure prophylaxis) is a medication that, when taken consistently as prescribed, is very effective at preventing HIV. It is a known behavioral science fact that someone who is in the dark about a situation usually assumes the worst and then continues to live in the dark. Someone who gets access to testing services today and tests negative will appreciate the gold knowledge and take the necessary precautions to protect themselves. Even though this study's finding contradicts these assumptions as it uncovered a high rate of 93% of previous HIV negative engaging in unprotected sexual encounters putting themselves at continuous risk of HIV and thus a need to keep testing. This population group is the one to benefit from prevention services to reduce the chances of HIV risk.

All clients who received HIV testing kits underwent an HIV risk assessment to ensure that most clients received the service. Each client had to undergo an HIV risk assessment and eligibility for HIV testing services. The risk assessment is a standard tool used to determine risk before any HIV testing event in Eswatini as targeted HIV testing services part of requirements. The HIV risk profiles are selfreported by each client. The risk was analyzed by many partners, unprotected sex after a negative HIV test, contact with human blood, and anticipated results. HIV risk exposure status showed that 73% of those who took the HIV selftesting kits were exposed to HIV from having many sexual partners who were more than one sexual partner. This shows a relationship between the number of sexual partners and the need to be tested for HIV, as well as higher testing rates compared to those who had one or fewer sexual partners. An odds ratio of 0.62 (0.52-0.73) and P-value =0.00 (Table 4) positively this assumption's supports significance with the findings. Even though the risk is assessed using a subjective tool that is reliant on the client's perception and accord, this does mean that exposure to HIV and the need to know the status may be relatively linked. Traditionally the assumptions were that those who are exposed shun from making means to

know their HIV status, but these results have proven that not to be entirely true. According to [20], Risk perception is an individual's subjective appraisal of the likelihood of an undesirable outcome. Within the context of HIV, it is the perception of the risk of acquiring HIV and the seriousness afforded to seroconversion. They further state that "It is inherently difficult to study because it encompasses both conscious and unconscious thought processes". In their study conclusion, they emphasize that even though HIV risk perception may be slightly higher around HIV testing, which increases the need for testing services, HIV testing events may be a crucial time to help correct misperceptions about HIV risk amongst at-risk population groups. In their study, their interest was mainly focused on perceived HIV risk and the need for prevention services like PrEP (Pre- Exposure Prophylaxis).

As mentioned before the risk assessment was based on self-reported outcomes and this meant that the level of honesty could also compromise the level of risk from the clients at distribution points which may result in deserving clients being missed due to responses. The effects show that all the risk factors were highly significant with P value=0.00 for all three risk classes. The odds ratio for unprotected sex risk was at 3.00 (2.33-3.88). This means that those who had unprotected sex were more likely to require testing and thus had tested in the past. Interestingly, those who had many partners had an odds ratio of 0.62 (0.52-0.73).

The results, when analyzed by anticipated HIV test results, showed a significantly high rate of unknown results prediction, meaning that they could not forecast their results at the point of distribution. Notwithstanding the above results showing high rates of the at-risk group in number and proportions. This shows that, indeed risk perception and the results may not be syncing most times. A total of 4633 (74%) overall participants and those who had ever tested contributed 727(70%) and the never tested before, with even the highest reported not to be able to predict their HIV results at 3906 (76%). These results, as seen in Table 5 come with a P value= 0.00 and an odds ratio of 1.36 (1.17-1.58). The group predicting a reactive result shows insignificant outcomes with a P value= of 0.33 and an odds ratio of 0.67 (0.29-1.52) (Table 5). This means that only a few of the participants who took the HIVST kits expected a positive result at the point of use. In essence, it is interesting to realize the relationship between perceived risk and the prediction of results. This is more so because several studies have indeed proven that there is a solid link between risk and positive HIV status. A study was done in Cuba and Eastern China which showed a high positivity rate of 30% and 39.1%, respectively, amongst at-risk sexual partners who were additionally linked with an HIV positive partner [21] indicates the high-risk status of those exposed through a sexual relationship with HIV positive clients. In their STRICT study, they identified the need for reaching out to sexual partners of index clients and providing them with HIV Testing Services (HTS) as they belong to a high-risk priority population and linking them to care and treatment. This group of people must be reached with HTS strategies to end the HIV epidemic as evidenced by the high seroprevalence of 51% among them.

In this study, those who anticipated an HIV negative (non-reactive) result was only 24% (1473). When classifying by ever tested and never tested, 298 (20%) were never tested, and 1175 (80%) were ever tested in the negative HIV test results anticipated results. The observed differences could be because an HIV test result is complicated to predict. People test mainly because they are exposed to HIV, but they always test because they are in the dark with their HIV status, and they are looking for answers from the testing service.

Another pillar of effectiveness for greater understanding was the ability of the intervention to shift important services from traditional health facility structures closer to the people. Even though the travel restrictions were the main

barrier that warranted the attempt to bring the service to shops and pharmacies, it must be noted that the concept of patient-centered approaches to service delivery was highly met. Eswatini implemented the Differentiated Service Delivery (DSD) care model in 2018 but has not taken up space because clients still preferred to visit health facilities as something they are used to, and this results in some clients being lost from care when they cannot travel to the health care facility for any reason. The Swaziland Integrated HIV Management Guidelines (2018) [22] which are aligned with the National Health Sector HIV/AIDS Response Plan and current global guidance, state that throughout the continuum of HIV care, from prevention to treatment, clients should be evaluated and offered differentiated care that takes into consideration their preferences and clinical conditions. Differentiated service delivery (DSD), is defined as "a client-centered approach that simplifies and adapts HIV services across the cascade, in ways that both serve the needs of people living with HIV better and reduce unnecessary burdens on the health system" (Journal of the International AIDS Society) Differentiated service delivery has been defined by [23] as "a client-centered approach that simplifies and adapts HIV services across the cascade, in ways that both serve the needs of people living with HIV better and reduce unnecessary burdens on the health system". DSD allows for integrated health services, highquality care, and has been shown to improve uptake of services and retention. All health facilities that provide HIV services in Swaziland should implement the HIV services packages as outlined in these guidelines. A multi-disciplinary approach to care by clinicians, counselors, expert clients, pharmacists, laboratory staff, and community workers is critical for the successful implementation of these guidelines. Primary health care facilities are ideally placed to strengthen community health systems and empower communities with the knowledge to facilitate uptake of HIV services as well as

strengthen linkages and client follow-up systems. Even though the emphasis of the DSD model is on treatment, HIV testing services are the most critical to achieving this as they are the gateway to treatment and prevention services. A client must undergo HIV testing to then shift to the next level of care. Without testing the HIV cascade can never be achieved as expected. The distribution of HIVST was a highly effective DSD model for HIV testing services during an unprecedented time of Covid-19 in Eswatini. It ensured sustained services and reached the highly targeted population group with a service they would not have ordinarily accessed then. The DSD concept has a shred of large-scale evidence backed from literature to improve the HIV services cascade. Additionally, it is a known fact that DSD is a client-centered approach that simplifies and adapts HIV services across the cascade to reflect the preferences and expectations of various groups of people living with HIV (PLHIV) while reducing unnecessary burdens on the health system [24]. "To maximize the public health impact of DSD, systems need to be patient-centered and adaptive, as well as employ robust quality improvement processes" [25].

Implementation Adoption

Adoption of an intervention is understood by knowing who could participate in the intervention and how many participated. Understanding the similarities and differences of those who participated is very important to rate the adoption of any intervention. By location and region of HIV, self-testing was distributed in all four regions in Eswatini. These regions are Manzini, Hhohho, Shiselweni and Lubombo. Each region is further divided into communities. There are 55 smaller communities in Swaziland, and each elects one representative to the House of Assembly of Eswatini. These regions are mostly for administrative segregation of the small Kingdom. Any intervention that has the potential to benefit the entire population needs to be evenly distributed in all four regions for equity and access to health care services.

Manzini region with a total of 3871 (48%), Hhohho 2623 (33%), Shiselweni recorded 928 (12%) distributions, and Lubombo region at 575 (7%). It is important to note that Hhohho and Manzini regions are mostly urban and industrial areas where most of the population group reside due to employment. Lubombo region has mostly seasonal workers in the cane fields, and this time of the year, cane cutting and employment were not in season, thus, the region had fewer people. Shiselweni is one of the most rural regions with very little employment taking place. When it comes to HIV testing history, which is the main result of concern, Hhohho and Lubombo regions showed an odds ratio of 0.42(0.35-0.49) and 0.21(0.17-0.27) with a high level of significance at P value = 0.00 (Table 3). This means that even though all regions adopted the intervention of HIV self-testing distribution, some reasons required the service more than the others based on their participant's denominator contributions. In as much as equitable distribution is important, it is crucial to ensure that evidence is used to inform the most in need of a particular service so that more focus goes towards that location. Global HIV funding mechanisms are very keen on the use of evidence and data for most in-need population groups. According to MEASURE Evaluation (2016) [26], The 2015 strategy for the United States President's Emergency Plan for AIDS Relief (PEPFAR) involves the use of all available data, "down to the most granular site level," to inform decisions about priority populations, interventions, locations, and partnerships within a target country to achieve epidemic control. They further state that the impact of collective efforts to strengthen health information systems around the world has created multiple data sources within countries. This data has the potential to inform the design of tailored interventions that more precisely target the HIV/AIDS epidemic where people need services the most. In recent times it is more important to track if the rightful population groups are adopting the services they require as informed by data and evidence. Adoption of the intervention at the national level by the ministry of health is seen by the extended and continued support of the strategy while Covid-19 effects are still being felt. It is evident that even post the Covid-19 era, this important intervention shall be maintained as the need will still be there, particularly to reach the most at risk and hard-toreach population groups like the males.



Figure 2. A picture of HIVST Distribution in Progress

Building organizational support is key for any intervention to ensure sustained adoption. The representation of the HIVST regional distributions supports the notion that the regional health management offices welcomed the intervention and thus all regions were highlighted represented as above. Organizational philosophies are living systems that can be influenced and developed through a system of interrelated elements of change. Any innovation requires a certain level of buy-in from the relevant stakeholders in this case the HIV stakeholders in the country. It was possible that the call by the Ministry of Health to ensure that HIVST was implemented forced some sectors to implement it without questioning due to the urgency of the situation that required to be addressed. The results, which showed highly effective implementation, was an indicator of success and is key in ensuring sustained adoption. Having a total of 6158 clients attend and accessing HIVST in 3 months was very impressive, especially when you consider possible missed opportunity would MOH not made the call for the intervention.

Implementation

Implementation illustration is based on detailing the activities that are required to be achieved and monitor if the activities were not. Further intended or this required understanding of the acceptability of the intervention. Another important factor in implementation is the context (i.e., where HIV-ST will be implemented). Rivera S.A et al. (2021) [27] states that "HIV self-testing (HIV-ST) is an effective means of improving HIV testing rates". Low- and middle-income countries (LMIC) are taking steps to include HIV-ST into their national HIV/AIDS programs HIV self-testing distribution was endorsed in Eswatini in 2017 and was included in the national HIV Integrated guidelines which were reviewed in 2018.

In order to ensure continuity of HIV testing services with less risk for health care work force and the community MOH is recommending:

- That community HTS counselors may be used in facilities to provide HTS eligibility screening and risk assessment, contact elicitation and contact follow up through phone calls.
- The use of HIV self-testing distribution to reach contacts of positive patients identified in the facility. Only contacts screening positive with the self-test kit should attend the facility for the purpose of confirmation.
- Community distribution of HIV self-test kits in the community by HTS counsellors using only pharmacies and shops as channels for distribution.

OFFICE

Your continued support and cooperation is always appreciated. Yours sincerely.

Dr VUSI MAGAGUILA DIRECTOR OF HEALTH SERVICES MINISTRA OF HEALTH

Figure 3. Urgent Halting of Services Memo from Ministry of Health

This meant that HIV distribution was not a new modality during the lockdown period but what was different was that it was the only available means of testing as restrictions to travel to facilities and community testing services were halted. This implementation was led by convenient access for the population and particularly those at high risk of HIV. The halted HIV testing services during that time required urgent swift advances to sustain HIV testing services. Even though this study did not look into understanding the detail of the implementation but was more inclined to the access and results during the period, informal insights were gathered from the Ministry of Health HIV testing coordinator who led the program during that time. This initiative used shops and pharmacy outlets to reach the intended population group. The implementation evidence was all informed by the qualitative results. The intervention came as a stop-gap measure based on the prevailing state of events. The initiative was acceptable, looking at the number of HIV self-testing kits distributed in a short space of time. This intervention was brought closer to the people and was very much convenient because someone could pick an HIVST kit while on their way for their monthly groceries. No long lines and queues were experienced, which made the services very much acceptable. The distributors ensured very brief interactions with the clients to reduce the chances of COVID -19 transmission.

The results here found evidence that HIV-ST was very much acceptable to a wide variety of patients, with the only limitation of no documented outcomes on use and linkages to the next level of care based on the results, which was a major limitation in this study.

Maintenance

In Eswatini, there are more people with undiagnosed HIV. The Covid-19 epidemic has made it more difficult to access traditional places where testing is provided, such as clinic-based testing sites, community-based organizations, and healthcare settings, as mentioned in previous chapters. Still, the benefits of knowing one's HIV status continues, including improved health and prevention. HIV self-testing is one of the most effective ways of ensuring that the population at high risk of HIV access the services anytime they require it. Maintenance of the implementation is a given as evidence still shows the expanded need to continue to priorities HIV self-testing as Covid-19 is not reducing in cases load and mortality rates. The distribution of HIV self-testing indeed continues in certain settings in Eswatini as the need is still highly felt nationwide. The requirement to maintain this intervention is solidified by some of the results which show that a significant number of participants self-reported unprotected sexual encounters after a negative test which means that they are continuously exposing

themselves to HIV. The results show that a total of 5743 (93%) among the total participants reported having engaged in unprotected sex which means no consistent condom use. This gave an output P-value of 0.00 and odds ratio of 3.00 (2.33-3.88) in table 5 showing high significance and likelihood of previous negative results and unprotected sexual encounters. This indicates that if this group accessed and used the HIV self-test, they can be able to link to treatment and mostly prevention services as their HIV risk is continuous. Access to PreP and VMMC (Voluntary medical male circumcision services could reduce their risk profile by a great magnitude. These services are particularly important as more people are spending time at home due to lockdown restrictions, and the exposure rates may be on the rise. This is supported by a study undertaken in China, which concluded that Facility-based HIV testing decreased and HIVST increased among MSM during Covid-19 measures in China. MSM successfully accessed HIVST as a substitute for facility-based testing, with no overall decrease in HIV testing rates [12].

Summary

The study findings result for HIV self-testing distribution during the lockdown period from the four regions in Eswatini were solicited from the National HIV self-testing registers. The period of interest was from April 2020 to July 2020. The results show that a total of 6158 clients were reached with HIV self-testing kits distributions. Among these a total of 3031 (50%) were females and 3127(51%) were males. The results by gender show an equitable distribution in both sexes. The majority of clients who received the kits were from the Manzini region with a total of 3871 (48%), Hhohho 2623 (33%), Shiselweni recorded 928 (12%) distributions, and Lubombo region at 575 (7%). Results by age distributions showed HIV self-test recipients coming from the age group 25-34 years, which forms the most atrisk population to HIV as they are at the reproductive age accounting for 2808 (46%) of

the overall number who received the HIVST kits. Even though this was not a significant finding to benefit those who had never tested before as most of them had tested for HIV before this showed a P-value = 0.37 and an odds ratio of 0.93 (0.79-1.09). This was important to note because this implied a habitual need for HIV testing services and a continuous risk profile for this group. It is also interesting to note that the highest proportion of the recipients of the kits were at risk, which accounted for 6135, the total of 4633 (75%) with risk profile did not have an idea of predicting a positive result as you would assume with any level of HIV exposure. Also notable was the high level of HIV exposure after an HIV negative result which recorded 5743/ 6135 (93%) of the overall total of recipients. These results came with a P-Value of 0.00 and an odds ratio of 3.00 (2.33-3.88). These results show that access to HIV self-testing during the lockdown period in Eswatini illustrated positive advances as it reached the most at-risk population groups and has a potential for extended sustained use to benefit specific high HIV risk population groups.

Conflict of Interest

The authors of this manuscript had no conflict of interest and no financial support received from any entity to conduct the study.

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