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## Outcomes of cervical cancer screening at ndola central hospital

Samson Mphande<sup>\*</sup>, Victor Mwanakasale

*The Copperbelt University, School of Medicine, P.O. Box 71191, Ndola, Zambia*

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### ABSTRACT

**Background:** Cervical cancer screening was introduced in 2013 mid-year at Ndola Central Hospital. Although cervical cancer is the second most common cancer among women worldwide, it is the commonest cancer in developing countries where it is closely associated with women of low-to-middle socioeconomic status. Cervical cancer screening results using VIA can either be negative or positive. **Methods:** The research was a retrospective study conducted at Ndola Central Hospital, Ndola, Zambia. Patient enrolment registers were retrospectively analyzed and 3,433 records were reviewed within the study period 2014-2015. Data was collected as; total enrolled, VIA-DC results, cryotherapy, biopsy and Loop Electrosurgical Excisional Procedure (LEEP). Data analysis was done using SPSS. **Results:** A total of 3,433 women were screened, 11.3% were VIA-DC-positive out of which, 26.3% were eligible for cryotherapy, 45.4% were scheduled for LEEP, and 20.4% were suspicious for ICC and were referred for biopsy. Over 80% of women screened were in the age group 25-45 years which contributed a big number of VIA-DC-positive screen (58.2%). However, 38.0% women who were referred for biopsy were in the group 40-50 years. The overall HIV prevalence in the study was 17.2%. **Conclusion:** The high rate of VIA-DC-positive screens are suggestive of a high rate of plausible cervical cancer cases later in life. This therefore indicates the need for expansion of cervical cancer screening and prevention programmes throughout the nation. There is also need for increased community sensitization on cervical cancer prevention and adequate treatment of cervical pre-cancerous lesions.

**Key words:** cervical cancer; screening; VIA; Cryotherapy; LEEP; Biopsy.

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### Introduction

The outcomes of cervical cancer screening helps determine the burden of cervical cancer. The burden of cervical cancer in developed countries is low compared to developing countries where it constitutes a major public health problem worldwide. Cervical cancer is the second most common cancer among women worldwide and it is the commonest cancer in women with low-to-middle socioeconomic status in developing countries [1][2]. In 2012, over 520,000 new cases of cervical cancer were diagnosed worldwide and about 266 000 death, 85% mortality occurred in less

developed regions [3]. The number of new cases from 2000 to 2012 had increased although surprisingly developed countries recorded a reduction in the number of new cases diagnosed. This shows that the burden of cervical cancer is increasing in developing countries and therefore, the conclusion is that cervical cancer is closely associated with low-to-medium socioeconomic status [2][4]. Africa, especially Sub-Saharan Africa has a high incidence of cervical cancer cases reported at rates exceeding 50 per 100,000 population and the age-standardized mortality were exceeding 40 per 100,000. The disease is the most common cause of cancer death among women in the region [5]. Zambia has been ranked second in the top 25 countries with highest incidence rates, with an incidence of 1,839 cases per year, estimated to be 52.8% on an age-adjusted incidence, making cervical cancer the most common cancer among women. The increased number of new cases and death observed in Zambia may be attributed to lack of screening, inadequate treatment of

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*\*Correspondence*

**Samson Mphande**

**The Copperbelt University, School of Medicine,**

**P.O. Box 71191, Ndola, Zambia**

**E Mail:** [sam.53sm@yahoo.co.uk](mailto:sam.53sm@yahoo.co.uk)

precancerous lesions, women shunning away from cervical cancer screening and inability to either initiate or sustain cervical cancer prevention programmes [4][6]. According to a research conducted in six African countries, 1,381 women were screened in Zambia out of which 386 (28.0%) had a VIA-positive screen. In the same study, 1,221 women were screened in Malawi and only 151 (12.4%) had a VIA-positive screen result and 5,529 women screened in Nigeria out of which 317 (5.7%) had a VIA-positive screen result [7] [8]. This suggests that cervical cancer is a major public health problem in Zambia and there is need to scale-up interventions aimed at preventing and treating precancerous lesions in order to reduce the increased prevalence and mortality rates. Visual Inspection with Acetic acid (VIA) is a screening technique that involves performing a vaginal speculum examination. Dilute acetic acid (3-5%) is applied on the cervix and visualised with the naked eyes and with the aid of a high-resolution digital camera (digital cervicography) to capture a photo for a clearer and magnified view of the cervix. The combination of naked eye view and digital camera aided view is called VIA-Digital cervicography (VIA-DC). Cervical lesions are identified as an opaque blight white well defined area on the cervix described as “acetowhite” (dull or oyster white lesion) most often located at the squamocolumnar junction as a sharply demarcated, distinct and well-defined dense lesion from adjacent normal epithelium. VIA-DC results can either be negative if no acetowhite lesions seen or positive testan acetowhite lesion is seen on the cervix. VIA-DC can be done along with cryotherapy either in the form of a “single visit” approach or in the form of a “see and treat” approach. The combination of VIA-DC and cryotherapy in a single visit approach offers secondary prevention of cervical cancer and can be carried out by a competent physicians or non-physicians health care giver, including nurses and midwives at the screening centre. VIA-DC-positive result may require antibiotic therapy, cryotherapy Loop Electrosurgical Excision Procedure (LEEP) or referral for biopsy depending on the extent of the acetowhite lesion. Treatment services for advanced disease should be readily accessible by the patient and offered according to the adopted national protocol, and set guidelines for management of cervical cancer [8][10]. The purpose of this research was to assess and compare the outcomes of cervical cancer screening for the year 2014 and 2015 so as to ascertain the status of the cervical cancer prevention programme at Ndola Central Hospital. Zambia has very little information concerning cervical cancer prevalence and mortality rates which may be attributed to little research being done on cervical cancer at both

hospital and national level [9]. In spite of the Zambian government’s efforts to address the issue of cervical cancer by introduction of cervical cancer prevention programmes in many provinces, there is still need to know the previous and current status of the prevalence of cervical cancer VIA-DC-positive screen. There was need therefore for this research to determine the outcome of cervical cancer screening. The project will help evaluate the status of cervical cancer screening at Ndola Central Hospital, and determine the appropriate recommendations with regard to cervical cancer screening and its related programmes.

### Objectives

- To determine the total number of women screened for cervical cancer at NCH for the period 2014-2015.
- To determine the prevalence of VIA-DC-positive screen for the period 2014-2015.
- To assess the Age-VIA positive correlation.

### Materials and methods

#### Study site and Ethical considerations

The study was conducted at Ndola Central Hospital, in Ndola, Copperbelt province, Zambia. It is a third level hospital which started offering cervical cancer screening mid-year in 2013. Ethical clearance was obtained from Tropical Disease Research Centre (TDRC) ethics committee. Permission to conduct the research was granted by Ndola Central Hospital management.

#### Sample population, Sample size and Inclusion criteria

The research was done retrospectively by systematic review of cervical cancer screening registers. The registers had all the information required for the data collection, but also has records pertaining women who came for reviews. New enrolments (women on their first visit) and women who came for review were entered in the same register but only distinguished by the type of ink colour used when recording the data. New enrolments were written in blue ink and red ink was used for those who came for reviews. The sample included all new enrolments between 2014 and 2015 and all women who came for reviews were excluded from the data collection. The study period for the research was from 1<sup>st</sup> January 2014 to 31<sup>st</sup>

December 2015 and the research was conducted from 8<sup>th</sup> May to 21<sup>st</sup> June 2016, that is data collection.

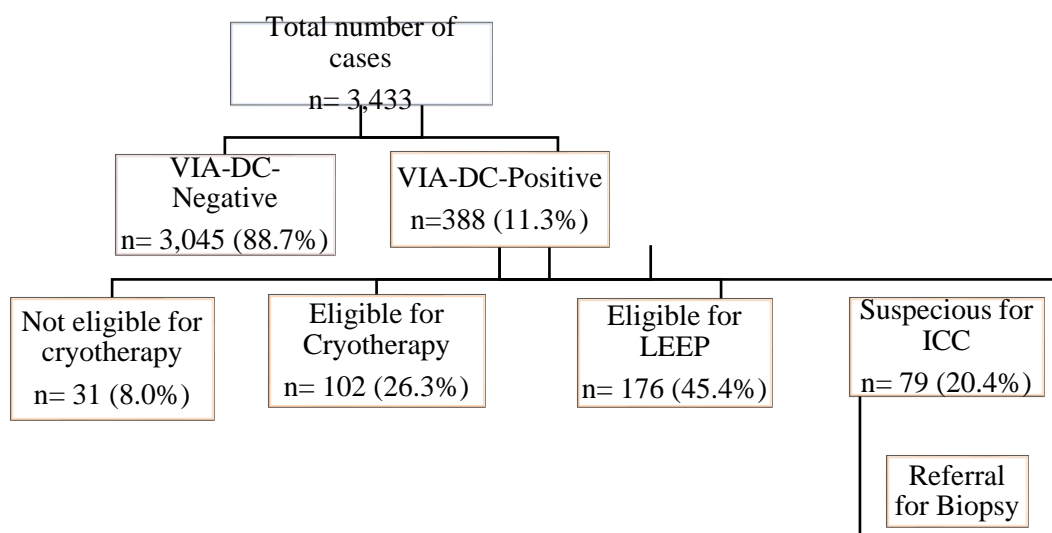
**Data collection, Entry and Analysis**

During data collection, the information of interest was; age, HIV status, screen results and intervention. From 2014 to 2015, 3,433 records were reviewed. Data collection went as follows; firstly a total of new enrolments were counted and recorded, then all VIA-DC-positives and VIA-DC-negatives, followed by cases eligible for cryotherapy, Loop Electrosurgical Excision Procedure (LEEP) and Biopsy. HIV positive and HIV negatives were also recorded. This was repeated for each month until all data for all 24 month. The second part involved grouping VIA-DC results into age-groups of 5 years starting with less than 20 years. This involved identifying the VIA-DC-positive and VIA-DC-negative results then checking their corresponding age. The collected data was entered in

Microsoft® Excel database for storage and was later exported to Statistical Package for Social Sciences (SPSS) version 16 for analysis. Data analysis involved generation of tables, frequencies and charts.

**Results**

A total of 3,433 women were screened for cervical cancer, 2,153 in 2014 and 1,280 in 2015. From the total number of women screened, 388 (11.3%) were VIA-DC-positive and 3045 (88.7%) women were VIA-DC-negative. Of the 388 VIA-DC-positive cases, 26.3% were eligible for cryotherapy, 45.4% were scheduled for LEEP, and 20.4% were suspicious for invasive cervical cancer (ICC) and were referred for biopsy. The remaining 8.0% did not meet the criteria for cryotherapy and thus were treated with antibiotics. Figure 1 show a flow chart with the summary of results obtained for the study period.



**Fig 1: Summary of final results obtained from the study**

Table 1 shows individual results for 2014 and 2015

**Table 1: Number of women according to the intervention for each year**

YEAR	VIA-DC-positive	CRYOTHERAPY	LEEP	BIOPSY	Others*
2014	275	73	134	51	17
2015	113	29	42	28	14
<b>Total</b>	388	102	176	79	31

\*Treated with antibiotic

**Table 2: VIA-positive screen rates by year**

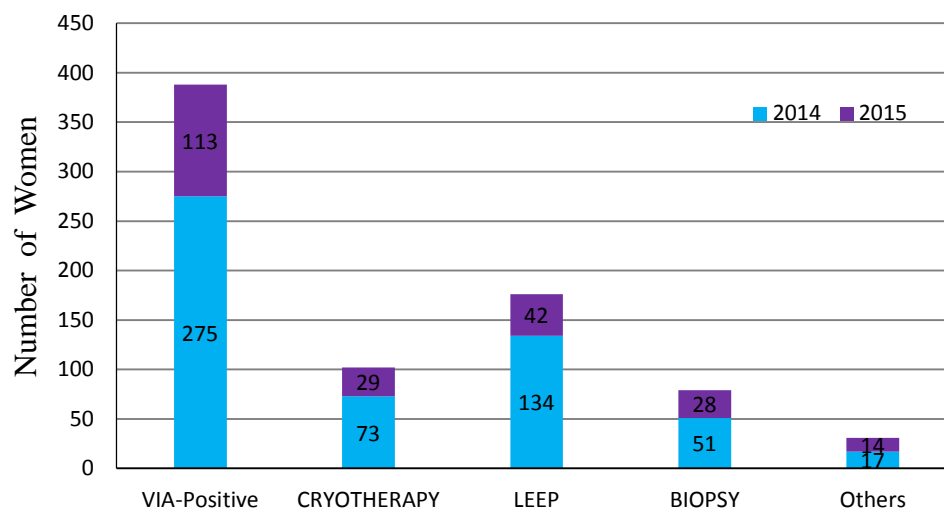
YEAR	Number Screened	VIA Positive n= (%)
2014	2,153	275(12.8%)
2015	1,280	113(8.8%)
<b>Total</b>	<b>3,433</b>	<b>388(11.3%)</b>

Table 2 shows the prevalence of VIA-DC-positive screen for 2014 and 2015 and the overall prevalence. From table 3, 112 VIA-DC-positive women were in the age group 20-29 and 118 were in the age group 30-39 and 6 girls below 20 years had a positive screen result. However, the majority of women with suspected ICC were in the age group 40-50years (38% of all referral for biopsy).

**Table 3: Age for VIA positive**

AGE	VIA positive	BIOPSY
<20	6	0
20-29	112	6
30-39	118	15
40-50	80	30
>50	11	26

A total of 33 women had VIA-DC-positive screen whose age was not recorded and only 2 women referred for biopsy had their age not recorded. Of all the women screened, 591 were HIV positive, 2,405 were negative and 437 didn't know their HIV status. The prevalence of HIV in the study population was 17.2%. Women whose HIV status was unknown were 12.7%, these were offered Diagnostic Counselling and Testing (DCT) to which they have the mandate to decline. Figure 2 shows that the majority of women screened were from the age group 25-45 accounting for over 75% of all women screened and this representing 58.2% of all VIA-DC-positive cases.

**Combine results for 2014 and 2015****Fig 2: Final results obtained from the study**

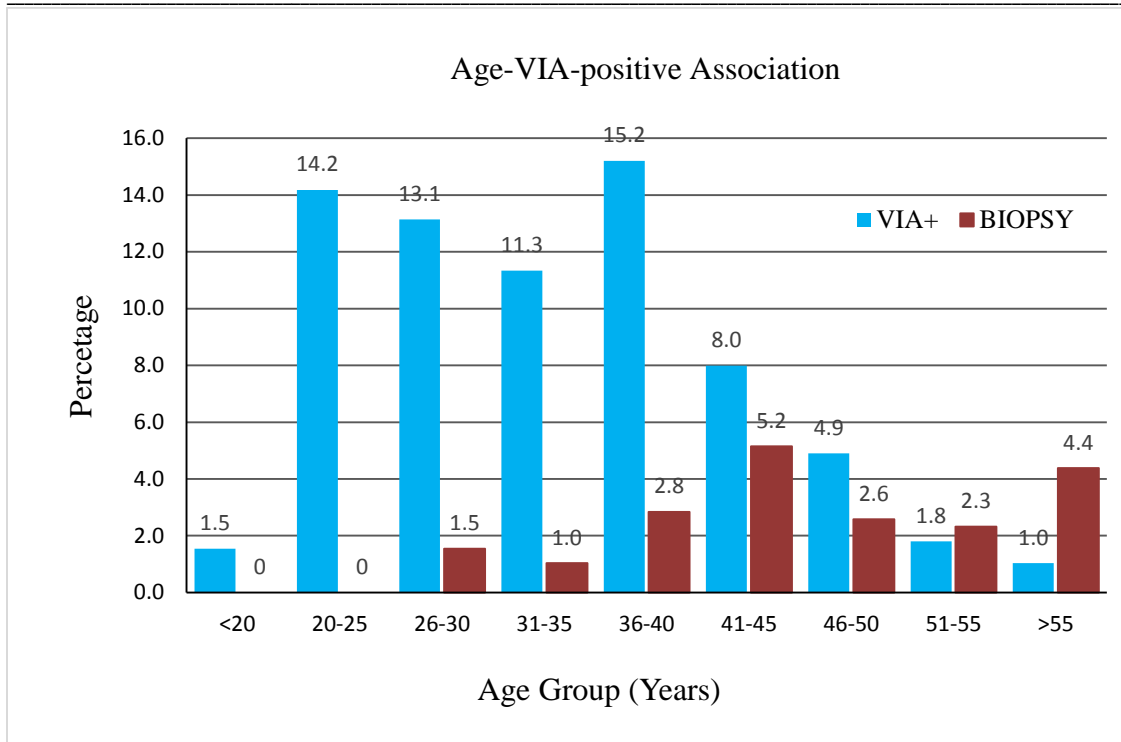


Fig 3: VIA-positive results in relation to Age-groups

**Discussion**

Ndola Central Hospital is one of the few Hospitals in the Copperbelt that offers cervical cancer screening services using VIA-DC enhanced. All the statistical information in this report is centred on the data collected based on the information compiled at Ndola Central Hospital cervical cancer prevention clinic for the period 2014-2015. From 2014 to 2015, a total of 3,433 women attended the cervical cancer prevention clinic and were screened for cervical cancer. The overall prevalence of VIA-DC-positive screen for the study period was 11.3%. 2014 represents the majority of VIA-positive case with a rate of approximately 71% of the total VIA-DC-positive results, with only about 29% for 2015. The intervention offered to women with VIA-positive women was based on the percentage of the cervix involved as follows: antibiotic therapy for lesions suggestive of inflammation; cryotherapy for lesions limited to the cervical os; LEEP for lesions involving more than 75% of the cervix and referral for biopsy for lesions suggestive of ICC (for example contact bleeding). Out of the total VIA-DC-positive cases, 20.4% were referred for biopsy representing 2.3% of the total number of women screened between 2014 and 2015. The aforementioned percentage represents women who presented late and had lesions

suggestive of ICC requiring biopsy for confirmation and as a guidance for management. Such a high rate of 11.3% VIA-DC-positive cases suggest significant likelihood of high prevalence of potential cervical cancer cases in future, implying the need for continued cervical cancer screening and same day treatment with cryotherapy. Although the VIA-DC-positive prevalence (11.3%) is high, it is consistent with findings in many studies and has been found to be lower than the rate recorded in a study conducted in Lusaka (1,381 women were screened and 386 (28.0%) were VIA-positive) as part of the research done in six African countries by WHO [8]. Although WHO recommends prioritizing screening the target age-group 35-45, the study has shown that there was a considerable number of VIA-positive case of women less than 35 years, representing 4.5% (40.2% of all VIA-positive women) of the total number of women screened. Thus screening of women younger than 35 years will be beneficial especially with the availability of same day treatment with cryotherapy. The age range of women enrolled and screened was from 16 years to older than 70 years, but the majority of women screened were aged between 25 and 45. This actually shows a wider coverage of the women at risk and will help reduce

women's chances of developing cervical cancer later in life as it can be detected at a much earlier stage at which treatment can be cheap, optimal and less invasive. This age range entails that there is no age restriction for screening and thus gives an equal opportunity to all women to be screened and live a health life. From table 3 above, the majority of women with a VIA-positive screen result were aged between 20 and 29 but the number was close to that of women in the aged between 30 and 39 although patients as young as 18 years were observed. On the other hand, the age range for women referred for biopsy was above 25 years with a peak age between 40 and 50 years representing 38.0% all women referred for biopsy, this shows that every woman has a higher chance of cervical cancer free life if screened at or before 35 years than when the screen is performed after 45 years. In essence, cervical cancer screening is critical and most important to a woman aged between 30 and 45 years. These findings are consistent with other studies and also with WHO recommendations for the cervical cancer screening target age group of 35-45 years in resource limited settings where only one screen per woman can be done[2]. The high rate of VIA-positive screen results observed in the age group 20-29 years can be explained based on the fact that this age group correspond with the period closest to women's sexual debut and a period at which women's sexual activity are high. This is concurrent with a period at which HPV infection is acquired, owing to changes seen on the cervical. Another important observation of note that can help strengthen the above explanation is that only 6 women were referred for biopsy within the same age group. This then explains the fact that most of the visualised lesion in the age group 20-29 years were highly unlikely to be pre-cancerous. There is need for further research to assess the utilization of same day cryotherapy treatment and to determine barriers that may impede access to screening services including treatment and cost of sustaining screening programmes. Due to the differences in the results obtained in 2014 and 2015, there is need for intensified awareness of cervical cancer to the community through Information, Education and Communication (IEC) to increase the number of women accessing cervical cancer screening. Emphasis is being put on strengthening cervical cancer related research at hospital level so as to get further insight of the burden of cervical cancer which in turn will help in strategic planning of programmes that are aimed at reducing the burden of cervical cancer among women at national level. The burden of cervical cancer not only affects the health and lives of women, but also their children, families, and the community at large as women are critical to social and economic stability of

the country and hence need for continued cervical cancer screening programmes to avert the burden.

### Conclusion

High rates of VIA-DC-positive screens recorded from the study suggest a significant burden of cervical cancer and also entails that there is an impending high rate of potential cervical cancer cases later in life. This therefore is a plausible indication for the need to expand cervical cancer screening and prevention programmes throughout the nation if cervical cancer rates are to be reduced. In addition to this, community sensitization on cervical cancer prevention, recognition of symptoms and the importance of screening will enable the success of implemented cervical cancer prevention programmes.

### Recommendations

- More research is needed to determine the knowledge of cervical cancer screening among women in the risk age group and also to determine the prevalence of cervical cancer confirmed by biopsy results.
- There is need for acquisition of proper register books that are durable for record keeping.
- Proper maintenance and backup of available electronic storage system for cervical cancer records needs to be consistent and strengthened.

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