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SPECIAL SUPPLEMENT ON THE INAUGURAL RESEARCH AND MENTORSHIP SYMPOSIUM FOR MEDICAL STUDENTS AND JUNIOR DOCTORS IN ZAMBIA

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Perspectives of the inaugural medical research and mentorship symposium for medical students and junior doctors in Zambia, Southern Africa: planning, outcomes and lessons learnt

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BACKGROUND

Africa is the second largest continent, with about 13% of the world's population yet bears 24% of the global disease burden.¹ Despite this unacceptably high disease burden, only less than 1% of health-related research originates on the continent.² In a cross-sectional study of six sub-Saharan African countries with 424 participants, Ngongalah et al explored the challenges faced by African researchers.² Their results showed areas of weakness including lack of training and awareness of the importance of research, inadequate support and collaborations amongst researchers in Africa. Thus, initiatives are needed to build a foundation for research that are home grown. In another study of medical schools in Sub-Saharan Africa, 168

medical schools were identified, 145 surveyed, 105 responded, reporting that of the approximately 10,000 medical student graduates on the continent, 68% leave the African continent workforce.¹ Some of the challenges reported were lack of mentorship and career structure. Mentorship is an integral part of our educational structure and career development. Mentorship can be formal with pairing of the mentee/mentor or informal by mentees seeking out a mentor. Mentorship provides an opportunity for trainees to gain constructive criticism, develop career goals and an opportunity for overall support through the learning process.³ With this background in mind we sought to organize a medical research and mentorship symposium targeted towards both medical students and junior resident doctors. This was a collaborative event by the Pan-African Organization for Health, Education and Research (POHER), Young Emerging Scientist Zambia (YES Zambia), and Copperbelt University School of Medicine (CBU-SOM) Mentorship Program. POHER is a non-governmental organization (NGO), co-founded by Drs Asombang and Mazimba, with a focus on the soundness of the health sector as the cornerstone of social and economic development of all African countries. YES Zambia is an initiative by Drs Kabwe and

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Lubeya, which has envisioned the creation of a renowned career and research hub for the young scientists that is cardinal in underpinning their career progression and leverage science to solve global challenges. CBUSOM mentorship program is a formal program co-founded by medical students and faculty at CBUSOM whose core value is to culture a pool of medical personnel that can receive and impart knowledge for academic and professional excellence.

CONFERENCE PLANNING AND ORGANIZATION

The medical research and mentorship symposium was planned to provide attendees with various career options after medical school, ranging from academia, private practice, non-governmental and research organisations. Being the first symposium with no prior published data, it was unclear what the response to the call for scientific abstracts would be like. Thus, the planning committee set expectations at eight to ten abstracts as the threshold for moving forward with hosting the symposium. The abstract categories were: case report/clinical vignette and clinical research. A total number of 19 abstracts were received, 16 of these were from the CBU-SOM and 3 from University of Zambia School of Medicine (UNZA-SOM). The categories submitted were two clinical vignettes and 17 clinical research. The distribution for the submitted clinical research abstracts according to study type was cross-sectional prospective nine (11) and retrospective six (6). The following were the specialties represented: obstetrics and gynaecology eight (8), paediatrics and child health four (4), public health three (3) and internal medicine one (1) while both clinical vignettes were under surgery. What was interesting was the uniformity in the thematic focus of the research topics, even though they were all conducted from different perspectives. Cervical cancer for instance was in three (3) of the abstracts, among them one highlighted the low uptake of cervical screening services by the female health practitioners at one of the tertiary hospitals which should be a public health concern. The other topics that were frequent with each having two different research

areas: Tuberculosis, diarrhoeal diseases in paediatrics and contraceptives. Unfortunately, five students withdrew from making their presentations at the last minute, thus highlighting the need of continued mentorship symposiums like this one for their exposure.

The reviewers for these submitted abstracts were senior doctors with diverse research experience and across specialties from USA, Japan and Zambia. A scoring sheet was created a priori based on uniqueness/originality, clarity and significance/impact. After individually scoring the applicants, the reviewers discussed each abstract over the phone and in person. Reviewers' comments were made available to each applicant. The final tally was based on points.

CONFERENCE ATTENDANCE AND PRESENTATIONS

The event was an astounding success based on attendance and on-site feedback by attendees. The symposium activities were organized in two segments. The morning session focused on the presentation of abstracts as both oral and poster presentations while the afternoon session was the mentorship component with the various speakers discussing career options and pathways post medical school. The symposium began at 9:00 am with welcoming remarks by the CBU-SOM mentorship program chairperson, Dr Chileshe Chibangula. Thereafter, guest speaker Professor Seter Siziya, Dean of the CBU-SOM gave his keynote address. Subsequently, within a timeframe of 10 minutes each, the oral presentations of abstracts were made. A question and answer forum followed the oral presentations, with judges in various fields providing constructive criticism and assessing the level of understanding of the individual projects. The poster presentations and viewing were in an adjoining building. Each poster presenter was also allotted a time period in which to present their work and answer questions.

The mentorship session was led by Dr Boniface Kawimbe, a senior pioneering surgeon and former minister of health in Zambia. He opened the session

by discussing the “alphabet soup post medical school in Zambia” which included explaining the specialty training programme (STP) and Master of Medicine (MMED) residency program. The other panel of speakers were Dr Dennis Sakala, an orthopaedic surgeon discussing private practice, Dr Rosemary Musonda, a research scientist discussed her experience with basic science research in Zambia and Botswana; Dr Natasha S Kaoma on creating your NGO; Dr Justor Banda training in Africa; Professor Henry Stalks training in Europe; Dr Akwi Asombang training in USA. As the planning processed wrapped up, there was an expressed need from the school of dentistry, hence dental specialization pathways were presented by Dr Mulawo.

An opportunity was given to the attendees to address questions to a panel of speakers on mentorship and career development prior to the conclusion of the ceremony. The symposium concluded with the award ceremony. The awards were given in the following categories: best overall research, oral presentations runner up, best clinical vignette and best poster presentation. The recipients were: a) Best Overall Research Award: Mundia N. et. al., 'Comparison of accuracy of traditional formulae of weight estimation with actual weights among children attending Kitwe Teaching Hospital'; b) Oral Presentation runner up: Kazungu C. et. al., 'Correlates of cervical cancer among screened women at Kitwe Central Hospital'; c) Best Clinical Vignette: Simbeya A. 'Polymorphous Low Grade Adenocarcinoma – a Case Report'; d) Best Poster Presentation: Sichimba D. 'Management of Traumatic Brain Injury in a Resource Restricted Centre – A case report'

POST CONFERENCE EVALUATION

The challenges that were faced in organizing the medical research symposium include difficulties in acquiring financing, convincing students to submit abstracts and low response rate to the post conference survey. Expenses for the symposium were mainly for the logistics, audiovisual, printed material and meals. Factors that contributed to the

difficulty in accessing finance for the symposium from the cooperate society included competing annual events like the graduating student's induction dinner which is sponsored by many private companies. In addition, most head offices of companies are not located in Ndola (the venue of the symposium) hence the likelihood of receiving financial assistance was dependent on willingness of the representative from Ndola to communicate with the head office in another town. With these obstacles in mind, we mostly sought products or services offered by companies but only received support from a few companies namely Shoprite, Coca Cola Zambia, Sky Print, Meit Prints and Polar water limited.

Another challenge faced was convincing students to submit their abstracts for presentation. The call for abstract submission was open to all medical students in Zambia and junior resident medical doctors. However, only 19 abstracts were submitted from this pool. In most cases this was attributed to prioritizing examinations or other school activities as school was in session and most students with completed research projects were in their final year. There was also a poor response in the post conference survey. There were approximately 300 attendees, yet only 27 responses were received from the online post conference survey. The survey had 4 sections that assessed; participant information, speakers, symposium facilities and aim of the symposium. This highlights that students do not understand the fundamental role that feedback plays in evaluation of academic activities as their input would help inform decisions in future.

The benefits of the symposium based on the post conference survey with 20 responses showed that 95% felt there were given the opportunity to present their work and receive constructive criticism, 100% agreed that that the symposium was able to provide information on career paths, 90% felt the importance of mentorship was discussed and 85% that the importance of research was discussed. In addition, 90% stated that they would pay to attend the symposium with 52% stating they would pay between kwacha 50-100 (\$4-7) as registration fee.

FUTURE CONSIDERATIONS

Given the important role of research and mentorship in medical education, more concerted efforts are needed to foster formal and structured activities aimed at this important task. This inaugural symposium demonstrates the feasibility of such conferences on the continent. While the scope of this conference was geographically confined to participants in Zambia, future conferences should aim at bringing medical students and practitioners from across the African continent.

CONCLUSION

Research and mentorship are a core aspect of medical training and career development. Research is important to gain an understanding of disease etiology, management and outcomes. Lack of research negatively contributes towards disease mortality and morbidity. Mentorship is important to serve as a guide and foundation for medical students and early career doctors. A symposium that fosters an environment of professional development,

mentorship and networking is important in the medical field. Opportunities for collaborations are developed, which lead to stronger educational structure and possibly impact policy.

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Comparison of accuracy of published weight estimation formulae with actual weights among children attending Kitwe Teaching Hospital

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ABSTRACT

Objectives: The aim of this study was to compare the accuracy of weight estimations using published traditional and newly derived formulae among children attending Kitwe Teaching Hospital in Zambia.

Design: The study used a cross sectional design. Children's actual weight was taken followed by weight estimations using a traditional, "weight (Kg) = 2(age + 4)" and a newly derived, "weight = 3(age) + 7" formulae.

Main outcome measures: Actual and weight estimates using two published formulae.

Results: The traditional formula under-estimated the average actual weight and across all age groups. While the mean estimated weight from the newly derived formula was not significantly different from the actual mean weight. However, weight estimates

from disaggregated age groups revealed a mixed picture: under-estimated for the age group 2-5 years, over-estimated for age group 6 - 9 years and no significant difference for age group 10 – 12 years. Modification of the traditional formula in an attempt to optimize estimation accuracy produced mean weight that was not significantly different from the actual weight but a mixed picture was observed after further analysis by age groups was performed: over-estimated weight for age groups 2-5 and 6-9 years and underestimated for age group 10 -12 years.

Conclusions: This study has also confirmed under-estimation of actual weight by the traditional formula and revealed a mixed picture from the newly derived formula by age groups. The revealed mixed picture has clinical significance of potentially causing either therapeutic failure or drug toxicity when estimated weights are used in dose calculations.

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Management of Traumatic Brain Injury in a Resource Restricted Centre: A Case Report

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INTRODUCTION

Traumatic brain injury contributes significantly to mortality and morbidity in trauma patients. In Low and Middle Income Countries (LMICs) access to safe emergency and essential surgical care and anaesthesia is still a challenge.

CASE REPORT

A 42-year-old man presented to a General Hospital with an 11 days history of headache, aphasia and right sided hemiparesis which started 2 days post interpersonal violence. He was subsequently referred to Kitwe Teaching Hospital. His Glasgow Coma Scale on presentation was 11/15 which improved to 15/15 prior to surgical intervention however, he remained with reduced power on the right side. Examination of other systems was unremarkable, and patient was hemodynamically

stable. A magnetic resonance imaging scan revealed a left occipital epidural haematoma with cerebral edema and midline shift to the right but no skull fractures. He was taken to theater for craniectomy and a large epidural haematoma was evacuated. A drain was left in situ and patient was taken to the intensive care unit (ICU). On day 1 post craniectomy, power on both the right upper and lower limb was 1/5. By day 2, it was 5/5 and patient was discharged from ICU to the General Surgical Ward where he had an uneventful recovery.

CONCLUSION

Traumatic brain injury is still be managed by General Surgeons in most LMICs. It is therefore important to ensure that Surgical training in these settings include all bellwether procedure and basic neurosurgical procedures in order to improve access to safe emergency and essential surgical care.

Polymorphous Low Grade Adenocarcinoma: A Case Report

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BACKGROUND

Polymorphous low grade adenocarcinoma (PLGA) is a malignancy arising from minor salivary glands. It grows slowly and rarely metastasises. It presents as a firm, painless mass, rarely ulcerates with predilection in females 50 years or older. PLGA can be mistaken for a pleomorphic adenoma (PA).

CASE REPORT

A 65-year old female presented with an asymptomatic lump in the buccal area for 3 years. Lump was biopsied a year prior and identified as PA, at which she was unfit for intervention. She recovered and was discharged. A year later, she reported increase in size of the mass with dull pain and associated feeding difficulties with constitutional symptoms. Medical history include multiple sclerosis, controlled asthma, hypothyroidism and on multiple drugs and prophylactic antibiotics. She ceased smoking a year prior with no alcohol intake.

Examination findings revealed performance and ASA score of IV, and a right, firm, tender fixed buccal mucosa mass measuring over 4cm in diameter, with irregular margins. Biopsy showed PLGA with perineural but no vascular invasion. CT and Ultrasound scan yielded T3N0M0. A low posterior partial maxillectomy and temporalis local flap was performed she is on close surveillance.

CONCLUSION

Multidisciplinary approach is vital in diagnosis and management of oral malignancies. Higher index of suspicion is needed concerning malignancies with the potential to be misdiagnosed. PLGA is frequently misdiagnosed as PA, especially with limited resources.

Cellular atypia and invasion are useful in distinguishing it from its mimicker. Recurrence is rare and prognosis is excellent. Awareness may bring about appropriate management of PLGA.

Association between Socioeconomic Factors and Knowledge of Tuberculosis in Kabwata and Misisi Townships of Lusaka, Zambia

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BACKGROUND

The prevalence of Tuberculosis (TB) in Zambia has continued to rise despite government efforts with a prevalence rate of 932/100,000 in Lusaka and 1,120/100,000 on the Copperbelt province according to the 2013-2014 National TB survey. TB is associated with people of low social economic status as they are prone to malnutrition, overcrowding due to poor housing and illiteracy. This research tries to identify the socio-economic factors that are associated with poor TB knowledge.

METHOD

A cross-sectional survey included participants aged 16 years and older from Misisi a high-density, low-income area and Kabwata a low-density middle-income area. The townships were selected by randomisation and data on TB knowledge was stratified by age, sex, educational level, occupation and monthly income. A TB knowledge score was constructed based on 11 questions, a score of 6 and above being significant knowledge.

RESULTS

A total of 187 surveys were completed, 54% of respondents were female aged 20-40 years (51%). The knowledge score was significantly low in Females (5.2), low-income (less than k1000/month) score of 5.4 and unemployed (5.7) respondents of Misisi township. Almost all respondents had heard about TB and were aware that it is curable, with a higher knowledge score among respondents who had been treated for TB before in both groups. The most common source of TB information was the clinic at 64.9% in Kabwata and friends 65.6% in Misisi.

CONCLUSION

Socio-economic factors are an important aspect of TB health campaigns and should be considered when designing TB information campaigns and public health interventions.

Distribution of the ABO and Rhesus Blood Groups in a Population of Namibian Blood Donors-Implications of Blood Transfusion

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BACKGROUND

The distribution of ABO and Rh blood groups varies from one population to another attributable to underlying geographic, genetic and ethnic diversity. Despite the presence of a large number of blood groups, these two (2) blood groups play a major role in modern medicine, anthropology and genetic research. We conducted a study to determine the distribution of ABO and Rh blood groups among blood donors in a population of Namibia.

METHODS AND MATERIALS

We carried out a retrospective cross sectional study among 809 Namibian blood donors aged between 16 to 65 years from the Namibia Blood Transfusion Services in Windhoek, Namibia. Data were extracted from the blood bank's database using systematic random sampling from all participants whose blood samples were tested using a slide agglutination test.

RESULTS

More donors were young adults in the age group 17-31 years. Blood group O was found to be widely distributed (54%, n=445), followed by A (22.2%, n=180) and B (21.9%, n=177). Blood group AB had the least frequency (1.1%, n=9). Rhesus positive individuals were 92.3% (n=747). Ethnicity had an influence on both the ABO ($p<0.001$) and Rhesus blood group type ($p<0.001$), while gender had no influence on either the ABO ($p=0.984$) nor Rhesus ($p=0.888$) blood group types.

CONCLUSION

The distribution of ABO in both Rh positives and Rhesus negatives was O>A>B>AB. We also found that ethnicity had a significant effect on the distribution of both ABO and Rhesus-D blood groups.

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Keywords: ABO; Rh; Namibia; sub-Saharan Africa; distribution

Factors associated with tuberculosis in children aged 0-14 years at Arthur Davison Children's Hospital in Ndola, Zambia

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ABSTRACT

Background: Paediatric tuberculosis (TB) has been overlooked because of challenges of diagnosing it and lower priority afforded to children by TB programs, as a result, both research and surveillance data in TB is greatly limited. The aim of this study was to determine factors associated with TB and its trends in children aged 0 to 14 years attended to at ADCH in Ndola, Zambia

Methods: A retrospective study was conducted where 97 files of TB patients at ADCH diagnosed bacteriologically or clinically for the years June 2016 to June 2018 were reviewed using a standardized checklist. Data was entered and analysed using SPSS version 23.

Results: A total of 78.4% were definite TB cases, 57.7% were males and 40.2% were aged 8 years and more. More than a third (33.0%) of patients had positive TB contact from family, 40.2% had HIV co-infection, 25.0% had malnutrition and Pulmonary TB was the most (51.5%) prevalent type.

Conclusion and recommendation: Age, TB contact from an adult, HIV co-infection and malnutrition are important risk factors of paediatric TB. Therefore, any paediatric patient with these factors should be considered at risk of having TB and require very thorough examination to rule out the presence of TB.

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Key words: *Arthur Davison Children Hospital; Paediatrics; Risk factors; Tuberculosis*

Assessment of Levels of Knowledge, Attitude and Utilization of Contraceptives among Female Undergraduate Students in Selected Institutions of Higher Learning in Lusaka-Zambia

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BACKGROUND

Unplanned pregnancy is a major medical, social and public health problem worldwide. Research has shown that at the time of enrolling into Universities, most women are about two years above the median age of sexual debut, suggesting that they are likely to be sexually active. Hence, throughout the world, female students are at risk of unplanned pregnancies as a result of ineffective or non-use of contraceptives (Dreyer, 2012; Maja & Ehlers, 2004)

METHODOLOGY

This was a cross sectional study conducted to assess the level of knowledge, attitude and utilization of various contraceptives among female undergraduate students in selected institutions of higher learning in Lusaka, Zambia. We enrolled 200 students from the University of Zambia and the National Institute of Public Administration. Data was collected with the aid of a self-administered questionnaire. Data analysis was conducted in STATA.

RESULTS

A proportion of 56.5% of participants were sexually active. The prevalence of contraceptive use among participants that were sexually active was 63.7%. Condoms were the most commonly used contraceptive method followed by oral pills. 61% of students showed good attitude toward contraceptive use. 20.5 % of participants had high levels of contraceptive knowledge, 31.0% had moderate where as 48.5% had extremely low levels of contraceptive knowledge.

CONCLUSION

The study showed evidence that female undergraduate students are sexually active, coupled with low knowledge on contraceptive use. There is need for more educational programs, and provision of contraceptives among female students' on options in institutions of higher learning.

Prevalence of Diarrhoea and Associated Risk Factors among Children under Five in Mulenga Compound, Kitwe, Zambia: A Cross-Sectional Study

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ABSTRACT

Background: In sub-Saharan Africa, diarrhoea remains one of the leading causes of morbidity and mortality among children under the age of five. In Zambia, diarrhoea is the third leading cause of preventable childhood deaths, responsible for 19% of all deaths among under five children.

Objective: to determine the prevalence of diarrhoea and to identify the associated risk factors among under five children in Mulenga compound, Kitwe, Zambia.

Methods: A community based cross-sectional study was conducted in Mulenga compound. A total of 127 under five children were randomly selected for survey. A structured questionnaire was used to collect data. Multivariable logistic regression was used to identify risk factors associated with diarrhoea at 95% confidence interval.

Results: The prevalence of diarrhoea among under five children in Mulenga compound was 29.1%. Diarrhoea was significantly associated with; mothers unemployment, presence of two or more under five children per household, sharing of toilet with other households, open dumping of solid waste, no treatment of drinking water, non-availability of handwashing facilities, disposing of household water waste in public street, and in the surroundings, feeding children with street sold foods, and lack of knowledge on risks and prevention of diarrhoea.

CONCLUSION

The study found a relatively high prevalence of diarrhoea among under five children in Mulenga compound. As such, there is need to strengthen existing policies on water and sanitation and implement new ones so as to reduce occurrence of childhood diarrhoea.

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Knowledge, Attitude and Practices of Emergency Contraception among Medical/Dental Students at the Copperbelt University School of Medicine

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BACKGROUND

Under-utilisation of Emergency Contraception (EC) has been reported by the World Health Organisation (WHO) as one of the major contributors to unplanned pregnancies that ultimately lead to unsafe abortions and increase in maternal morbidity and mortality. Under-utilisation of the emergency contraceptive methods may be due a number of reasons such as negative attitude or lack of information about the methods.

METHODS

The study was a cross-sectional descriptive and was conducted among both male and female Students at CBU-SoM from 4th to 5th academic years. A self-administered structured and pre-tested questionnaire was used to collect data from 182 clinical Students who were selected using random sampling technique. Collected data was coded, entered and analysed using SPSS version 20.0.

RESULTS

The study showed that a majority of participants 133(73.6%) had very good knowledge about ECs. On the contrary, majority of participants revealed negative attitudes 139(76.9%) and practices 119(65.4%) towards ECs. Negative attitudes were associated with year of study ($P=0.026$, $R= -1.350$) and religion ($P=0.027$, $R= -0.23$) while negative practices were associated with increase in number of sexual partners ($P= 0.02$) and those who were sexually active ($P=0.01$).

CONCLUSION

This study demonstrated significant levels of negative attitudes and practices towards ECs use. These findings are consistent with the reported under-utilization ECs and a major contributing factor to widely documented unplanned pregnancies among young women in Zambia.

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Correlates of Cervical Cancer among Screened Women at Kitwe Central Hospital

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BACKGROUND

Cervical cancer kills more women than any other cancer in Africa. The burden of cervical cancer in Zambia is among the highest in Sub Saharan Africa. The government of Zambia is in a continuous fight to curb the higher levels of cervical cancer. This project aimed at determining the correlates of cervical cancer.

METHODS

This was a cross-sectional study conducted at Kitwe teaching hospital in Kitwe, Zambia. A total of 2489 cases which were screened using Visual Inspection with Acetic acid between 13th June, 2013 and 28th June 2018 were extracted and analysed. Univariate, bivariate and multivariate analysis were conducted to ascertain any correlation between the dependent variables and independent variables.

RESULTS

This study showed that there is significant correlation between cervical cancer and HIV status, Education levels and age range of the candidate. Women with an HIV negative status had lower odds (0.486, CI; 95%) of having cervical cancer compared to HIV positive women. Further, low levels of education was associated with increased risks of having cervical cancer. Women who were below 30 years had reduced risk of developing cervical cancer as compared to women older than 30 years (OR: 0.528, CI 95%).

CONCLUSION

Cervical cancer shows significant correlation between HIV status, Education levels and the age range an individual falls into. Thus policies formulated in the fight against cervical cancer must consider these correlates to improve mortality and incidence rates.