

A Knowledge-Based HIV/AIDS Framework for Lagos State: An Empirical Study.

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Abstract: This study investigates non-clinical HIV/AIDS activities and explores the efficacy of contemporary E-Health initiatives, including systems focusing on deployment of healthcare information, telecommunications and information and communication technologies. The study evaluates non-clinical HIV/AIDS activities by studying students from Lagos State. Data was collected from selected secondary schools in all Lagos State administrative divisions, as well as Lagos State University. Schools were selected in each division (2-5 schools) using a stratified proportional random sampling principle. A questionnaire was developed based on HIV/AIDS transmission and prevention indicators. The study triangulated qualitative and quantitative data in order to investigate the extent of HIV/AIDS awareness and education, especially regarding transmission and prevention risk factors. The empirical gaps were revealed to be: (a) behavioural challenges; (b) sexually transmitted infections - STIs and clinical understanding; (c) lack of transmission awareness; (d) condom use; (e) fear of HIV/AIDS-related stigma and discrimination (HASD) and (f) ineffectiveness of HIV Counselling and Testing centres in the Lagos State metropolis. Knowledge Management (KM) concepts were effectively adopted to propose a validated framework to tackle gaps related to transmission and prevention risk factors in Lagos State.

Keywords: HIV/AIDS, risk factor, E-Health, telecommunication and knowledge management (KM).

I. Introduction

Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is recognized as a global healthcare challenge and one of the most severe problems facing the entire world (Sassman et al., 2011). The National Intelligence Council (2002) suggests that, Nigeria, India, South Africa, Ethiopia, China and Russia will shoulder the heaviest burden of HIV infection and over three million people die of HIV/AIDS each year (Hunt, 2009). Sassman et al., (2011) stated that, the Sub-Saharan Africa region is most heavily affected by HIV/AIDS, accounting for 67% of the 33 million people in the world living with HIV/AIDS today and for 72% of AIDS deaths worldwide.

Since the first case of HIV/AIDS, Nigeria government has developed different intervention programme such as creation of National and State agencies: National AIDS Control Agency – NACA and State AIDS Control Agencies – SACAs (Apena et al., 2012). This study collaborated with Lagos State AIDS Control Agency – LSACA, using Lagos State student as the potential risk group with primary aim of introducing knowledge management (KM) concept to enhance current activities and promote sharing of knowledge. The Lagos State AIDS Control Agency (LSACA) was created in 2000 as a master plan of the Federal Government to address HIV/AIDS prevalence in the States and the sole organization in full control of HIV/AIDS activities. LSACA has over four hundred non-government organizations (NGOs) working on different level of awareness HIV/AIDS (Apena, 2012). LSACA work thematic groups: Prevention and behavioural change; Care, treatment and support; Monitoring and evaluation, research and surveillance; Socio-economic impact of the HIV/AIDS epidemic; Uniform services and regional programmes; Policy, advocacy, legal issues and human rights; Coordination and institutional arrangements; Resource mobilisation and management. Currently, LSACA activities lack use of technology such as e-health, telecommunication and database. The study developed a validated framework to support therapeutic activities and enhance HIV/AIDS awareness to aid knowledge sharing in public health sector. This could be fashioned into other areas of public health challenges.

II. Method

A questionnaire was developed based on HIV/AIDS transmission and prevention indicators. This was administered to 1000 students (senior secondary school 1-3 and Lagos State University students) through their guiding and counselling units. The pupils returned 958 (95.8%) questionnaires from 10 participating senior secondary schools from five Lagos State administrative divisions (Badagry, Epe, Ikeja, Ikorodu and Lagos State) including Lagos State University students. Secondary Schools were selected in each division (2-5 schools) using a stratified proportional random sampling principle. Semi-structured interviews were carried out

with staff of the Lagos State AIDS Control Agency (LSACA) in order to collect qualitative data and establish the direction of the study. This is to evaluate and established height of HIV/AIDS awareness in Lagos State.

Participants

The main rationale of selecting SSS 1-3 pupils and tertiary institution students was that, the study, primarily focussed on day school students aged 15 and above. This extended to include university level students aged 25 and above, in order to understand the state of HIV/AIDS in Lagos State environs. The research includes non-Lagos State residents, who part take in the survey as potential risk group. Participants were captured randomly as revealed in Table 1.

Table 1 Participants Population

Characteristic N = 958	Lagos Non-Residence		Rural		Urban		Total		P-value
	n	%	n	%	n	%	N	%	
Gender									
Male	5	0.5	177	18.5	239	25	421	44	
Female	15	1.6	249	26	271	28.3	535	56	0.059
Age Groups									
15-16	2	0.2	205	21.7	126	13.8	333	35.2	
17-18	1	0.1	115	12.2	79	8.4	195	20.6	
19-20	0	0	14	1.5	8	0.8	22	2.3	
21-22	1	0.1	12	1.3	17	1.8	30	3.2	
23-24	4	0.4	32	3.4	76	8	112	11.9	
25 and above	11	1.2	45	4.8	197	20.8	253	26.8	0.001
Educational Class									
SSS 1-3	3	0.3	349	36.5	219	22.9	571	59.7	
Tertiary	17	1.8	79	8.3	289	30.2	385	40.3	0.001
Marital Status									
Single	16	1.7	389	41.9	417	44.9	822	88.6	
Married	4	0.4	24	2.6	78	8.4	106	11.4	0.001

*p-value significant < 0.05

Research methods and Data collection

The research was designed to evaluate HIV/AIDS risk factors and peers behavioural issues within the population (student). One thousand questionnaires were used to obtain the quantitative data and a 95.8% response rate was achieved through the support of Lagos State Ministry of Education. The questionnaires collected demographic variables and information regarding participants' concerns related to HIV/AIDS. The study further organised semi-structured interview with the Lagos State AIDS Control Agency (LSACA) to evaluate organisational activities and capacity leaders working on HIV/AIDS to qualitative data.

Ethical Consideration

The research was sponsored by the Lagos State Government and the research ethical approval was obtained from the Lagos State Ministry of Education Guiding and Counselling unit. The conditions are: (i) the data should be made anonymous (ii) no contact with SSS 1-3 students (iii) only the school counsellors were to administer the questionnaire.

Data analysis

The responses to the questionnaire (quantitative data) were analysed using the Statistical Package for the Social Sciences (SPSS®17). Chi-square tests of 0.05 level of significance testing were used. The analysis triangulate both quantitative and qualitative data to produce risk factors that drive the current height of HIV/AIDS awareness.

III. Results

(i) Behavioural challenges

Kagimu et al., (2004) defined Behavioural change communication (BCC) as the process of communicating to individuals and the community for the purpose of changing unfavourable behaviours and attitudes to those that are favourable. Apena et al, (2014) described HIV/AIDS BCC activities as an important indices to evaluate risk factor in Lagos State. Their study established statistical analysis (Table 2) to study the respondents' awareness to BCC in Lagos State Schools based on "whether young students are knowledgeable about HIV/AIDS transmission and prevention (risk factors)".

It was suggested that the current height of HIV/AIDS BCC activities has significant effect on transmission rate. Also, the location of schools could be considerable factor to people living with HIV/AIDS

(PLWHA) for therapeutic awareness. The study was based on use of media and organisation of lectures/class to address on HIV/AIDS behavioural issues in Lagos State environ to address HIV transmission risk factors. The study conclusively considered BCC low tool in addressing HIV/AIDS in Lagos State such as availability of free condom and leaflets on safe sex. Deployment of electronic-based BCC could provide information on HIV transmission to sustain and maintain good behaviour in the long term.

Table 2 Behavioural Change Information (BCI) in Lagos State Schools (Apena, et al., 2014)

HIV/AIDS BCI	Gender		School Location		Educational Class	
	Male	Female	Rural	Urban	SSSI-3	Tertiary
Lesson/Lectures	p -value = 0.362		p -value = 0.001		p -value = 0.366	
Yes	331 (35.8%)	431 (46.6%)	314 (33.9%)	435 (47%)	450 (48.6%)	313 (33.8%)
No	76 (8.2%)	85 (9.2%)	97 (10.5%)	60 (6.5%)	100 (10.8%)	61 (6.6%)
Media (How often)	p -value = 0.065		p -value = 0.057		p -value = 0.014	
Very Common	276 (30.2%)	381 (41.6%)	290 (31.6%)	356 (38.8%)	381 (41.6%)	278 (30.3%)
Common	80 (8.7%)	92 (10.1%)	71 (7.7%)	94 (10.3%)	99 (10.8%)	73 (8.0%)
Uncommon	47 (5.1%)	39 (4.3%)	48 (5.2%)	38 (4.1%)	63 (6.9%)	22 (2.4%)

*p-value significant < 0.05

(ii) Sexually transmitted infections - STIs and clinical understanding

Sexually transmitted infections (STIs) and sexually transmitted diseases (STDs) are categorised as HIV/AIDS risk factors by the public and community health biomedical officers working in epidemiology and it has been used as an index to monitor the HIV incidence rate in the developed world (Calentano et al. 1998; and Fleming and Wasserheit, 1999). Developing nations have been tackling STIs as a factor contributing to HIV transmission among young people. The literature has shown that young people have little or no knowledge of STIs and as a result this has become an issue that is associated with HIV risk factors. Apena et al., (2014) considered location and educational level as factors that militate Lagos State students’ vulnerability to STIs, due to their lack of knowledge on HIV/AIDS and clinical awareness. Their study (Table 3) further examines students’ sexual practice and STIs protection among peers, such as the use of condoms.

Table 3 STIs Clinical Remedy Awareness in Lagos School (Apena et al., 2014)

STIs Awareness N = 958	Gender		School Location		Educational Class	
	Male	Female	Rural	Urban	SSSI-3	Tertiary
What is STI?	p -value = 0.925		p -value = 0.001		p -value = 0.001	
Correct	369 (39.8%)	468 (50.5%)	355 (38.3%)	464 (50%)	486 (52.4%)	352 (38%)
Incorrect	28 (3%)	36 (3.9%)	39 (4.2%)	25 (2.7%)	51 (5.5%)	13 (1.4%)
Unsure	12 (1.3%)	18 (1.9%)	18 (1.9%)	7 (0.8%)	17 (1.8%)	08 (0.9%)
Clinical Remedy	p -value = 0.236		p -value = 0.001		p -value = 0.001	
Aware	238 (26.2%)	322 (35.4%)	208 (22.8%)	340 (37.3%)	269 (29.6%)	291 (32%)
Unaware	50 (5.5%)	49 (5.4%)	58 (6.4%)	40 (4.4%)	75 (8.2%)	24 (2.6%)
Unsure	117 (12.9%)	133 (14.6%)	136 (14.9%)	110 (12.1%)	192 (21.1%)	59 (6.5%)

*p-value significant < 0.05

(iii) Lack of transmission awareness

The study verified level of HIV transmission awareness, using indices of HIV transmission knowledge (definition, virus and transmission) – gap revealed by the empirical study was the respondents’ lack of HIV-transmission. The problem of HIV in Lagos State could be tackled by raising awareness about how to reduce HIV-transmission (including practising sexual abstinence, safe sex, blood screening and preventing syringe sharing) as confirmed by this research. “How can HIV/AIDS transmission be avoided?” Respondents were expected to respond by choosing options including faithfulness to partners, use of condoms for casual sex, behavioural change, single use of disposable syringes, screening all blood and blood products for HIV and vaccination. The responses of the students was significant and showed that the risk group (Lagos State Students) were aware that HIV infection could be avoided by considering the factors responsible for HIV transmission. A knowledge-based framework could be used to address holistic factors contributed to HIV/AIDS transmission.

(iv) Condom use

The use of condoms is a vital component of STIs/STDs prevention strategies and family planning. The use of condoms prevents the contacts of reproductive organs and the anus and mouth in the case of oral sex. Sexual activities are pronounced among the selected age group (15-24) in Nigerian schools. The social activity of secondary school students outside school hours are of concern to public health workers as they are not under official supervision, while the tertiary students have the freedom of “social network” on their side as they are far from home. The use of condoms is advocated by public health sector to prevent un-wanted pregnancy and spread of sexual diseases. Expandable knowledge on use of condom could break or truncate sexual networks

and protect sexual network activity. The use of condoms during sexual activities is classified as a behaviour issue. The use of condoms could positively address the fear of HIV/AIDS transmission among Lagos State students. The study evaluate attitudes to use of condom among Lagos State Student and this is revealed in Table 4.

Table 4: Students attitudes to condom use (Apena, et al., 2014)

Characteristic	Educational Class				Gender				Age Groups (yrs)			
	SSSI-3		Tertiary		Male		Female		15-24		25 and above	
Do you use Condom during sex?	n	%	n	%	n	%	n	%	n	%	n	%
Yes	253	26.5	203	21.2	256	26.8	200	20.9	325	34.5	126	13.3
No	140	14.6	99	10.4	90	9.4	149	15.6	159	16.8	76	8
No Response	178	18.6	83	8.7	75	7.8	186	19.5	208	21.9	51	5.4

(v) Fear of HIV/AIDS-related stigma and discrimination (HASD)

The HIV/AIDS stigmatisation were characterized by factors of avoidance, social fear of abuse and shame as a sociological effect. Apena et al., (2014), described HIV/AIDS-related stigma and discrimination (HASD) as ability of individual to declare his or her HIV/AIDS status. This is could determine the pace of the HIV incidence rate and prevalence. HASD is described as occurrence where HIV risk group had lost trust or were unable to have control over disclosure (Anderson et al., 2008). Sharing experience of HIV risk factors in open gardens among Lagos state students’ such as opportunistic infections, sexual transmitted infections and diseases (STIs/STDs) could enhance HIV/AIDS transmission awareness in schools. Lagos State students were evaluated as shown on Table 5.

Table 5 Fear of Stigmatisation and discrimination (Apena et al., 2014)

Characteristic	Gender		Educational Class				Location					
	Male		Female		SSSI-3		Tertiary Student		Rural		Urban	
HASD	n	%	n	%	n	%	n	%	n	%	n	%
Would you tell friends of your HIV/AIDS Status?												
Yes	170	19.2	224	25.3	234	26.4	161	18.2	181	20.4	204	23
No	142	16	148	16.7	161	20.3	109	12.3	128	14.4	156	17.6
Don't Know	85	9.6	117	13.2	117	13.2	86	9.7	90	10.1	109	12.3

(vi) Ineffectiveness of HIV Counselling and Testing centres

According to Balogun and Odeyemi (2010), there is less awareness for HIV testing among the traditional birth attendants (TBAs) in the rural areas of Lagos State and this contributes to mother-to-child transmission. The study evaluated effectiveness of capacity leaders working in Lagos State on both HIV/AIDS therapeutic activities and awareness. Respondents were asked if they were aware of the existence and activities of an HCT centre in their locality and their response is depicted in Table 6. The existence of HCT centres to Lagos State students is low as these was revealed in divisions and age groups. In summary, 1 out 3 respondents was aware of HCT activities in their respective localities. Furthermore, none of the age groups showed a satisfactory level of awareness of existence, role and activities of HCT centres.

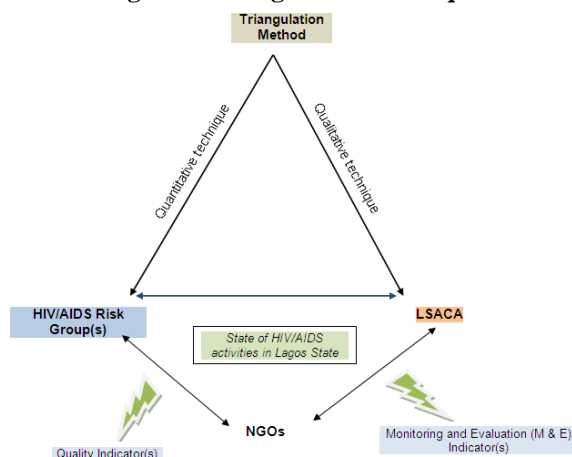
Table 6 Respondents’ Awareness of HCT Centres in Lagos State (Apena et al., 2014)

Divisions N =921	Awareness of HIV Counselling and Testing Centres					
	Aware		Not Aware		Total	
	n	%	n	%	N	%
Badagry	57	6.2	97	10.5	154	16.7
Epe	43	4.7	113	12.3	156	16.9
Ikeja	164	17.8	198	21.5	362	39.3
Ikorodu	33	3.6	70	7.6	103	11.2
Lagos Island	57	6.2	70	7.6	127	13.8
Non-Lagos Residence	8	0.9	11	1.2	19	2.1
Age Groups, n = 908,						
15 - 16	108	11.9	209	23	317	34.9
17 - 18	64	7	123	13.5	187	20.6
19 - 20	5	0.6	17	1.9	22	2.4
21 - 22	13	1.4	17	1.9	30	3.3
23 - 24	49	5.4	57	6.3	106	11.7
25 and Above	118	13	128	14.1	246	27.1

IV. Research Validation

Students' responses (quantitative data) was triangulated figure 1 with the Lagos State AIDS Control Agency (LSACA) semi-structured (qualitative data) interview to produce HIV/AIDS militating gaps in the State. The study produce a conceptual framework to be validated by randomly selected 10 NGOs working in the State without the interference of LSACA team. The proposed validated framework is suggested after the consideration of positive suggestion from all the validated team.

Figure 1 Triangulation technique

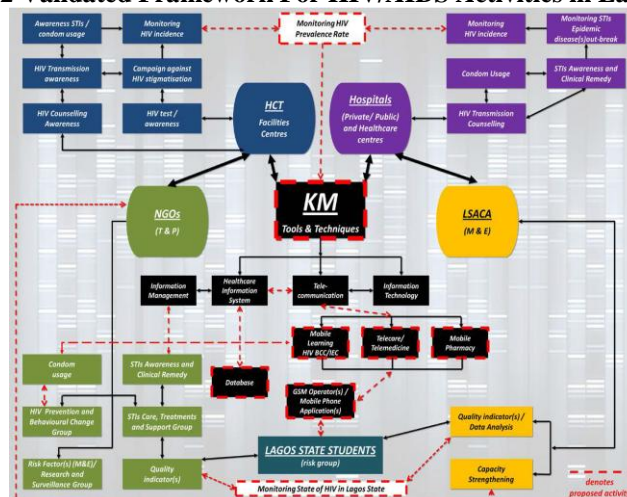


V. Discussion and Validated Framework

Knowledge transformation and sharing appears to be the main challenges behind HIV/AIDS activities in Nigeria as revealed by the empirical study. The study has established gaps through the statistical analysis (descriptive and inferential), which has further revealed that Lagos State students have an insufficient understanding of HIV/AIDS risk factors and knowledge. Such gaps are one factor contributing to the current state of HIV/AIDS prevalence as shown in the discussion about the Lagos State AIDS Control Agency (LSACA) organisational issues.

Based on these gaps, the study proposed a validated HIV/AIDS framework using the knowledge management (KM) concept in other to unify disjointed knowledge in Lagos State HIV/AIDS activities. Bali et al., (2011) described KM as an organisational knowledge with meaningful interaction of people, processes, activities and technologies that enable the sharing, creation and communication of knowledge. The research deployed primary KM tools and an appropriate techniques as revealed in figure 2, these are (i) information management (ii) healthcare information system (iii) telecommunication and (iv) information technology. The research suggested deployments of mobile learning, telemedicine and mobile pharmacy to enhance HIV/AIDS therapeutic activities in all the Lagos State administrative divisions in support of current patients' management. A centralised database is suggested in the study to monitor HIV/AIDS incidence and prevalence rate in other develop accurate information on monitoring and mortality.

Figure 2 Validated Framework For HIV/AIDS Activities in Lagos State



This empirical research evaluate use of mobile phone among the risk groups and was found significant for knowledge transfer. Electronic-learning (e-learning) and mobile computing are suggested into HIV/AIDS activities in Lagos State as part of mobile-learning (m-learning) for Knowledge Management (KM) to address behavioural challenges and enhance HCT activities regarding HIV information, education and communication (IEC). This will address issue of stigmatisation of risk group(s) and create reversible information sharing with capacity leaders. This would also to improve HIV therapeutic activities, monitor HIV incidence rate through central database operations and to supports people living with HIV/AIDS (PLWHA) in other to access suggested anonymous mobile pharmacy and counselling team.

The use of mobile phone technology for services that includes free text messaging and calls for patient management and information systems will bring about a centralised quality health care information management system (healthcare database) to aid the efficiency of the biomedical professionals and help healthcare professionals working in isolation. The use of mobile phones to access information in Nigeria is relatively cheaper, easier and more popular than in South Africa, particularly with the rural settlers (Kazanka and Dada, 2009). The communications gap between people living with HIV/AIDS (PLWHA) and the biomedical staff on therapeutic activities can be bridged by the use of mobile technology (SMS) to update a centralised database for antiretroviral clinical trials and HIV/AIDS behavioural issues on use of condom including stigmatisation issues.

VI. Conclusion

The research successfully proposes a validated KM-based framework to address current issues on HIV/AIDS transmission and prevention awareness through the use of information and communication technologies (ICTs) in Lagos State. The study suggested e-Health (database, telecare, healthcare information management, mobile pharmacy, and e-portals) as a knowledge management (KM) tools to enhance HIV/AIDS activities and address behavioural issues. Deployment of KM tools in Nigeria healthcare sector could address issue of disjointed knowledge and promote quality healthcare services in all (Apena et. al., 2014).

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