ORIGINAL RESEARCH ARTICLE

Screening and risk factors for cervical cancer among survivors of sexual violence in conflict settings, Eastern Democratic Republic of Congo

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Abstract

This study assesses the risk that rape survivors have of developing cervical cancer in the context of conflict. A cross-sectional and descriptive study conducted in Bunyakiri and Kavumu, a conflict region in the east of the Democratic Republic of the Congo during the period from September 1 to 10, 2022, including 47 women survivors of sexual violence, 41 of whom were selected on the basis of certain criteria with age ranging from 18 to 50 years. Speculum examination was performed with visual inspection with acetic acid (VIA). After collecting data, the latter were encoded in the Excel file and grouped in the form of tables then analyzed after calculating the percentage. Ages of 21-30 years was the most represented, i.e., 56%. Among them, 34.1% were married and 31.7% were abandoned. Majority was in secondary school (46.3%) and illiterates (34.1%). 36.5% complained of pelvic pain and 36.5% reported first sexual intercourse at the age range of 13-15 years, of which 25 cases, i.e., 61% were sexually active. 39% reported having had 3 sexual partners in their life. VIA was negative in 97.5% of cases. It should be mentioned in this study that the environment of conflict zone, the circumstances of rape and the risky sexual behavior of survivors are an ecosystem that predisposes them to cervical cancer. *(Afr J Reprod Health 2023; 27 [12]: 79-85).*

Keywords: Screening, risk factors, cervical cancer, survivors, conflict settings, eastern Democratic Republic of Congo, Kavumu, Bunyakiri

Résumé

Cette étude évalue le risque qu'ont les survivantes de viol de développer un cancer du col de l'utérus dans un contexte de conflit. Une étude transversale et descriptive menée à Bunyakiri et Kavumu, région de conflit à l'est de la République Démocratique du Congo durant la période du 1er au 10 septembre 2022, incluant 47 femmes survivantes de violences sexuelles, dont 41 ont été sélectionnées sur la base de certains critères avec un âge allant de 18 à 50 ans. L'examen au spéculum a été réalisé avec inspection visuelle à l'acide acétique (VIA). Après collecte des données, ces dernières ont été encodées dans le fichier Excel et regroupées sous forme de tableaux puis analysées après calcul du pourcentage. La tranche d'âge de 21 à 30 ans était la plus représentée, soit 56 %. Parmi eux, 34,1% étaient mariés et 31,7% étaient abandonnés. La majorité était scolarisée dans le secondaire (46,3%) et analphabète (34,1%). 36,5% se plaignaient de douleurs pelviennes et 36,5% rapportaient leurs premiers rapports sexuels entre 13 et 15 ans, dont 25 cas, soit 61% étaient sexuellement actifs. 39 % déclarent avoir eu 3 partenaires sexuels dans leur vie. VIA était négatif dans 97,5 % des cas. Il convient de mentionner dans cette étude que l'environnement de la zone de conflit, les circonstances du viol et le comportement sexuel à risque des survivantes constituent un écosystème qui les prédispose au cancer du col de l'utérus. *(Afr J Reprod Health 2023; 27 [12]: 79-85).*

Mots-clés: Dépistage, facteurs de risque, cancer du col de l'utérus, survivantes, contextes de conflit, est de la République démocratique du Congo, Kavumu, Bunyakiri

Introduction

Cervical cancer is the fourth most common cancer in women worldwide, with an estimated 604,000 new cases and 342,000 deaths in 2020. About 90% of new cases and deaths worldwide in 2020 occurred in low- and middle-income countries[1]. Cervical cancer screening involves detecting Human Papillomavirus (HPV) infection to identify precancerous lesions and cancer, and then treating them as appropriate[2]. The

World Health Organization's group of experts recommends the use of a strategy combining screening by HPV test and treatment rather than the use of a strategy combining screening by visual inspection after application of acetic acid (VIA) and treatment. When resources are limited and screening by HPV testing is not possible, the expert group advises the use of a strategy combining screening by VIA and treatment[3].

Sexual violence constitutes, in the same way as infection with the human immunodeficiency virus (HIV/AIDS), a risk factor for the occurrence of dysplastic lesions of the cervix. It affects one in four women in her lifetime[4]. A study carried out in the United States, among women aged 18 to 88, revealed an increased risk of cervical cancer of 40% in women who had been sexually abused in their lifetime and 70% among women who have suffered sexual conjugal violence[4]. The conflict in the Democratic Republic of Congo (DRC) is the deadliest since the Second World War, in which 40% of women in the east have been victims of sexual abuse[5,6]. Among women victims of sexual assault or rape, we will see for example that there are a lot of pathologies in the gynecological sphere such as fibroids of the uterus, cancer of the cervix or pathologies infectious[7].

The objective of this study is that during this screening, to assess the risks run by survivors of sexual violence in the occurrence of cervical cancer.

Methods

Nature and type of study

This is a descriptive and retrospective cross-sectional study.

Population and collection site

This is a study conducted in a conflict zone in the east of the Democratic Republic of Congo, province of South Kivu in the region of Kavumu and Bunyakiri. Bunyakiri General Hospital and Kavumu Hospital Center served as settings for screening. Forty-seven (47) female rape survivors participated in the voluntary screening, of which forty-one (41) aged 18 to 50 met our selection criteria. A survivor is someone who has experienced gender-based violence. It is a term that is generally favored in the psychological and social support fields because it implies resilience[8]. In this study, the term "*survivor*" is used to reinforce the concept of resilience. The town of Kavumu is located 30 kilometers north of Bukavu. The rape and the mutilation of the victims' genitals shocked the entire population of this region. Some of the children were still babies at the material time. They had serious physical and psychological sequelae, some of which will probably never be able to give birth[9]. Bunyakiri is a territorial entity located in the extreme north of the province of South Kivu, 72 km from the city of Bukavu. In this region, armed groups such as the Mai-Mai had committed atrocities (murders, sexual slavery, torture, rape) in 7 villages of Bunyakiri, in Kalehe territory between 2016 and 2018[10,11].

Selection criteria

Included in the study are sexually active and/or postmenopausal women survivors of rape supported by the Panzi Foundation and the association The Children of Panzi and Elsewhere. Were excluded, women with vaginal bleeding, those with a history of hysterectomy and those who did not meet our selection criteria.

Conduct of the study and collection technique

Data collection took place from September 1 to 10, 2022 and targeted survivors of sexual violence.

The women were recruited within the organization "The Children of Panzi and Elsewhere" where they are supported through psychosocial activities. After being registered for screening, these women had to give their informed consent and answer a form including questions relating to their identity and gynecological-obstetric history. They were then subjected to an examination without preparation after gentle cleaning of the cervix using a compress soaked in physiological saline. The Visual inspection of acetic acid (VIA) was the examination carried out with 4% acetic acid labeled "DCMP" (Central Medical-Pharmaceutical Depot) of the 8th CEPAC, Bukavu. VIA involves applying 4% acetic acid to the patient's cervix and then observing her under strong light for color changes at the squamous junction of the cervix. IVA positive patients present with a dense, well-defined whitish coloration close to the junction zone or touching the transformation zone. VIA-negative patients show no whitish coloration near the junction zone[12]. Patients with

suspicious results were transferred to Panzi General Hospital in Bukavu for treatment (cryotherapy, electro resection or cold conization and hysterectomy as appropriate).

Visual inspection of the cervix after application of acetic acid (VIA) and/or Lugol's solution (VILI) is a simple, affordable cervical cancer screening approach that is particularly adapted to the realities developing countries[13]. It has a sensitivity comparable and sometimes better than that of the pap smear. According to African studies, the sensitivity of the VIA/VILI test would vary from 79 to 97% with a specificity between 87 and 96%[14].

Variables and collection tools

We collected the data during a screening visit in a consultation room set up for the occasion in partner hospitals in the region. A visit sheet pre-established by The Ida Lee Project (ILP) and The Children of Panzi and Elsewhere (CPE) was our collection tool. Elements such as socio-demographic characteristics, risk factors with gyneco-obstetrical history and VIA examination were included on the visit sheet with their important points.

Data processing and analysis

The data was collected on a visit sheet then encoded in the Excel file and grouped in the form of tables then analyzed after calculating the percentage. The pre-established visit sheet for this study was submitted to the ethics committee of The Ida Lee Project and the CPE association with the University of Liège, in Belgium.

Ethical consideration

The ethical committee of The Ida Lee Project and the CPE with the University of Liège, in Belgium approved the study.

Results

The age most represented in our study was the interval of 21-30 years, i.e., 56%, followed by that of 31-40 years (19.5%) and finally 17% for the interval of 41-50 years. These survivors were mostly married with 34.1%, followed by the survivors abandoned by their partner (31.7%); while single survivors were at 17%. They mostly had a secondary education level (46.3%) followed by illiterates with 34.1% and a primary education level (19.5%). According to their occupation, they were a farmer (41.1%), followed by traders with 31.7% and seamstresses (12.1%).

Table 1: Sociodemographic characteristics of survivors N=41

Sociodemographic characteristics	Number	Percent
Age		
18-20	3	7.3
21-30	23	56
31-40	8	19.5
41-50	7	17
Marital status		
Married	14	34.1
Single	7	17
Widow	4	9.7
Abandoned	13	31.7
Concubinage (common-law union)	3	7.3
Education level		
Primary school	8	19.5
Secondary school	19	46.3
Illiterate	14	34.1
Occupation		
Farmer	17	41.4
Market gardener	1	2.4
Teacher	1	2.4
Housewife	3	7.3
Seamstress	5	12.1
Shopkeeper	13	31.7
Student	1	2.4

In the context of risk factors and history, 36.5% of survivors complained of pelvic pain followed by those who had no particular complaints with 31.7% and those who complained at the same time of Vaginal discharge and vaginal itching (12.1%). There is only one survivor who attested to having recorded cancer in the family (2.4%), the majority of whom did not have it, i.e., 97.5%. The age of menarche was most represented at 13 years (29.2%), 14 years (26.8%) and 15-year (22%). The first sexual intercourse, the most represented age intervals are 13-15 years (36.5%) and 16-18 years (34.1%) then 19 years and over (24.3%). The majority of these survivors were sexually active with 61% and had declared having known 3 sexual partners (39%) in majority, followed by others with 2 partners (24.3%); some attest to having known only one sexual partner (22%) and others think they have reached 6 partners (7.3%). Most of them did

Table 2: Risk factors and gyneco-obstetric history

	Number	Percent
Complaints		
Pelvic pain	15	36.5
Vaginal discharge and vaginal itching	5	12.1
Vaginal discharge	4	9.7
Vaginal itching	3	7.3
Vaginal mass	1	2.4
No complaints	13	31.7
Cancer in the family		
Yes	1	2.4
No	40	97.5
Age at menarche (years)		
12	3	7.3
13	12	29.2
14	11	26.8
15	9	22
16	4	9.7
17	2	4.8
Age at first sexual intercourse		
Before 12 years	2	4.8
13-15 years	15	36.5
16-18 years	14	34.1
19 and older	10	24.3
Number of sexual partners		
1	9	22
2	10	24.3
3	16	39
4	1	2.4
5	1	2.4
6	3	7.3
>7	1	2.4
Sexually active		
Yes	25	61
No	16	39
Oral contraception		
Yes	6	14.6
No	35	85.3
Parity		
0-5	29	70.7
6-10	11	26.8
11-20	1	2.4

not use oral contraception, i.e., 85.3%; the parity was significant ranging from 0 to 5 for the majority of them (70.7%) and 26.8% for a parity ranging from 6 to 10. None of the survivors mentioned using Tobacco.

In general, we did not objectivize other particular signs at the level of the cervix, i.e., 51.2%, but some surviving women had ectropion (24.3%), cysts with 9.7%, followed by immature metaplasia

Table 3: Physical signs on cervical inspection and VIA

Physical signs on inspection of the cervix	Number	Percent
Physical signs		
Ectropion	10	24.3
Cervical polyp	1	2.4
Egg of Naboth	1	2.4
Cervicitis	1	2.4
Immature metaplasia	3	7.3
Cysts	4	9.7
No signs	21	51.2
Visual inspection with acetic acid (VIA)		
VIA Negative	40	97.5
VIA Positive	1	2.4

(7.3%); cervical polyp, Naboth's egg, and cervicitis each accounted for 2.4%. Visual acetic acid inspection of the cervix of survivors was 97.5% negative, 2.4% positive.

Discussion

Among the survivors, the age that is most represented in this study is that of the youngest between 21 and 30 years old. The strong representation of young women in this study is explained by the fact that these women were raped from a young age as children and they benefited from psychosocial follow-up with the association the children of Panzi and elsewhere; this shows how rape in the midst of conflict also affects young women and children, although all age groups can be affected.

Screening should start from age 30 in the general population of women, with regular screening through a validated HPV test every 5–10 years, and from age 25 for women living with HIV, who should also be tested. screened more frequently, every 3 to 5 years[2]. A woman benefiting from cervical cancer screening, between the ages of 30 and 40, would see her risk of developing cervical cancer reduced by 25 to 36%[15]. A 2013 study of 4,230 women in the United States found a 21% increased risk of developing cancer in adulthood among people who had experienced childhood sexual abuse[16].

Olivier N *et al* found 9.5% of rape victims who were under 15 years old and they think that sexual violence among young women in the study environment like ours can be explained by the increase in sexual violence. insecurity in the region

linked to the influx of armed groups who commit abuses and massacres while carrying out mutilation of organs and murders after the rape of their victims[17]. During our study 34.1% of survivors of sexual violence were married followed by those who were abandoned with 31.7%. These women were all victims of rape, some of whom later married despite their history of rape and others were abandoned by their spouses because of this connotation of a raped woman.

Identification as a "*rape victim*" usually hampers a woman's chances of getting married, many pregnant survivors are single parents[18]. These women did not have higher education because many were limited to secondary level, i.e., 46.3% and 34.1% did not go to school. The poverty of the region and the climate of conflict that reigns there could explain this low level of study of the survivors in this region. People with low incomes and those who are less educated are more at risk of developing cervical cancer[19]. In their occupation, 41.1% of the survivors were farmers in this study followed by 31.7% women who were engaged in petty trade. This confirms the fact that several women reported having been sexually assaulted while going to the fields or being in the fields. Médecins Sans Frontières (MSF) reported that in Darfur, 82% of sexual assaults were triggered while women were outside their villages of origin, usually in search of firewood, collecting water or crop in their fields[20].

Susan AB *at al* found that the majority of sexual assaults occur in individual homes[18]. During screening visits, 36.5% of survivors complained of pelvic pain that appeared to be chronic. Some survivors reportedly testified that after being raped they began to develop pelvic pain. The set of complaints made of vaginal discharge, vaginal itching and pelvic pain would be an entity testifying to a sexually transmitted disease. Each attack by a different attacker increases the woman's likelihood of contracting a sexually transmitted infection (STI), including human immunodeficiency virus (HIV)[18].

The history of sexually transmitted diseases is one of the risk factors that maintains the occurrence of cervical cancer in women. It may be due to sexual assault or post-rape risky sexual behavior. The persistent high risk of human papillomavirus is the cause of cervical neoplasia and is implicated in nearly one hundred percent of cervical neoplasia[21,22].

In our study, it is shown that the age of first sexual intercourse is so early with the interval ranging from 13 to 15 years or 36.5% and from 16 to 18 years or 34.1%. With early sexual activity due to rape starting in childhood, we believe that screening for cervical cancer at a young age would be of value for the diagnosis of cervical cancer especially in survivors of sexual violence. Today, 61% of survivors of sexual violence are sexually active, some of whom are married and others in common-law relationships with different sexual partners. In their sexual activity, 39% of the survivors of our study declared having known 3 sexual partners, some of whom had known them during the rape.

At Panzi Hospital, a total of 71% of women presenting in 2006 had been gang raped (59.3% reported gang rape and 11.7% reported a combination of gang rape and slavery sexual). The average number of assailants per sexual assault was 2.5, and a few women were assaulted by more than 15 assailants. From a medical perspective, this preponderance of gang rape has important implications for health[18].

The mechanism by which sexual violence affects the occurrence of cervical cancer would be direct, through repeated sexual assaults, at the base of a traumatized cervix, which, in contact with the human papillomavirus, should constitute the beginning of a cervical carcinogenic process[4]. In the whole of this study, 51.2% of the survivors were found without particular signs at the level of the cervix after the installation of the speculum, other women had ectropion as the most remarkable sign followed by other less represented signs. After visual inspection of the cervix with acetic acid, 97.5% of the survivors screened did not show warning signs of a precancerous lesion. In relation to this overwhelming majority, we believe that our sample is small but also screening is done in younger women to obtain conclusive results. It is therefore imperative that this category of women survivors of rape be followed by regular screening during their lives. While most HPV infections clear on their own and most precancerous lesions resolve spontaneously, there is a risk of progression from HPV infection to chronic disease or from precancerous lesions to invasive cervical cancer all the women[2]. Cervical cancer takes 15 to 20 years to develop in women with a normal immune system. It

can take 5 to 10 years only in women with a weakened immune system[2].

Limitations

This study reproaches itself for not having coupled the method used (VIA) with other screening methods such as IVL in order to obtain a high sensitivity. We have based ourselves on the realities on the ground by offering affordable quality services according to WHO recommendations for developing countries. All risks factors are not followed over time to see what type of results occur. We observed the environment, life and behavior of the survivors without following them over time.

In addition, the study is retrospective, the original information and the way it was collected cannot be verified or validated. The retrospective nature prevents clarifying documentary inconsistencies and resulted in missing data. Also, it is impossible to make causal claims from the data. For example, a victim of sexual violence with specific symptoms may have had these symptoms before the sexual violence[18].

Conclusion

We now know that there are risk factors (co-factors) that work together with HPV to increase the risk of cervical cancer in survivors of sexual violence in conflict settings. These survivors are at high risk due to an increase in sexually transmitted infections due to risky sexual behavior; the fact of being sexually assaulted early, sometimes by several aggressors at the same time and finally the macabre poverty reinforced by the conflict. This picture of the situation should make it possible to review the age of screening, particularly among survivors of rape, and to integrate screening for cancer of the cervix into the survivors' sexual and reproductive health program for their follow-up, and this at from 18 years old.

Competing interests

The authors declare no competing interests.

Authors' contributions

GBK: participated in tool development, data collection, data analysis and manuscript writing. RM: participated in the writing of the research protocol, the development of the tools and contributed significantly to the comments and finalization of the manuscript. DMM: participated in tool development, data analysis and manuscript review. CDK: oversaw data analysis and manuscript review. SN: participated in the drafting of the research protocol, the development of the tools and contributed significantly to the comments. ONN: oversaw data analysis and manuscript review
All authors have read and approved the final version of the manuscript.

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