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Knowledge, Behaviour and Perceptions Affecting Control of HPV / HIV Co-Infection and Cervical Neoplasma Screening Among Patients with Cervical Cancer in Kenya

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Abstract

The main objective of this study was to assess how Knowledge, behavior and perceptions affect Cervical Cancer screening and the control of HIV/ HPV Co-infection among patients with cervical cancer in Kenya. The following specific objectives guided the study; to weigh the knowledge, behavior, and perceptions on the understanding of the absorption of Cervical Cancer Screening and prevention strategies among women in Kenya. This was a cross-sectional, descriptive and quantitative comparative study of cervical neoplasia screening and control strategies among women attending Kenyatta National Hospital and Coast Provincial General Hospitals in Kenya. The study was conducted at the Coastal region of Kenya particularly Mombasa County and all parts of Nairobi County over a twelve-month period at the Coast Provincial General Hospital (CPGH) and Kenyatta National Hospital respectively. The target population for this work involved all female respondents who had tested positive for HIV and Cervical Cancer and have the results or they need further screening. Convenience sampling technique was used because of time constraints. Random sampling was used to identify participants. The study concludes that knowledge, behavior, and perceptions on absorption of Cervical Cancer Screening and prevention by women depend on initiatives that have been put in place to motivate and educate women on issues related to cancer screening. The study recommends that the need for community understanding of cervical cancer and the causal relationship between HPV and cervical cancer is usually poor, giving priority to continuing education on the significance of HPV prevention and periodic cervical Cancer screening.

Acronyms and Abbreviations

ACC	Adenocarcinoma
ANC	Antenatal Clinic
AOR	Adjusted Odds Ratio
ARR	Adjusted Related Risk
ASCUS	Atypical Squamous Cells of Uncertain Significance
CDC	Centre for Disease Control
CI	Confidence Interval
CIN	Cervical Intraepithelial Neoplasia
CxCa	Cervical Cancer
DALY	Disability Adjusted Life Year
DVI	Direct Visual Inspection
EBRT	Extend Beam Radiotherapy
ELISA	Enzyme Linked Immunosorbent Assay
FIGO	International Federation of Gynecology and Obstetrics

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GIT	Gastrointestinal system
GUT	Genitourinary Tract system
HAART	Highly Active Antiretroviral Therapy
HBM	Health Belief Model
HGSIC	High Grade Squamous Intraepithelial Lesions
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
HR	Hazard Ratio
HRT	Hormone Replacement Therapy
IARC	International Agency for Research on Cancer
ICC	Invasive cervical cancer
IDU	Intravenous Drug Users
KNH	Kenyatta National Hospital
KCR	Kenya Cancer Registry
LEEP	Laser Electrosurgical Exicision procedure
LGSIL	Low Grade Squamous Intraepithelial Lesions
LOH	Loss of Heterozygosity
MMR	Mismatch Repair Region
NGO	Non-Governmental Organization
NCSP	National Cervical Screening Program
O&G	Obstetrics & Gynaecology
OCP	Oral Contraception Pills
OR	Odds Ratio
Papsmear	Papanicolou Smear
PVE	Per Vaginal Examination Examination (pelvic examination)
RCT	Randomized Control Trial
SCC	Squamous Cell Carcinoma
SES	Socio Economic Status
SIR	Standardized Incidence Ratio
SPC	Statistical Process Control
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TQM	Total quality management
UNAIDS	United Nations Joint Program of HIV/AIDS
VIA	Visual Inspection after application of Acetic acid
WBC	White Blood Count
WHO	World Health Organization

Introduction

Background information

One of the leading causes of morbidity and mortality in Kenya and the world at large is Human Papillomavirus (HPV). High-risk, oncogenic HPV types (featuring HPV 16 and HPV 18) are connected to 99.7% of all cervical cancers. Low-risk HPV types (HPV 6 and HPV 11) are accountable for incremental abnormal Pap test results, and almost all cases of genital warts. HPV is so prevelant that more than fifty percent of all sexually active people will be

tainted by the disease in their lifetime, however, it is the young sexually active women who bear the chief impact of both infection and clinical complications. Presently, there does not exist an effective HPV prevention strategies or efficient treatments for individuals with genital warts or cervical lesions in Kenya; the available treatments only focus on extracting the affected area consequently, recurrence is common. The government of Kenya is planning to avail to the health sector prophylactic vaccines in the near future. It is hoped that the vaccines will unquestionably reduce the morbidity and mortality associated with these infections.

A study conducted by CDC, (2004) revealed that roughly 20 million people living in America are infected with HPV and roughly 6.2 million new HPV infections develop each year. HPV is rampant among the sexually active populations since the infection is spread by skin-to-skin sexual contact. The study further reveals that Centers for Disease Control projects that at least half of the sexually active population will contract HPV at a given point in their lives, and at least 80% of women will contract the infection by the age of 50. In the United States, about 10% of the population have an active HPV infection, whereas 4% have an infection that results in cytological abnormalities, and an additional 1% have infection causing genital warts (Koutsky, 1997). Despite the small percentage of Americans revealed to have clinically visible genital warts, as many as 13% of americans attending STD clinics are reported to have genital warts (Koutsky, 1997). The greatest risk factors attributed to the infection include; gender, youth, and sexual activity, with the maximal rates being routinely found amongst the sexually active women aged 25 years and below. In a study conducted by Winer *et al*, 2003 that sampled 148 female university students who were sexually active and within 24 months 38.9% were infected by HPV. The most common HPV type detected was HPV 16 which had a cumulative infection rate of 10.4%, HPV 18 had a cumulative infection rate of 4.1% by the end of the 24 months. In a smiliar study conducted by Brown et al, (2005) examined a smaller sample of mid-adolescent women for a period of two years. At the end of the period, the results revealed that, 82%of the women were infected with HPV). DNA from both low-risk and high-risk HPV types has even been detected amongst women who engage in sexual activities with their fellow women counterparts, which is a population that was expected to have a low incidence of HPV infection (Marrazo et al; 2001). It should be observed that prevalence estimates vary due to the technique enaged in assessing the viral load; polymerase chain reaction analysis is a more sensitive detection method and yields higher rates of prevalence.

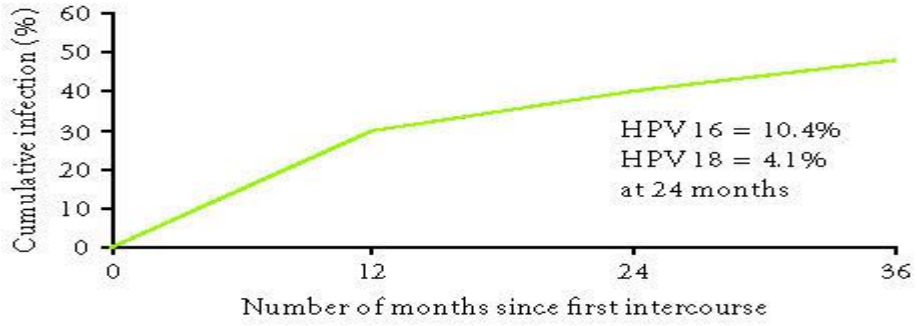

Figure 1. Reveals the cumulative rate of HPV infection amidst college-aged women who were virgins at baseline. Adapted from (Winer et al 2003)

Limitations

The most important limitation of this study is the exclusion of genotyping tests to establish the common genotypes circulating within the population responsible for Cervical Cancer acquisition and progression due to financial constraints. It is important to recognize possible limitation of this study in terms of identification of specific genotypes responsible for acquisition of cervical cancer.

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Thirdly, the other limitation to the study is the lack of viral load considering the fact viral load detection in blood is a good indicator of viral suppression as well as monitoring of drug effectiveness for HIV patients diagnosed with cervical cancer.

Materials and Method

Study site

The study was conducted at the Coastal region of Kenya particularly Mombasa County and all parts of Nairobi County over a twelve-month period at the Coast Provincial General Hospital (CPGH) and Kenyatta National Referral Hospital. The County of Mombasa and Nairobi have approximately 939,370 people and 3,138,369 respectively (KNBS, 2009). They are Cosmopolitan Centers with people of different races. The study sites a fair presentation of both the youth and the older generation. The Centers are chosen due to accessibility of VCT and free cervical malignant growth screening services being offered by the Ministry of Health (MOH) and also due to the fact that that they form the bulk of the population of both Mombasa county and Nairobi County.

Study design

A cross-sectional, descriptive and quantitative comparative study of cervical neoplasia screening, and control strategies among women attending Kenyatta National Hospital and Coast Provincial General Hospitals in Kenya

Data collection techniques

Data was obtained from a total of 300 patients via face to face, patient interviews, patient records both outpatient and inpatient. The data collection was carried out by the researcher according to the schedule shown in the table. Only patients who consent will be scheduled in the study. Data was captured and cleaned then analyzed using the SPSS software.

Data management and analysis

Data quality was checked by pre testing questionnaires before use and data entered in the computers using double entry system. Queries were raised and resolved as soon as they were identified. Quality control was done to ensure reliability and validity of data. Data collected from patients at the Gynecological clinic, Oncology clinic, Radiotherapy clinic, Comprehensive Care Centre (CCC) and Pathology Laboratory was captured in the electronic data base and exported to excel work book 2010. Data analysis was done using SPSS Version 23.0 statistical software. Basic characteristics of the study samples were summarised using simple proportions and means, median and inter quartile ranges.

Further analysis was done to perform one way ANOVA comparing more than two means followed by Post hoc Student Newman Keul for multiple comparisons. Independent t-test was used to calculate if there was any significant difference between different groups. Data was presented by use of frequency distribution tables. In both statistics, 95% confidence level was used and all statistical tests were considered significant at $P < 0.05$. The data was presented qualitatively and quantitatively by way of narrative, description, tabulation and discussion.

Results

Mean comparison of the respondents

ANOVA

The study sought to determine the significance level between the groups in each of the objectives. From the findings, the f-calculated of Attitudes towards Cervical Cancer Screening was 2.792.

Table 1: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Attitudes Towards Cervical Cancer Screening	Between Groups	536.503	30	17.883	2.792	.000
	Within Groups	1069.658	167	6.405		
	Total	1606.162	197			

T-test

To test this, we concentrate on the 2-tailed value and compare it with 0.05. Values that are below 0.05 we reject the null hypothesis. From the results, the attitudes towards cervical cancer screening before education, the p-value was 0.001 for both equal variances assumed and equal variances not assumed. Therefore, we reject the null hypothesis.

Table 2. T- Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Attitudes Towards Cervical Cancer Screening	Equal variances assumed	2.905	.090	3.384	196	.001	1.35008	.39894	.56331	2.13685
	Equal variances not assumed			3.398	185.623	.001	1.35008	.39736	.56615	2.13401

Student-newman-keuls

Attitudes towards cervical cancer screening

Attitude toward second scanning

From the ANOVA table, the p-value indicates that there was significant different between the groups on attitude towards Screening with a p-value of 0.041 which is less than 0.05. However, Student-Newman-Keuls indicates that there is no significant different between the groups. Therefore, Type I error levels are not guaranteed.

Table 3. ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.301	3	3.100	2.813	0.041
Within Groups	213.790	194	1.102		
Total	**223.091**	**197**			

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Table 4. Student-newman-keuls

Student-Newman-Keuls[a,b]		
If you were offered a free cervical cancer screen, would you be willing to be screened?	N	Subset for alpha = 0.05
		1
Unsure, many be willing	34	2.5882
No, would not be	93	2.6452
Don't know what cervical cancer is	37	3.0000
Yes would be willing	34	3.1471
Sig.		.076

Means for groups in homogeneous subsets are displayed

a. Uses Harmonic Mean Sample Size = 41.406.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed

Reason for not willing to take second screening

From the ANOVA table, the p-value indicates that there was significant difference between the groups on willingness to be screened with a p-value of 0.000 which was less than 0.05. From Student-Newman-Keuls, it was inconvenient to get to a clinic and some didn't know what was cervical cancer. Other reasons include; The test is human wanting are all not significantly differences while I don't have time to attend for a test, The test will be painful and other groups are all significantly different because they are in different column which is column 1, 2, 3 and 4. Therefore Type I error levels are not guaranteed.

Table 5. ANOVA

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	153.330	5	30.666	51.356	.000
Within Groups	114.649	192	.597		
Total	**267.980**	**197**			

Table 6. Student-Newman-Keuls

Student-Newman-Keuls[a,b]						
What will make you not to be willing or interested in taking cervical cancer screening?	N	Subset for alpha = 0.05				
		1	2	3	4	5
It's inconvenient to get to a clinic	34	1.1765				
I don't know what it's for	24	1.3750	1.3750			
Other reasons	81		1.7284	1.7284		
The test is human wanting	19			2.0526		
The test will be painful	18				3.2222	
I don't have time to attend for a test	22					4.0000
Sig.		.362	.105	.137	1.000	1.000

Means for groups in homogeneous subsets are displayed

a. Uses Harmonic Mean Sample Size = 25.309.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed

Individual cervical cancer

From the ANOVA table, the p-value indicates that there was significant difference between the groups on how the patient think are risks for cervical cancer with a p-value of

0.024 which is less than 0.05. However, Student-Newman-Keuls indicates that there is no significant different between the groups. Therefore, Type I error levels are not guaranteed.

Table 7. ANOVA

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	40.329	2	20.165	3.799	.024
Within Groups	1034.923	195	5.307		
Total	**1075.253**	**197**			

Table 8. Student-Newman-Keuls

Student-Newman-Keuls[a,b]		
Do you think you are at risk for cervical cancer	N	Subset for alpha = 0.05
		1
Yes	152	7.2171
Don't know	27	8.2222
No	19	8.3684
Sig.		.122

Means for groups in homogeneous subsets are displayed

a. Uses Harmonic Mean Sample Size = 31.170.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed

Attitude towards Healthy Woman and Screening for Cervical Cancer

From the ANOVA table, the p-value indicates that there was no significant different between the groups on whether the patient think healthy woman, who feed well, need to be screened for cervical cancer with a p-value of 0.064 which is less than 0.05. Similarly, Student-Newman-Keuls indicates that there is no significant difference between the groups. Therefore, Type I error levels are not guaranteed.

Table 9. ANOVA

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	1.002	2	.501	2.789	.064
Within Groups	35.038	195	.180		
Total	**36.040**	**197**			

Table 10. Student-Newman-Keuls

Student-Newman-Keuls[a,b]		
Do you think a healthy woman, who feeds well, need to be screened for cervical cancer	N	Subset for alpha = 0.05
		1
No	19	1.0000
Don't know	21	1.0000
Yes	158	1.1772
Sig.		.262

Means for groups in homogeneous subsets are displayed

a. Uses Harmonic Mean Sample Size = 28.148.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed

Individual Cervical Cancer Information Sharing

From the ANOVA table, the p-value indicates that there was significant different between the groups on whether the patient have ever talked with their mother, daughter or friends about cervical cancer with a p-value of 0.043 which is less than 0.05. However, Student-

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Newman-Keuls indicates that there is no significant different between the groups. Therefore Type I error levels are not guaranteed

Table 11. ANOVA

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	2.489	2	1.244	3.189	.043
Within Groups	76.097	195	.390		
Total	**78.586**	**197**			

Table 12. Student-Newman-Keuls

Student-Newman-Keuls[a,b]		
Have you ever talked with your mother, daughter or friends about cervical cancer	N	Subset for alpha = 0.05
		1
No	23	1.0435
Don't know	21	1.1905
Yes	154	1.3701
Sig.		.103

Means for groups in homogeneous subsets are displayed

a. Uses Harmonic Mean Sample Size = 30.741.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed

Discussion

The study discussed the respondents' response and findings according to the questionnaires given to them.

Attitudes towards cervical cancer screening before educational intervention

Knowledge and Awareness Levels after Educational Intervention with 3.347 and Attitudes towards Cervical Cancer Screening Educational was 3.897 and the f- tabulated is 1.527 hence there was significant different between the groups. For knowledge and awareness levels after educational intervention the p-value for both equal variances assumed and 0.033 and 0.029 respectively, therefore we reject the null hypothesis. The p-value for attitudes towards cervical cancer screening educational is 0.282 and 0.287 which is greater than 0.05. We therefore accept the null hypothesis. Lastly the p-value for general health was 0.057 and 0.053 for both equal variances assume and equal variances not assumed respectively therefore we accept the null hypothesis. In all of the outcomes there was not much significance difference in the mean. According to a study conducted in Western Kenya that discovered the following, first, self-reported HIV was linked with increased CC screening attendance and secondly not all women who admitted living with HIV undertook screening services, this finding highlights the significance of education among the high-risk group of women (Orango'o et al; 2016). In order to ensure proper conveyance of information and retention of patients in health care is through laying a strong foundational relationship between the provider and patient, particularly those who have many medical and social needs (Fletcher et al; 2014).

Conclusion

The study concludes that knowledge, behavior, and perceptions on absorption of Cervical Cancer Screening and prevention by women depend on initiatives that have been put in place to motivate and educate women on issues related to cancer screening. When there are good strategies of education the awareness level and knowledge increase therefore reduces the risk associated with Cervical Cancer.

Recommendations

The recommendations of this study can be summed up based on Kenya health Care reforms. Outreach, community mobilization, health education (including extensive sexuality education) and counseling are vital elements of an efficient program for the prevention and control of cervical cancer that guarantees elevated coverage of vaccination and screening and elevated therapy adherence (75). Also, vital elements of the HIV reaction are community outreach, mobilization and commitment. Using HIV infrastructure can provide both programs with resource optimization and extra efficiencies. Reducing morbidity and mortality from cervical cancer needs better schooling and interaction. Community understanding of cervical cancer and the causal relationship between HPV and cervical cancer is usually poor, giving priority to continuing education on the significance of HPV prevention and periodic cervical screening.

Disclaimer

The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Kenyatta University nor Clinical and Laboratory Standards Institute. Use of trade names is for identification purposes only and does not constitute endorsement by Kenyatta University nor Clinical and Laboratory Standards Institute.

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