

Impact of Community Face to Face Health Education Intervention on Knowledge and Perception about HIV Services by Men in the Buea Health District

Melvis Bora Samba^{1,*}, Alfred Kongnyu Njamnshi², Dickson Shey Nsagah¹, Verla Siysi Vincent³

¹Department of Public Health and Hygiene, Faculty of Health Sciences, University of Buea, South West Region, Cameroon

²Department of Internal Medicine & Specialties (Dermatology and Neurology),

Faculty of Medicine & Biomedical Sciences, University of Yaounde I, Centre Region, Cameroon

³Departments of Medicine, Faculty of Health Sciences, University of Buea, South West Region, Cameroon

*Corresponding author: borathestar1@gmail.com, boramel@yahoo.com

Received October 03, 2020; Revised November 04, 2020; Accepted November 10, 2020

Abstract Background: HIV/AIDS eradication strategy rooted in the sustainable development goal 3 aims at achieving global health security by 2030, but the low engagement of men in HIV services is a setback to this goal. Therefore this trial aim to assess the efficacy of face to face weekly health education in community based groups, to improve knowledge and perception about HIV services, especially HIV testing in men 21 years and above in the Buea Health District. **Methods:** We did a cluster selection of communities and assigned blocks of community men's groups to either the brief health education intervention condition of 30 to 45 minutes weekly, or a comparison group of community men who are left to receive only standard services. A manual generated randomization district health areas list was used to select community male groups into intervention or control groups. A total of 366 participants either receive health education on HIV Services or not. The primary outcome for this study which was improved knowledge about HIV prevention; HIV Services and positive perception about HIV Services especially testing services was assessed at baseline and at six months. **Results:** Assessing the knowledge of participants after six months of follow-up, it was observed that the odds of knowing where HIV services are offered in their area was 0.35 times more (CI: 0.21, 0.59) in the intervention arm that in the control arm and was statistically significant at $p=0.00$. When asked if they knew the types of HIV services that are offered, the odds of knowing the services was 2.58 times (CI: 1.42, 4.70) in the intervention arm compared to the control arm ($P=0.02$). When examining perception about HIV, both men in the control and intervention arm consider that people should test regularly (92.9% and 93.3% respectively) but agreeing that partners should do and share results together was more in the intervention group than in the control (60.4% against 56.5%). **Conclusion:** community face to face health education on HIV to men in community based groups can be a good strategy to improve correct knowledge and positive perception on HIV Services, especially testing. This contributes to the growing body of evidence on the use of Health Believe Model in giving Health Education. This is a complementary strategy for strengthening HIV testing services which will contribute in achieving the 2030 health security agenda.

Keywords: HIV, health education, Men, HIV Testing, perception, randomization, Cameroon

Cite This Article: Melvis Bora Samba, Alfred Kongnyu Njamnshi, Dickson Shey Nsagah, and Verla Siysi Vincent, "Impact of Community Face to Face Health Education Intervention on Knowledge and perception about HIV Services by Men in the Buea Health District." *American Journal of Epidemiology and Infectious Disease*, vol. 8, no. 2 (2020): 91-99. doi: 10.12691/ajeid-8-2-5.

1. Background

HIV testing has been the main tool used to know the number of people living with the virus globally, which now stands at 37 million people infected [1]. Health Education has been one of the major tools used to create awareness on the diseases and help people engage in preventing HIV and AIDS through testing to know ones status. But men have been found to have low engagement

in HIV services, especially testing which is the entry point in the HIV care cascade [2,3,4] and this is attributed to many factors some of which is correct knowledge and perception these men have about HIV services [5]. This has negatively impacted the sustainable development goal 3 HIV/AIDS eradication strategy which aims at achieving global health security by 2030 [6]. The result of poor engagement by men in testing to know HIV status early has been poorer clinical outcomes in men [7]. Even when men are tested, adherence is still low according to treatment figures of 2017 reporting only 69809 men

receiving ART in 2017 out of the 253 961 adults that received ART, showing that preventing HIV progression to AIDS in men is low resulting to more men developing AIDS and dying [8]. Global figures reveal that out of the estimated 35 100 000 adults aged 15+ who were living with HIV in 2017 globally, 16 800 000 occurred in men and new infection was 850 000 out of a total of 1 600 000 with 480 000 deaths due to AIDS occurring in men out of 830 000 among adults aged 15 + [9]. Therefore the importance of full engagement by men in the HIV response is increasingly recognized [10,11].

Studies have shown that attracting men for HIV testing services has been the main challenge as few men are found to respond to HIV testing services [12,13,14]. We realized most studies carried out on men have focus in most instances on men who have sex (MSM) [15,16,17] who fall under key populations, but Africa has a generalized HIV epidemic and what becomes of the men in the general population who fall outside this group and hardly benefit from these programs? It has been reported that testing uptake in sub-Saharan Africa with this generalized epidemic is disappointingly low and some studies report that less than 50% of those infected know their status [18] and therefore Cameroon has recognized that additional targeted efforts will be needed to ensure 80% coverage of all sex and age disaggregation to achieve epidemic control [19]. There is the presence of a range of HIV testing and counseling modes of delivery which ranges from voluntary counseling and testing (VCT), male as partners testing, community-based testing which involves home-based testing, mobile testing, and community outreach testing.

Despite the availability of these services, the uptake of HIV services in Cameroon is still lower than expected [20] and uptake is even lower among men especially testing which is the entry point in the HIV care cascade [21]. A recent Cameroon population-based HIV impact assessment (CAMPHIA) estimates that 55.6% of adults living with HIV aged 15-64 years knew their HIV status and only 51.4% of HIV-positive men knew their HIV status [22]. HIV prevalence in the South West Region stands at 3.6 % (2.4 - 4.9 95% CI) [22]. There is very little information on VCT uptake among men in the Buea Health District, and also on the factors that influence it. Identifying contextual influences on men's testing behavior is critical to informing HIV testing programmatic efforts and addressing gender gaps in HIV testing uptake [23].

Health Educational interventions have been proven to be capable of producing positive change in preventive health behaviors [24,25]. Education has been reported by some studies as key to changing men's perspectives and improving HIV knowledge and that correct knowledge on HIV has been associated with HIV testing uptake [26]. But these studies reported the existence of educational gap on HIV programmes that are specifically tailored for men [5]. Various health communication strategies have been recommended but there is need to look at that which can be more suitable for men and cause them to engage. It is based on this background that we embarked on an intervention study to used face to face health education in community groups to see if it will improve knowledge on HIV services in general and positive perception and attitude towards HIV Testing.

2. Material and Methods

2.1. Trial Study Area and Setting

This study was conducted in the Buea Health District found in the Fako Division of the South West Region of Cameroon. Fako Division is located at Latitude 4.1667° and Longitude 9.1667°. The District has seven Health Areas which are Tole, Bokwango, Buea Town, Bova, Muea, Buea road and Molyko. It is made up of sixty-seven communities with a population of about 200,000 thousand people (2005 census), but which is fluctuating because of the ongoing political crisis in the Region since 2016. The communities are semi urban and rural with many social, economic and political institutions. The inhabitants comprise people from various ethnicities, though the majority is the Bakweri indigenes. Activities here ranges from agricultural on the rich volcanic soil, economic to social, and a good proportion are involved in academic activities as the town host a good number of higher institutions in the region. The area constitute a mobile population, a demographic characteristic that favours constant change in social interaction and this ease the spread of diseases including HIV/AIDS and therefore is a suitable site for this study.

2.2. Study Design

This was an experimental study in which we applied health education as our intervention. Correct information on HIV and AID through health education was given to men 21 years and above. This constitute general Knowledge on HIV and AIDS, the importance and benefit of knowing ones status through testing, the importance of HIV treatment and how it affects the viral load and capable of preventing further transmission. This education also involved counseling and sharing of contact information for information seeking by the client regarding HIV. This delivery of special care was not given in the control arm, but rather the control arm received the usual care.

2.3. Population of Study

The target population for this study constitutes adult men 21 years and above residing at the time of the study, within the Buea Health Districts of Fako Division in the South West Regions of Cameroon. Sine it is not possible to study all the men in the Health District, a sample was selected for the study to be a representation of this target population. Participants therefore had to meet the inclusion criteria set for the study.

2.4. Ethical Considerations

This study was approved by the University of Buea Faculty of Health Sciences Institutional Review Board (FHSIRB No 1016-08, 2019), Administrative authorization was given by the University of Buea Faculty of Health Sciences Administration, the South West Regional Delegation of Public Health, and the community authorities after presenting the authorization from the Regional Delegate to them. Eligible adult men were adequately informed about the study with the help of a consent form and were enrolled in the study

only after signing a consent form, or giving verbal consent. This indicates their willingness to participate in the study.

2.5. Sample Size Determination

Sample size calculation for this trial study was based on sample size calculation for comparison between two groups. Manual calculation was done thus,

$$n = \frac{2 \cdot \left[\begin{matrix} Z_{crit} \sqrt{2\bar{p}(1-\bar{p})} \\ + Z_{pwr} \sqrt{p_1(1-p_1) + p_2(1-p_2)} \end{matrix} \right]^2}{d^2}$$

Where: n= sample size
 Z_{crit} = The z-value for 95% confidence interval and significance level of 0.05
 $\bar{p} = p_1 + p_2 / 2$
 Z_{pwr} = Z-value for power of 95, which is 1.645
 p_1 = Testing uptake at baseline
 p_2 = T

Expected testing uptake in men who received the intervention
 d^2 = Minimum expected difference between p_1 and p_2

$$n = \frac{2 \cdot \left[\begin{matrix} 1.96 \sqrt{2 \cdot 0.4(1-0.4)} \\ + 1.645 \sqrt{0.3(1-0.3) + 0.5(1-0.5)} \end{matrix} \right]^2}{0.2^2}$$

$n = 12.23 / 0.2^2,$
 $n = 12.23 / 0.04$
 $n = 305.$

Considering a 20% non-response rate, n = 366. Therefore final n = 366.

2.6. Inclusion and Exclusion Criteria

Inclusion Criteria

- Men who resided in the area for the period of study
- Men willing to continue to participate even if they change place of residence
- Those who could communicate in English or Pidgin
- Men who gave a signed or verbal consent to participate

Exclusion Criteria

- Visitors who were not sure to be in the area for the intervention period
- Men who refuse to give signed or verbal consent to participate and those outside the require age group

2.7. Participant Selection for the Intervention Study

The sampling method used to determine the impact of Health Education on knowledge, perception and attitude to HIV testing uptake by men was the simple random sampling method. It therefore included all the seven health areas in the Health District. We use balloting to get the health areas for the intervention and controls. Whether a participant fall in the intervention or control arm was determined by the health area the participant’s men’s group belong to. In the intervention and control health areas, the men required for the study were recruited from the community men’s meeting groups to participate in the study after they had fulfill the inclusion criteria and recruitment stopped when the sample size was attained (Figure 1).

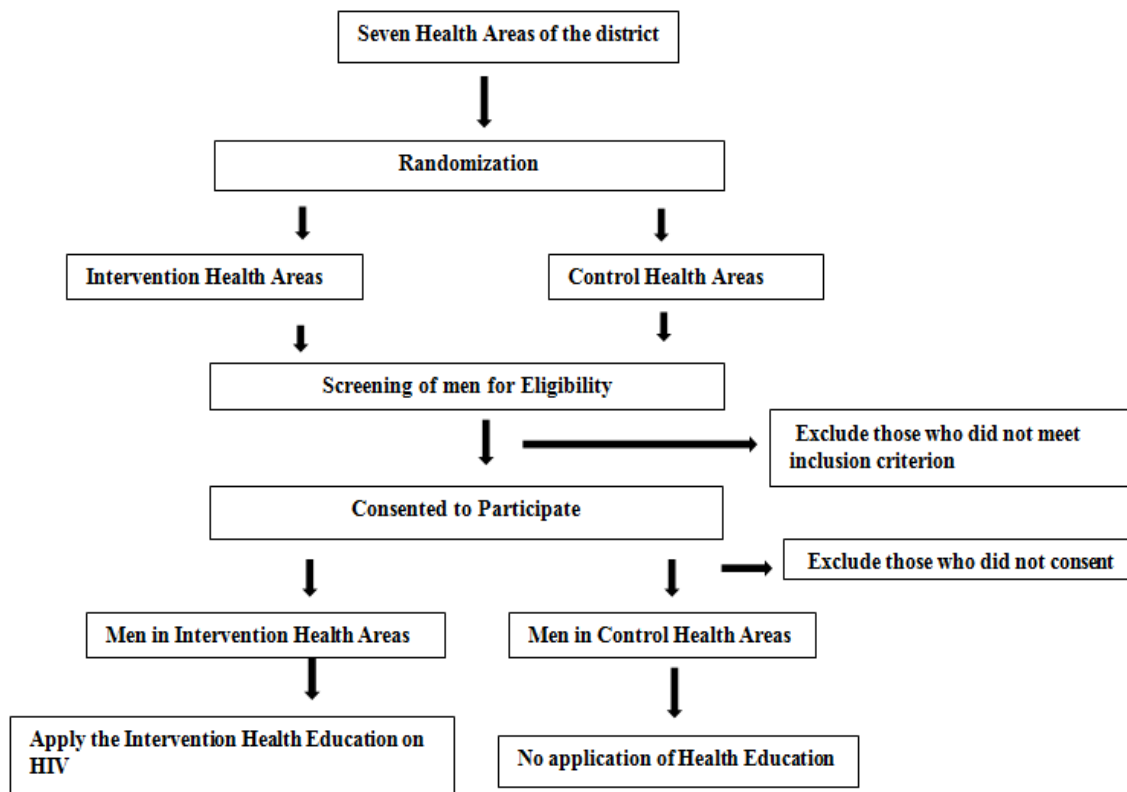


Figure 1. Flow chart of study participant selection for the intervention

2.8. Description of the of Intervention and Control Conditions

2.8.1. Intervention Arm

Application of face to face Health Education was carried as intervention in community men's groups that were under the intervention health areas using the adult learning method. Community mobilization was conducted before the start of the process. The community group leaders were consulted and provided with information on the purpose of the study. All the health talks materials were reviewed before the beginning of the intervention. On intervention days, the health education talk was held at established time intervals that were most appropriate to the average time spent by men. The intervention conditions consist of a brief, educational 30-minute health talk followed by questions and answers. The health education intervention involved general talk on HIV and AIDS, the importance of knowing ones status through testing, the importance of HIV treatment and how it affects the viral load and capable of preventing further transmission of the virus. This continued for six months. This health education also involved an optional sharing of contact for information seeking by the client regarding HIV. Health education was given twice a month for six months while members who may have some urgent issues to be addressed were allowed to contact by phone and seek for information at any time before the next meeting.

2.8.2. Control Arm

This delivery of special care was not given in the control arm, but the control arm received the usual care they have been receiving through health care and were also evaluated after six months.

2.8.3. Trial Duration and Outcome Measure

Duration of trial was six months, with outcome assessed at baseline and 6th month. The studies primary outcomes were improved knowledge about HIV Services, perception and attitudes towards HIV Services especially testing services while its secondary outcomes will be the actual utilization of testing services whose complete data is still in process. At this level we are reporting only on the result of the primary outcome of the study.

2.9. How Data Was Analyzed

The process of selection and flow throughout the study was summarized using a flow-diagram and analysis of participant demographics and outcome variables was summarized using descriptive summary measures expressed using frequencies, mean or median for continuous variables and proportions for categorical variables. We applied the T-test for comparing groups on continuous outcomes and the chi-squared test for binary outcomes. Logistic regression was used for univariate and multivariate analysis to bring out the association between selected variables of HIV related knowledge on treatment, viral load suppression, perception and attitude towards HIV services and testing. P-values were calculated to compare the statistical significance of each variable between the two groups to determine their mean difference. The data

was entered into EPI Info version 7; imported to excel for cleaning analyzed using SPSS (Statistical Package for the Social Sciences) version 20.0 with Statistical significance set at a p-value of 0.05, with 95% confidence level. Here we have presented only the primary outcome results of the study making use of tables and figures.

3. Results

3.1. Characteristics of the Respondents

Between November 2019 and August 2020, a total of 366 men were enrolled into the study initially to be followed up for six months which was interrupted by the COVID19 lockdown. The men were aged 21 and above with a median age of 32 years. Of the 366 men, most of the men were the age range of 36 to 45 years (Figure 2) and a majority of the men were married (Figure 3).

3.2. Assessment of Correct Knowledge in Study Participants

This was to verify the impact the intervention had on the knowledge of participants on HIV and AID. Odds ratios indicate change between baseline and post intervention in correct knowledge among men in intervention and comparison group, and net effect of the intervention.

3.2.1. Knowledge on HIV Services Relating to Testing

Assessing the knowledge of participants after six months of follow-up (Table 2), it was observed that the odds of knowing where HIV services offered in their area was 0.35 times more (CI: 0.21, 0.59) in the intervention arm than in the control arm and was statistically significant at $p=0.00$. When asked if they knew the types of HIV services that are offered, the odds of knowing the services was 2.58 times (CI: 1.42, 4.70) in the intervention arm compared to the control arm ($P=0.02$). So it can be observed from these results that the odds of men being aware about the existence HIV services in their area was more in the intervention arm compared to the control arm and when asked of what services are involved in the process of testing, most men they mentioned pre-test counselling on HIV, taking off blood for HIV testing and post counselling. The knowledge on the cause of HIV was seen to be very high in the men and there was no significant difference in both arms.

3.2.2. Knowledge on HIV Services Relating to Treatment and Viral Load

An assessment of the Knowledge men has on HIV Services relating to treatment and viral load after six months intervention (Table 1), shows that the odds of knowing the treatment given if someone is tested positive was 0.16 times more (CI: 0.07, 0.39; $p=0.00$) in the intervention than in the control arm. The odds of accepting to go for treatment if tested positive was more in the intervention compared to the control arm. The odds of knowing about Viral load in HIV was 5.05 (2.26-11.30); $P=0.03$ in the intervention than in the control arm. The odds of refusing that adherence to treatment if positive can

stop HIV transmission to partner after some time was 0.11 (0.01-0.87) less in the intervention arm which was statistically significant ($p=0.01$).

3.3. Perceptions about VCT in Participants

When examining perception about HIV (Table 2), both men in the control and intervention arm consider that people should test regularly (92.9% and 93.3% respectively) but agreeing that partners should do and share results together

was more in the intervention group than in the control (60.4% against 56.5%). They said that HIV testing was important but worried of taking an HIV test because they perceive having a positive result as trouble. Believe that antiretroviral drugs make people with HIV less infectious was more in the intervention group (78.8%) which was statistically significant. To think it is normal for a man to have more than one sexual partner was high but the men in the control arm were more into this idea than the intervention arm (65.5% against 61.1%).

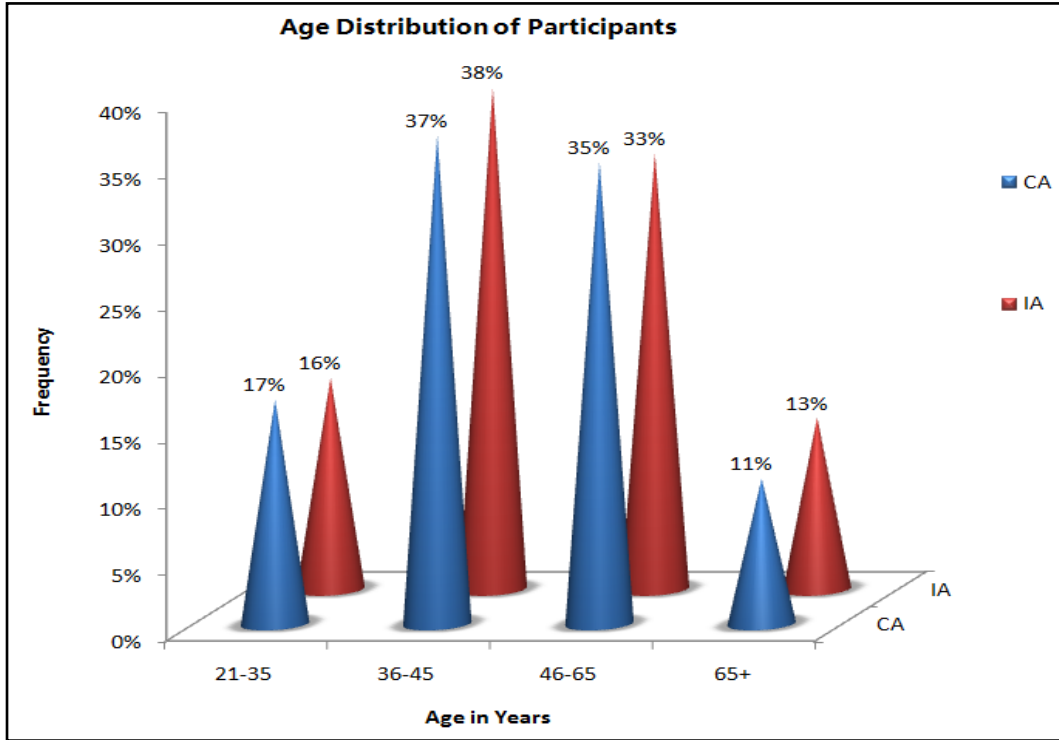


Figure 2. Distribution of participants according to age

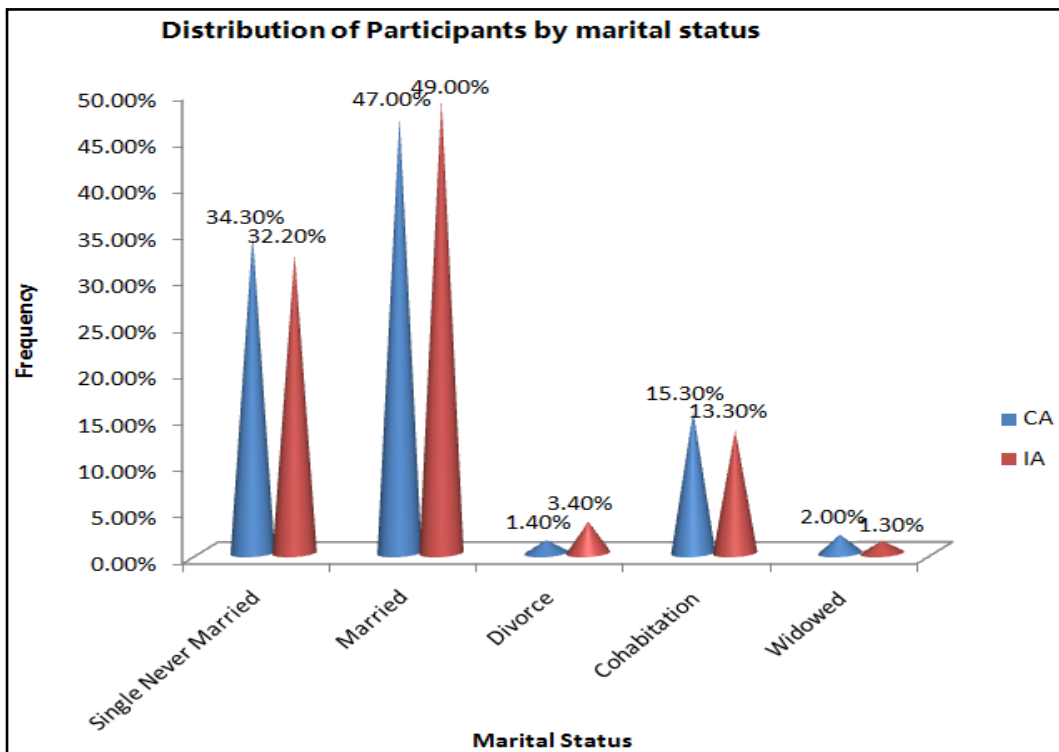


Figure 3. Distribution of participants according to Marital Status

Table 1. HIV/AIDS Knowledge in Participants

Variables	Frequency (%)	aOR	95%CI	X2	P Value
Do you know where HIV services offered in your area?	61.4	Ref			
	35.8	0.35	0.21-0.59	18.46	0.00
Do you know a place around where you can go for an HIV test	49.4	Ref			
	33.3	0.51	0.21-1.25	11.66	0.02
Do you know the types of HIV services that are offered	34.9	Ref			
	58.1	2.58	1.42-4.70	13.28	0.01
What is the treatment given if someone is tested HIV positive	57.0	Ref			
	17.9	0.16	0.07-0.39	18.46	0.00
Do you know about Viral load in HIV	25.4	Ref			
	60.2	5.05	2.26-11.30	17.61	0.03
Taken HIV treatment correctly can stop HIV transmission to partner after some time	53.8	Ref			
	11.1	0.11	0.01-0.87	6.63	0.01
Partners should do and share HIV status results	57.0	Ref			
	17.9	0.16	0.07-0.39	18.46	0.00

Table 2. Perceptions on HIV in participants after six moths

Perception Indicator	Frequency (%)		P- Value
	Intervention Arm	Control Arm	
Consider that people should test regularly	93.3%	92.9%	0.846
Partners should do and share HIV status results	60.4%	56.5%	0.50
Believe that antiretroviral drugs make people with HIV less infectious	78.7%	73.3%	0.47
Think it is normal for a man to have more than one sexual partners	61.1%	65.5%	0.25

4. Discussion

The study findings demonstrate the importance of education about HIV as a strategy to improve knowledge on HIV in men to change perception about HIV services. Other studies have demonstrated the importance of education about HIV as a strategy to improve knowledge on HIV in men, change perception about HIV services utilization and testing for HIV [11,27]. Furthermore, some studies have revealed a number of contributing factors to the current HIV situation in men and lack of the right information is reported to be among the leading causes of low voluntary counselling and testing especially among men [28].

The present study demonstrates that the odds of men being aware about the existence HIV services in their area and knowledge of the services involved in the process of testing was more in the intervention arm compared to the control arm. In a study carried out in western Kenya, community health education regarding HIV services offered at the health facilities were recommended as one of the ways to get men more involved in HIV services [29]. Access to accurate Health Information on HIV is important to help people take the right decision regarding their health. Also other studies reports that having a higher HIV knowledge was associated with improved engagement with HIV testing services because general knowledge of HIV, HIV prevention, and the benefits of HIV testing influences individual perception of risk for HIV infection

[7,23,30]. This tally with a study in Cote D'ivoire [31]. But a study in Lesotho South Africa revealed that despite high levels of knowledge of where to obtain an HIV test, low testing rates suggest the need to identify barriers to HIV testing and strategies for increasing testing rates. But it is important to give them a comprehensive health education on HIV before asking them to test because making men aware of where to get tested without this information is not sufficient. Inadequate levels of HIV testing and personal knowledge of HIV status were recognized as primary behavioral drivers in the spread of HIV in Lesotho [32]. While other studies have equally reported how poor information about available HIV services and their importance has resulted in low engagement by men to these services, barriers men face that contributes to this low engagement such as provider bias, turnaround time and embarrassment in seeking information about services and fear of stigma was also highlighted [27,33].

The results further indicate a change in perception about HIV testing as agreeing that partners should do and share results together was more in the intervention group than in the control (60.4% against 56.5%). Health Education is very necessary to changing men's perspectives and improving HIV knowledge but men have been reported of not frequenting the health facilities as women do and this implies they do not get most of the health education talks and information available at the health facilities. The face to face Health education intervention contributes in the improvement of men's knowledge on HIV services in the

Buea Health District, and also increase a positive attitude and perception regarding taking an HIV test. This is as a result of knowledge gained on viral load suppression, preventing further transmission and HIV progressing to AIDS. So Community based approach to disseminating health information to men is very necessary. Going to the communities and giving men face to face information may help overcome many of these barriers by providing accurate, timely, engaging information and appropriate care. Face to face health Education gives room for men to ask their questions and share worries which they said the health care providers hardly have time to give them during consultation. Also, not all can access the mass media questions and answer sessions, so they strongly believe a face to face interaction can solve this problem and bridge the gap. Men expressed that when they listen to mass media programs, their interest areas are not mostly on health topics so they do not still get informed even if it has been proven that mass media is a good source of disseminating health information

Access to accurate health information on HIV is important to help people take the right decision regarding their health according to the Health Belief Model [24]. Knowledge on the importance of testing, where to seek information and positive perceptions regarding HIV services among men is of great necessity. The Health Belief model and other behaviour change models have proven over the years that health education as strategy used in changing behaviour can make people to respond better to health issues. It is important to examine the impact of face to face health education, especially in setting where many people may not connect to mass or social media site talking about HIV. Men have been found to have issues when it comes to health seeking generally and HIV prevention services in particular. Using face to face health education as a medium of relaying information indirectly reduce the vulnerability of men to the HIV risk of not testing early and the complications may result from late testing and late engagement on treatment. So encouraging men to actively participate in any available HIV services offered in their community is necessary.

5. Conclusion

This trial contributes to the growing body of evidence on ways to make men engage in HIV services. Face to face health education on HIV to men in community based groups can be a good strategy to improve correct knowledge and positive perception on HIV Services, especially testing. It can be a complementary strategy for strengthening HIV testing services by causing more men to engage in testing, which is the entry point, and all through the HIV care cascade. With the help of tools like the Health Believe Model which we used in giving Health Education, quality information which will lead to correct knowledge on HIV Services can be delivered. Therefore reaching men in the communities which is a better comfort zone for men than the health facilities, with the correct information on HIV routinely, is capable of strengthening health systems and achieving the goal oriented towards HIV services utilization in men.

6. Recommendations

Few interventions have evaluated the ultimate outcome of face to face health education on services uptake in men. However, if there is desire to improve uptake of HIV services by men, then more efforts must be directed toward this goal. Community delivered face to face health education on a regular basis should be incorporated as one of the community-based intervention to engage men.

7. Perspective for Further Studies

Although health education has been recognized as a main way to disseminate the right information and change perception there are limited studies on the impact of giving men information about HIV using a face to face health education approach in the comfort zones of men, like their community groups? Therefore a better assessment of face to face health education in the comfort zone of men is needed to rigorously evaluate whether they are a viable and effective strategy for reaching men and making them engage more in HIV services.

List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
BHD	Buea Health District
CA	Control Arm
CDC	Centers for Diseases Control and Prevention
HIV	Human Immunodeficiency Virus
IA	Intervention Arm
PMTCT	Prevention from mother-to-child transmission
SSA	Sub Saharan Africa
SPSS	Statistical Package for Social Sciences
STI	Sexually Transmitted Infections
WHO	World Health Organization

Ethics Approval and Consent to Participate

This study was approved by the University of Buea Faculty of Health Sciences Institutional Review Board (FHSIRB No 1016-08, 2019) and trial registration (PACTR202009503991085)

Acknowledgements

The authors will like to thank all reviewers for their input, the Regional Delegate of Public Health for the South West Region, the District Medical Officer of Buea Health District, Data Collectors, Community Leaders and the individual participants whose authorization and consents gave us a gateway to the realization of this work. Appreciation goes to all the authors for their vital contributions. This is part of a Ph.D. thesis by MBS at the Department of Public Health and Hygiene, University of Buea in Cameroon.

Competing Interests

This work has no conflict of interest to declare.

Funding

No Funding was received for this article.

Consent for Publication

All participants who were part of this study were provided a consent form explaining the nature of the study. Only those who gave verbal consent or by signed the consent form were recruited into the study.

Availability of Data and Materials

The datasets is available from the corresponding author on reasonable request.

Authors' contributions

MBS designed and prepared the initial draft of the paper for the study conceived by DSN and MBS, which is being reviewed, supervised and guided by AKJ, DSN and VSV.

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