

Recreational cannabis use among South Sudanese youth

Plus

- Ischaemic strokes and myocardial infarctions in a cannabis user
- Inadequacy of a 12.5 cm MUAC as a cutoff
- Prevalence and associated factors of family planning among students
- A haemopneumothorax revealing thoracic endometriosis
- Endoscopically diagnosed hookworm infestation in an adult
- A giant primary ovarian fibrosarcoma

SSMJ

SOUTH SUDAN MEDICAL JOURNAL

ISSN 2309 - 4605 eISSN 2309-4613 Volume 17. No 2. May 2024

A Publication of the Health and Social Sciences Research Institute of South Sudan

Juba, South Sudan

Email: southsudanmedicaljournal@gmail.com **Website:** www.southsudanmedicaljournal.com

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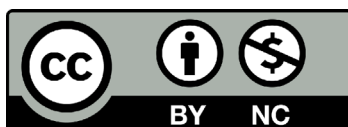
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FRONT IMAGE: Cannabis CBD hemp. (Credit: Pixaboy free image)

No smoke without fire: Recreational cannabis use among South Sudanese youth

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Citation: Adwok. No smoke without fire: Recreational cannabis use among South Sudanese youth. *South Sudan Medical Journal* 2024;17(2):48-49 © 2024 The Author (s) License: This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.1>

‘Bang’i, ‘ganja’, ‘weed’, ‘grass’, and ‘herb’ are a handful of names for psychoactive preparations of the *Cannabis sativa* plant. According to the World Health Organisation (WHO), cannabis is the world’s “most widely cultivated, trafficked and abused illicit drug.”^[1] Compared to substances like cocaine or heroin, recreational cannabis use enjoys a somewhat sanitised reputation as a ‘natural’ panacea for issues ranging from insomnia to social anxiety. This perception is further complicated by the legitimate applications of medicinal cannabis and cannabinoids, which under professional supervision, have shown efficacy in alleviating symptoms of conditions such as epilepsy and multiple sclerosis.^[2] In a qualitative study of drug and alcohol use among South Sudanese youth in Australia, Pittaway and Dantas found that most participants did not consider cannabis as a drug.^[3] Additionally, many participants reported that cannabis was beneficial for mental health issues and linked it to positive states like relaxation, creativity and freedom.

While the popular cultural narrative often paints recreational cannabis use as benign, Δ -9 tetrahydrocannabinol (THC), the psychoactive component of cannabis, has been linked to acute and chronic health problems. These include damage to the respiratory tract from long-term smoking,^[4] vascular disease,^[5] and in the case of pregnant cannabis users, impairment of foetal development.^[6] There is also evidence that recreational cannabis use plays a role in the aetiology of psychosis in serious mental illnesses like schizophrenia. Research in a South London population demonstrated that compared to those who had never used cannabis, users of high-potency cannabis had a three times higher risk of developing psychosis.^[7] More research is needed to elucidate the long-term mental and physical health impact of psychoactive cannabis preparations. However, despite the many known unknowns, recreational cannabis use presents individual and societal risks that warrant a robust response from both governmental and non-governmental organisations. This is especially important given how widespread cannabis use is likely to be in South Sudan.

Lack of reliable community-level data makes it difficult to estimate the extent of illicit drug use in South Sudan. However, certain factors indicate that South Sudanese youth are especially vulnerable to exposure to drugs like cannabis, both as distributors and consumers. These factors include proximity to high volume cannabis cultivation areas and high levels of unemployment, largely attributable to years of social and political unrest. For increasingly desperate youth struggling with the interconnected issues of poverty, mental illness and poor prospects, cannabis may offer temporary respite from the relentless pressures of their daily lives. The cultivation and distribution of cannabis also presents a feasible, although illegal opportunity to make ends meet in a difficult economic environment. Evidently, the issue

of recreational cannabis use sits at the intersection of various societal problems which are not amenable to quick fixes but urgent action is required, nonetheless.

Without vigilance and measures that address the intersectional issues affecting South Sudan, the conflagration of cannabis-related health and social complications may become increasingly difficult to extinguish. It is therefore important to nurture a 'flame-resistant' environment through initiatives that promote education, mental health support, economic opportunities, and societal engagement. In the pursuit of solutions, input from South Sudanese youth is needed to craft and champion policies that resonate with their realities and safeguard their futures.

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Inadequacy of a 12.5 cm MUAC as a cutoff for malnutrition for children aged three to five years

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Submitted: March 2023

Accepted: March 2024

Published: May 2024

Citation: Gai and McIntosh.

Inadequacy of a 12.5 cm MUAC as a cutoff for malnutrition for children aged three to five years, South Sudan Medical Journal, 2024;17(2):50-54 © 2024 The Author (s) License: This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.2>

ABSTRACT

Introduction: MUAC (mid-upper arm circumference) is a simple and easily taught screening tool for identifying malnutrition in children. South Sudan use a MUAC of 12.5 cm for children aged between six months and five years as a cut-off for moderate acute malnutrition. Currently, in South Sudan, children from six months to five years have the same MUAC cutoff for malnutrition.

Method: This study evaluated the sensitivity of using a MUAC of 12.5 cm as a screening tool for children between 6 and 60 months applied to data obtained from children enrolled in urban and rural primary schools in Maridi County, South Sudan. We used the 12.5 cm cutoff which was 2 standard deviations from the median for boys at nine months and for girls at 20 months. We also used 14.0 cm as the cutoff and compared the number of children identified, and also the false positive rate, assuming -2 SD from the median to be the accepted norm for malnutrition. Finally, we considered two different standards, using 14.0 cm for children aged 3-5 years and 12.5 cm for children under three years.

Results: Comparing the results obtained using the two different MUAC standards (12.5 cm versus 14.0 cm) against a single MUAC standard there is a dramatic difference in outcome. Using the current standard (12.5 cm), only 7.3% of the children were found to be malnourished. Using 14.0 cm, 33.8 % were found to be malnourished (Table 4). If we accept the norm of 2 SD below the median for age as an adequate definition of malnutrition, the false positive rate using 14.0 cm is 9.6 %, an acceptable figure for a screening device, but the false negative rate for 12.5 cm is 17.4 %, a clearly unacceptable rate for a screening device. If, however, instead of using one cut-off for children from six months to five years, a period characterized normally by rapid growth and changes in body composition, we used two different standards—12.5 cm for those under three years and 14 cm for those aged 3-5 years, the number of false positives drops down to 2.7% and false negatives to 0.9 %

Conclusion: We suggest that the use of 12.5 cm for malnourished children is inappropriate above two years, that 14 cm would be a more appropriate screening measurement from 3-5 years of age.

Key words: MUAC, malnutrition, children, Maridi, South Sudan

Introduction

MUAC (mid-upper arm circumference) is a simple and easily taught screening tool for identifying malnutrition in children. In South Sudan, we have used a MUAC (mid-upper arm circumference) of 12.5 cm for children aged between six months and five years as a cut-off for moderate acute malnutrition.^[1]

The standards for MUAC, and other child growth standards^[2] were developed using data collected in the WHO Multicentre Growth Reference Study^[3] from children from different ethnic backgrounds and cultural settings; 12.5 cm happens to correspond to two standard deviations (SD) below the median for nine-month-old males.

That standard became entrenched in our nutritional programmes in South Sudan when the World Food Programme (WFP) initiative for infants and lactating mothers used 12.5 cm as the cutoff for all children aged five years and under. However, that standard seems to ignore the reality of childhood growth and maturity.

In general, a screening tool should be sensitive, preferably catching all the subjects. A more selective, discriminating test can then be applied. In screening for HIV, we have a sensitive test that includes some false positives and then a more selective, discriminating test to determine if a patient truly is infected. A screening test that excludes a significant percentage of the affected individuals is a poor tool.

Although there is disagreement regarding definition for malnutrition, whether we are discussing undernutrition or over nutrition (obesity), most experts regard a z score (2 SD below the median) as an acceptable value for under (mal)nutrition. The standard for obesity for years has been a BMI (body mass index) of greater than 30 [kg/(height in meters) squared], although some experts are questioning that standard. Obesity measurements have significance for medical screening, employment, and potentially for third party payments for medications. Likewise, undernutrition definitions are important for supplemental feedings and understanding risks for populations.

There is growing evidence that we need to identify malnourished children prior to entry into formal education because inadequate nutrition sets children up to do poorly in school. Nutrition and development have long been linked, but newer data are showing the critical importance of early nutrition on academic achievement. Moreover, nutrition impacts all areas of life, particularly vulnerability to infectious diseases.

Table 1. MUAC median and -2 SD for boys and girls aged 6-60 months^[2]

Age months	Boys – 2 SD (cm)	Boys median (cm)	Girls – 2 SD (cm)	Girls median (cm)
3	11.6	13.5	11.1	13.0
6	12.2	14.2	11.8	13.9
9	12.4	14.5	12.0	14.1
12	12.5	14.6	12.1	14.2
15	12.7	14.8	12.2	14.4
18	12.8	14.9	12.4	14.5
21	12.9	15.0	12.6	14.7
24	13.0	15.2	12.7	15.0
27	13.2	15.4	12.9	15.2
30	13.3	15.5	13.1	15.4
33	13.4	15.7	13.2	15.5
36	13.5	15.8	13.3	15.7
39	13.6	15.9	13.4	15.9
42	13.6	16.0	13.5	16.0
45	13.7	16.1	13.6	16.1
48	13.8	16.2	13.7	16.3
51	13.8	16.3	13.8	16.4
54	13.9	16.3	13.9	16.6
57	13.9	16.4	13.9	16.7
60	14.0	16.5	14.0	16.9

South Sudan has one of the highest mortality rates in the world for children under five years^[4] and malnutrition is undoubtedly a contributing factor. In this study, we evaluated the sensitivity of using a MUAC of 12.5 cm as a screening tool for children between 6 and 60 months in four primary schools in Maridi County, South Sudan.

Method

Children in four primary schools – Michael Tawil primary school, Chanambia primary school, Haduo primary school, and Gbutala primary school – had their MUAC measured and their ages recorded as it appeared in the school registers of the rural and urban primary schools (see limitations below).

Using the MUAC standards (Table 1) from the WHO growth standard,^[2] we used the 12.5 cm cutoff which was

2 standard deviations from the median for boys at nine months and for girls at 20 months.

We also used 14.0 cm as the cutoff and compared the number of children identified, and also the false positive rate, assuming -2 SD from the median to be the accepted norm for malnutrition.

Finally, we considered two different standards, using 14.0 cm for children aged 3-5 years and 12.5 cm for children under three years.

Results

We screened 219 children in the four schools. Tables 2 and 3 show the age and sex and MUACs of the children measured.

Tables 4 and 5 show the number and percentage in each MUAC category and the number of false positives and negatives.

Comparing the results obtained using the two different MUAC standards (12.5 cm versus 14.0 cm) against a single MUAC standard there is a dramatic difference in outcome. Using the current standard (12.5 cm), only 7.3% of the children were found to be malnourished. Using 14.0 cm, 33.8 % were found to be malnourished (Table 4). If we accept the norm of 2 SD below the median for age as an adequate definition of malnutrition, the false positive rate using 14.0 cm is 9.6 %, an acceptable figure for a screening device, but the false negative rate for 12.5 cm is 17.4 %, a clearly unacceptable rate for a screening device (Table 4).

If, however, instead of using one cut-off for children from six months to five years, a period characterized normally by rapid growth and changes in body composition, we used two different standards—12.5 cm for those under three years and 14 cm for those aged 3-5 years, the number of false positives drops down to 2.7% and false negatives to 0.9 % (Table 5).

Although not statistically analysed, there appears to be no difference between the results from rural and urban schools.

Discussion

Nutrition is universally accepted as a critical indicator of overall health, vulnerability to disease, and development. It is generally acknowledged that proper nutrition is necessary for good cognitive development and academic performance^[5] and data supporting that claim are

Table 2. Number of children measured by age and sex

Age (in months)	Male	Female	Total
12-23	0	1	1
24-35	25	22	47
36-47	29	31	60
48-59	22	24	46
60-71	33	32	65
Total	109	110	219

Table 3. MUAC by age group

Age (in months)	MUAC < 12.5 cm n	MUAC 12.5-14 cm n	MUAC > 14 cm n
12-23 months	1	0	0
24-35 months	10	17	20
36-47 months	5	23	32
48-59 months	0	10	36
60-71 months	0	8	57
Total	16	58	145

Table 4. Group data using a single MUAC standard (<12.5 cm) for all ages together

	Rural Schools n (%)	Urban Schools n (%)	Total n (%)
Total	99 (100%)	120 (100%)	219 (100%)
MUAC < 14 cm	38 (38.4%)	36 (30.0%)	74 (33.8%)
MUAC < 12.5 cm	6 (6.1%)	10 (8.3%)	16 (7.3%)
False (+) 14 cm	9 (9.1%)	12 (10.0%)	21 (9.6%)
False (-) 12.5 cm	24 (24.2%)	14 (11.7%)	38 (17.4%)

accumulating rapidly. Indeed, there is emerging evidence from subtle nutritional differences regarding brain development and cognitive outcome in children with no evidence of insufficient (mal)nutrition. The more we understand about nutrition, the more obvious becomes its role in cognitive development. Therefore, the use of an

Table 5. Group Data using MUAC < 14 cm for those aged 3-5 years and 12.5 cm those 2 years and under

	Rural Schools n (%)	Urban Schools n (%)	Total n (%)
Total	99 (100%)	120 (100%)	219 (100%)
MUAC < 14 cm	38 (38.4%)	36 (30.0%)	74 (33.8%)
MUAC < 12.5 cm	6 (6.1%)	10 (8.3%)	16 (7.3%)
False (+)	3 (3.0%)	3 (2.5%)	6 (2.7%)
False (-)	1 (1.0%)	1 (0.8%)	2 (0.9%)

insensitive measure of malnutrition for screening children ready to start their formal education predisposes our most vulnerable children to poor academic performance as well as more obvious consequences of malnutrition.

UNICEF numbers from the early part of this century noted that one child in four did not live to see his/her fifth birthday. Child mortality rate of South Sudan fell gradually from 318 deaths per 1,000 live births in 1971 to 97.9 deaths per 1,000 live births in 2020, according to World Data Atlas.^[4] Though these improvements are commendable and noteworthy, our childhood mortality rate is still among the worst in the world, and improving on that depressing statistic has been one of the goals of the Ministry of Health, the Government of South Sudan, and numerous non-governmental organizations (NGO) working in South Sudan. Although the causes of the horrible rate of childhood mortality remains multi-factorial, there is little argument that malnutrition is a significant contributor.

If we accept the proposition that 2 SD below the median MUAC for age defines malnutrition, then 12.5 cm is an extremely poor screening method for children three years of age and older, as others have found in different regions of the world.^[6] If we use 12.5 cm for children aged under three years and 14 cm for children 3-5 years of age, we capture almost all the children with malnutrition and have an acceptably low false positive rate.

The first step in adequately addressing the scourge of childhood malnutrition is to have adequate screening tools for identifying children at risk. Perhaps the most vulnerable period, nutritionally speaking, for children in South Sudan, is after the cessation of breast feeding, which typically occurs between ages 1.5 and 2.5 years.

We agree that MUAC is probably the most cost-effective screening tool for malnutrition. Weight for age is fairly simple, but accurate scales are more expensive and those who are relatively tall, as in the Dinka and Nuer populations would have to be more severely malnourished to be identified. Height is a much more difficult measurement to make accurately, so weight-for-height would be difficult, particularly in a field office.

MUAC tapes are cheap and their use easily taught, but we suggest that MUAC tapes using 14.0 cm is the more appropriate screening tool for children 3-5 years of age. When a patient is identified, further evaluation can be done to see if he/she is truly 2 SD below the median for age using charts from WHO showing median MUAC for age from six months to five years.^[2] Even if the child is considered a false positive (i.e. MUAC < 14 cm for 3-5 years, but greater than 2 SD below the median for age), he would be identified as someone to follow more closely and rechecked periodically (as we do for those identified in the HIV screening who are found to be negative with the Determine confirmatory test).

These data also show the importance of continued feeding programmes that target our most vulnerable children. Our data suggest that by using an inappropriate screening tool, one of the nutritionally most vulnerable groups, children between weaning and school age, have been overlooked. We find using a MUAC of 12.5 cm particularly inappropriate for the older children in this group. We feel that the more appropriate screening tool would be to use 14.0 cm, which is 2 SD below the median MUAC for both boys and girls at age five years.

Limitations

- We were unable to confirm the ages of the children screened, as there is no data bank of birth certificates in most areas of South Sudan, so were forced to use the stated age of the child given by his/her parents at registration. Also, no months were given for the ages of the children, so the calculations for each child used the MUAC at the lowest months for age (i.e. a two-year-old was screened as a 24-month-old, a four-year-old as 48 months).
- Small sample size.

Conclusion

Nutrition continues to be a major concern in South Sudan. As the country develops and seeks to end the perpetual cycles of poverty that have plagued the nation, education

is recognized as a critical step. For the youngest citizens to take advantage of educational opportunities that many have struggled so hard to obtain, there is need to identify those children who are at risk for failure because of malnutrition. We submit that the current screening tools are inappropriate in identifying those children.

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Gordon Memorial College Trust Fund (GMCTF) News

GMCTF has this year provided 12 grants, totalling over US\$35,000 in value, to South Sudanese doctors who are completing their medical studies in Ethiopia or Uganda before returning to South Sudan.

They are studying at Addis Ababa University, St Paul's Hospital, Mbarara University of Science and Technology, the University of Gondar, Wolaita Sodo University and Bahir Dar University. They are studying a range of specialisms: Paediatrics and Child Health Care, Anaesthesiology and Critical Care, Neurosurgery, General Surgery, Ophthalmology, Obstetrics and Gynaecology, and General Paediatrics.

GMCTF hopes to be able to support the postgraduate studies of more South Sudanese in future years. We are not currently accepting applications, but information on the support available for 2025 will be available on our website www.gmctf.org from December 2024.

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Prevalence and associated factors of family planning among students of health training institutes in Juba: A cross sectional descriptive study

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Submitted: March 2024

Accepted: April 2024

Published: May 2024

Citation: Alier et al, Prevalence and associated factors of family planning among students of health training institutes in Juba: A cross sectional descriptive study South Sudan Medical Journal, 2024;17(2):55-60 © 2024 The Author (s) **License:** This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.3>

ABSTRACT

Introduction: Family planning (FP) is less prevalent in South Sudan yet information on the subject is scarce and varied from one source to another. This study assessed the prevalence and associated factors in family planning among students at health science training institutes in Juba City.

Method: This was a cross-sectional survey of students' self-reported utilisation of FP methods. Four hundred randomly selected students from five health training institutes (HTIs) in Juba City participated. Data collection was done using a pretested structured questionnaire. IBM SPSS 23 software was used for data analysis. Chi squared tests and regression analyses were performed to determine the associated factors.

Results: Among the 400 participants, the lifetime prevalence of FP methods was 77.3%, of which modern contraceptive use was 22%. FP was more prevalent among participants aged 45-50 (85.7%) and females (80.7%). Eighty-seven percent of divorced couples and 91.3% of traditional believers reported practicing FP. More nursing/midwifery cadres within the professional category reported practicing FP, as well as 90.4% of rural respondents. Eighty-three percent of respondents working in pharmacies said they practice FP, compared to 68.1% of those working in clinics. FP practice was similar among participants who were aware (78.9%) and those who denied being aware (72.5%). Marital status ($p < 0.001$), religion ($p < 0.001$), residence ($p < 0.001$), and place of work ($p = 0.037$) were significantly associated with FP.

Conclusion: The prevalence of family planning among students at Health Training Institutes in Juba City is high compared to national estimates, but the contraceptive overall prevalence rate is still low. It is significantly associated with marital status, religion, residence, and place of work. There is a need to continue the effort.

Key words: Family planning, prevalence, students, health institutes, Juba, South Sudan

Introduction

The World Health Organization (WHO) defines family planning (FP) as the “ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their birth”. It involves a wide spectrum of methods ranging from short-term to permanent techniques. The short-term methods include pills, condoms, lactational amenorrhoea, diaphragms, and emergency contraceptive pills while long-term methods encompass injectables, implants, and intra-uterine devices. Permanent methods incorporate female and male sterilisation. Traditionally, it consists of periodic abstinence, withdrawal, and various folk methods such as strings and herbs.^[1-3]

Globally, of about 1.9 billion women aged 15-49, 874 million use modern methods, and 92 million use traditional methods. The contraceptive prevalence rate (CPR) among women of reproductive age (WRA) who practice any contraceptive method is 75%. Thirty nine percent of married women use modern contraception.^[1-3] For adolescents aged 15 to 19 years, the use of modern contraceptives is 61%, and for those aged 20 to 24 years, it is 66%.^[2] Comparatively, women above 30 years old account for more than 75%. The global incidence of unplanned pregnancies among students at higher educational institutes continues to increase yearly despite increased awareness and knowledge of regular modern and emergency contraceptives. Furthermore, in Eastern Africa, from 2015 to 2019, there were 20,900,000 pregnancies annually out of which 9,890,000 were unplanned.^[4]

The proportion of need for FP satisfied with modern methods among women aged 15 to 24 years is estimated at 80% in Brazil, 95% Colombia, 52% Ethiopia, 35% Nigeria, 65% Bangladesh and 45% Philippines.^[2] Furthermore, CPR is estimated at 30% in Uganda, 58% Kenya, and in Rwanda, it is 64% and 47% in urban and rural settings respectively.^[2] A study conducted in Uganda found that out of 4,264 women, only 9.4% (95% CI: 8.6-10.3) were utilizing a modern contraceptive.^[5]

In South Sudan, a study among 380 women in Juba City showed that 42.6% used FP methods during their lifetime, and 36% used contraceptive methods in the last three months preceding the study.^[6] Lifetime use of contraceptives was positively associated with occupation ($r = 0.115$, $p < 0.05$).^[6] Of 1,373 women who accessed Juba Teaching Hospital, Tambura Hospital, and Yei Hospital, 29.4% accepted contraceptives: implants (49%) and injections (45%), oral (4%), and sterilization (2%).^[7]

Several factors, such as age, culture, ethnicity, religion, access to contraceptive services, peer pressure, and lack of partner support, might contribute to low utilization of contraceptives. For instance, adolescents are afraid of being seen by the elders taking FP pills.^[8] As for religion, CPR is 47.1% among Catholics, 45.8% for Protestants, and 6.3% among Muslims.^[6] Strong cultural beliefs, lack of a law empowering women to make informed decisions on FP, and inadequate counselling might account for low CPR in South Sudan.^[9] With a maternal mortality ratio of 1,223 per 100,000 live births, and a contraceptive prevalence rate of 4.7%, South Sudan has the worst reproductive health situation in the world.^[9,10]

The Government of South Sudan through the Ministry of Health is committed to global FP aspirations such as the FP2030 goals and aims to increase contraceptive prevalence rate to 20% by 2030.^[12] In order to contribute meaningfully to this target there is need to generate data to better understand the prevalence and associated factors among the upcoming health professionals who are expected to champion the achievement of these commitments when they get to the field. Therefore, this study assessed the prevalence of FP among students of HTIs in Juba City, South Sudan.

Method

This study was conducted at five HTIs in Juba City, South Sudan Institute of Pharmacy Technicians, Juba Nursing and Midwifery Institute, Juba Health Science Institute, St. Mary's Health Institute, and Juba Institute of Health Science. A cross-sectional design was adopted. The study population comprised all the students at the five HTIs who consented. Both males and females participated equally. The sample was estimated using Cochran's formula at a precision level of 5%, 95% confidence limit and variance of 50%. After calculations and adjustments for non-response, a sample of 400 students was assembled. Data collection was done using a pretested structured questionnaire. The software IBM SPSS 23 was used for data analysis.

Institutional ethical approval was obtained from the South Sudan Institute of Pharmacy Technicians Research Committee via a letter dated 14/07/2023, Central Equatoria State Ministry of Health and Environment, and all five institutes. In addition, every participant provided informed consent, and confidentiality was maintained throughout. Data anonymity was ensured to minimize risk of accidental disclosure and access by any unauthorized third party. Participation was voluntary and

Table 1. Respondents' sociodemographic characteristics, factors associated with family planning

Variables (n = 400)		Ever family planned?		Total n (%)	p value
		Yes, n (%)	No, n (%)		
Age in years	15-24	79 (75.2)	26 (24.8)	105 (26.3)	0.401
	25-34	108 (78.3)	30 (21.7)	138 (34.5)	
	35-44	80 (74.1)	28 (25.9)	108 (27.0)	
	45-50	42 (85.7)	7 (14.3)	49 (12.3)	
Gender	Male	138 (73.4)	50 (26.6)	188 (47.0)	0.054
	Female	171 (80.7)	41 (19.3)	212 (53.0)	
Marital status	Single	38 (51.4)	36 (48.6)	74 (18.5)	<0.001*
	Married	143 (81.3)	33 (18.7)	176 (44.0)	
	Divorced	87 (87.0)	13 (13.0)	100 (25.0)	
	Others	41 (82.0)	9 (18.0)	50 (12.5)	
Religion	Christian	78 (60.3)	52 (39.7)	131 (32.8)	<0.001*
	Muslim	56 (78.9)	15 (21.1)	71 (17.8)	
	Traditional beliefs	73 (91.3)	7 (8.8)	80 (20.0)	
	Others	101 (85.6)	17 (14.4)	118 (29.5)	
Professional category	Clinical medicine	70 (70.7)	29 (29.3)	99 (24.8)	0.094
	Pharmacy	94 (80.3)	23 (19.7)	117 (29.3)	
	Nursing/ midwifery	83 (83.8)	16 (16.2)	99 (24.8)	
	Others	62 (72.9)	23 (27.1)	85 (21.3)	
Residence	Urban	167 (68.7)	76 (31.3)	243 (60.8)	<0.001*
	Rural	142 (90.4)	15 (9.6)	157 (39.3)	
Place of work	Hospital	57 (80.3)	14 (19.7)	71 (17.8)	0.037*
	Pharmacy	88 (83.0)	18 (17.0)	106 (26.5)	
	Clinic	81 (68.1)	38 (31.9)	119 (29.8)	
	Others	83 (79.8)	21 (20.2)	104 (26.0)	
Awareness of FP	Yes	235 (78.9)	63 (21.1)	298 (74.5)	0.189
	No	74 (72.5)	28 (27.5)	102 (25.5)	
Overall prevalence		309 (77.3)	91 (22.7)	400 (100.0)	

all participants were not penalized for refusal or withdrawal from the study. Training of assistants, pretesting of data collection tools and regular reviews ensured quality.

The software Epidata Manager 4.0.6.0 was used for data entry before exporting to IBM SPSS version 23 for analysis. Chi squared tests and regression analyses were performed to determine associated factors. The prevalence

of FP was obtained by dividing the number of participants who reported practicing FP by the total number of participants.

Results

Among the 400 participants, the self-reported lifetime

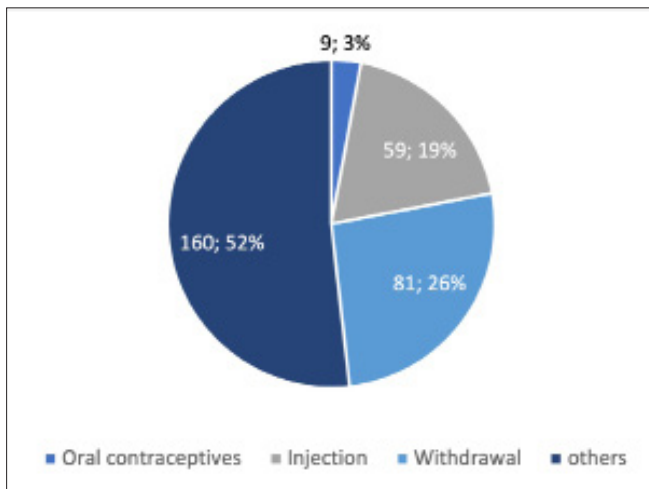


Figure 1: Utilisation of contraceptive methods among students in different health training institutes in Juba

Table 2: Summary of statistical model: Multivariate logistic regression analyses

	Chi-square	df	Sig.
Model	87.989	10	<0.001
Cox & Snell R Square	Nagelkerke R Square		
.197	.300		

Table 3: Classification table predicting the overall prevalence of family planning prevalence among health training institutes' students

Observed		Predicted		Percentage Correct
		Have you ever used family planning?		
		Yes	No	
Have you ever used family planning?	Yes	289	20	93.5
	No	57	34	37.4
Overall Percentage				80.8

prevalence of FP across all categories was 77.3% (n = 309), and of modern contraceptive use was 22% (n = 68). FP was more prevalent among those aged 25 to 34 years old. The prevalence rate was 80.7% among female participants and 73.4% among their male counterparts. More than four-fifths (87%) of divorced couples reported using FP. Although Christians accounted for about a third

of the respondents (32.8%), 91.3% of traditional believers said they were practicing FP (Table 1). For the type of contraceptive methods used, modern oral contraceptives accounted for 3% (n = 9), and injectables, 19% (n = 59) and withdrawal traditional method 26% (n = 81) (Figure 1).

From bivariate analysis, there was a significant association, at a 5% significance level, between FP and marital status (p < 0.001), religion (p < 0.001), residence (p < 0.001), and place of work (p < 0.037) (Table 1).

The statistically significant factors at bivariate analysis were entered into a statistical model: multivariate logistic regression. This was to determine the likelihood of the association. A preliminary analysis suggested that the assumption of multicollinearity was met, that is, overall tolerance = 0.965. Furthermore, an inspection of standardized residual values revealed that there were outliers which were kept in the dataset. Therefore, the model was statistically significant, (x² (10, N = 400) = 87.989, p < .001), indicating that the model could differentiate respondents who ever family planned from those who never family planned. Consequently, the model clarified between 19.7% (Cox & Snell R²) and 30% (Nagelkerke R²) of the variance (Table 2) and correctly predicted that 80.8% of respondents who ever family planned (Table 3). As shown in table 4, marital status, religion, residence, and place of work significantly contributed to the model.

From the odds ratios, for every increase in married participants, there is 31.4% less likelihood of practicing FP. Similarly, for every increase in Muslim devotees, there is 36.9% unlikelihood of practicing FP. Those who work in pharmacies are 1.12 times more likely to have ever family planned while respondents working in clinics are 1.78 times more likely to have ever family planned (Table 4).

Discussion

In this study, the self-reported lifetime prevalence of FP among all categories was 77.3%, and that of contraceptive use was 29%. While this is higher than the 4.7% average estimate for South Sudan,^[10] a previous population-based study in Juba City also reported a lifetime contraceptive prevalence rate of 42% but was silent on the overall utilisation of FP.^[6] The increased utilisation of FP methods could be attributed to concerted efforts by the Government and partners as enshrined in the Government's Declaration to abide by FP2030 commitments.^[12] Nevertheless, further research is needed to confirm the results' validity, given the magnitude of increment from the country estimates and previous studies.

Table 4. Predictors of family planning prevalence among health training institutes’ students in Juba: Multivariate logistic regression

Predictor	B	S.E.	Wald	df	p value	OR (95% CI LL, UL)
Marital status						
Single*			19.525	3	< 0.001	
Married	-1.160	0.351	10.921	1	0.001	0.314 (0.158, 0.624)
Divorced	-1.393	0.426	10.680	1	0.001	0.248 (0.108, 0.573)
Others	-1.803	0.502	12.922	1	< 0.001	0.165 (0.062,0.440)
Religion						
Christianity*			22.017	3	< 0.001	
Islam	-0.996	0.396	6.3170	1	0.012	0.369 (0.170,0.803)
Traditional beliefs	-2.014	0.497	16.420	1	< 0.001	0.133 (0.050,0.353)
Others	-1.242	0.361	11.812	1	0.001	0.289 (0.142,0.586)
Residence						
Urban*						
Rural	-1.445	0.337	18.415	1	< 0.001	0.236 (0.122,0.456)
Place of work						
Hospital*			8.573	3	0.036	
Pharmacy	0.112	0.460	0.059	1	0.808	1.118 (0.454,2.754)
Clinic	0.580	0.403	2.078	1	0.149	1.787 (0.812,3.934)
Others	-0.474	0.439	1.163	1	0.281	0.623 (0.263,1.473)
Constant	0.908	0.431	4.435	1	0.035	2.48

*Reference category

Overall, the study found that the traditional methods such as withdrawal were the preferred methods of contraception. This may be explained by the continuing myths around modern FP methods and the uncertainty with which they are viewed. In support of this view, there is reported fear among adolescents regarding being seen by elders as taking FP pills and inadequate counselling of women and girls on FP.^[8] The most common modern method of contraception reported is injection, and the least is oral contraceptives. This could suggest that those practicing FP prefer long-lasting techniques instead of methods with more frequent administration.

Our findings show that marital status, religion, residence, and place of work are significantly associated with FP. This is not surprising considering previous studies. For instance, studies have documented that women aged 30-39 years utilise contraceptives more than adolescents

(aged 15-19), who have the lowest CPR and highest unmet need for FP.^[13] In our study, save for place of work, all the associated factors have an inverse association with FP, as beta coefficient is negative (Table 4). This means for every observed change in the factors, there is unlikelihood of opting for FP among the participants.

Conclusion

The prevalence of family planning among students at Health Training Institutes in Juba City is high compared to national estimates, but the contraceptive overall prevalence rate is still low. It is significantly associated with marital status, religion, residence, and place of work. The study recommends sustained efforts in the provision of FP services including tailored health education and counselling of couples.

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Ischaemic strokes and myocardial infarctions in a young male cannabis user

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Submitted: March 2024

Accepted: April 2024

Published: May 2024

Citation: Culling et al, Ischaemic strokes and myocardial infarctions associated with regular cannabis use in a young man, South Sudan Medical Journal, 2024;17(2):61-65 © 2024 The Author (s) **License:** This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.4>

ABSTRACT

Ischaemic cerebral infarctions are seen in young people but, under the age of 30, multiple bilateral infarcts are uncommon; genetic pre-disposition and comorbidities often underlie them. There is growing awareness of the potential impact of modifiable risk factors, such as cannabis, for those experiencing stroke and other cardiovascular events. A case of a 29-year-old man is described who presented with sudden onset occipital headache and right eye vision loss. Computerised axial tomographic scanning (CT) of the brain demonstrated multifocal bilateral areas of low attenuation. A brain magnetic resonance imaging (MRI), confirmed bilateral acute cerebral infarctions. In view of a significant elevation in troponin levels at a previous admission, cardiac viability magnetic resonance imaging (cvMRI) was carried out and demonstrated acute infarction affecting the left ventricular apex and multiple smaller infarcts elsewhere within the myocardium. On this occasion he did not complain of chest pain. The electrocardiogram (ECG) showed ischaemic changes. The patient denied a family history of ischaemic heart disease, diabetes mellitus, hypertension and hypercholesterolaemia, but admitted to daily use of cannabis and cigarette smoking. We considered the regular use of cannabis as a possible aetiology in the development of multi-territory cerebral and myocardial infarcts, previous myopericarditis and left ventricular dysfunction

Key words: cannabis, cerebral infarctions, myocardial infarction

Introduction

Ischaemic cerebral infarctions are seen in young people but, under the age of 30, multiple bilateral infarcts are uncommon;^[1] genetic pre-disposition and comorbidities often underlie them. There is growing awareness of the potential impact of modifiable risk factors, such as cannabis, for those experiencing stroke and other cardiovascular events.

Nearly 200 million people worldwide report using recreational cannabis and its popularity is rising.^[2] In the UK there are debates about the drug's legality, and different types of cannabis are being prescribed to relieve pain in conditions such as cancer and neuropathy^[2] and in the management of multiple sclerosis.

Case Report

29-year-old male was admitted to the emergency department with a sudden onset

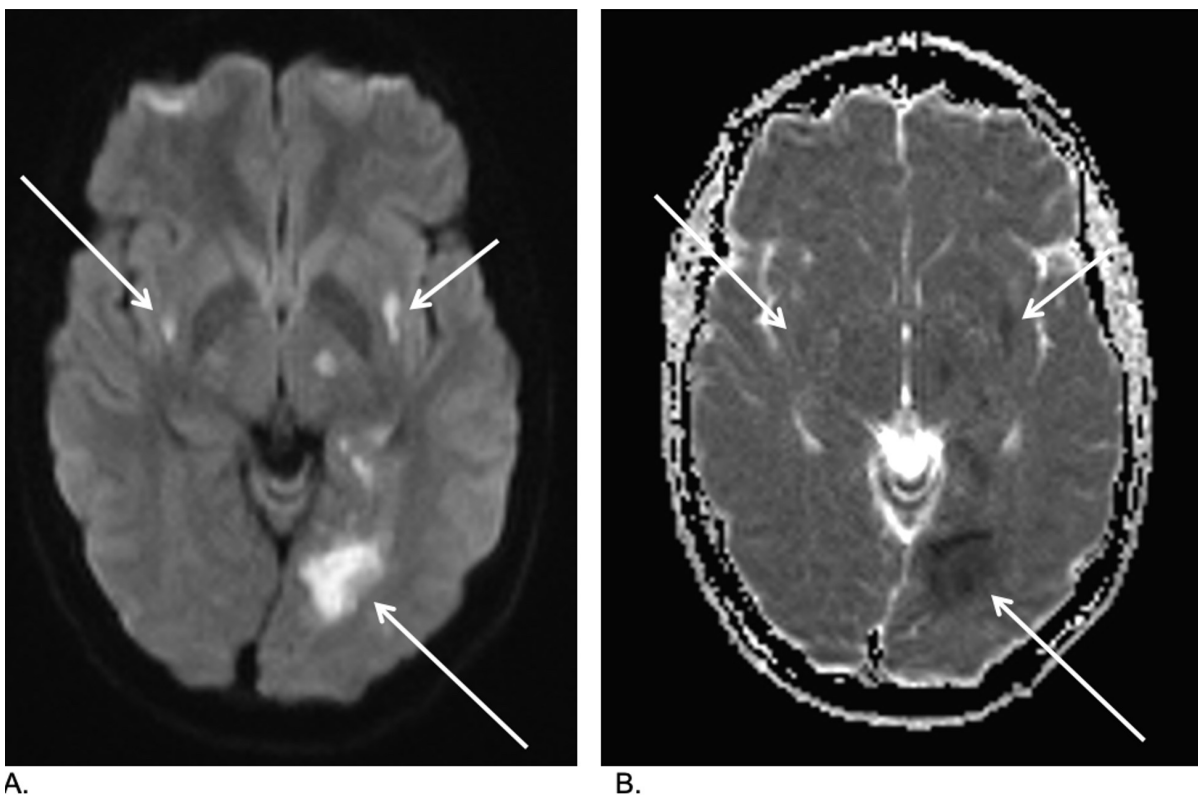
Case Report

of painless vision loss in his right eye and mild occipital headache lasting about ten minutes associated dysarthria and right sided paraesthesia. There were no premonitory features apart from several episodes of diplopia in the previous year. Following this episode vision returned to normal. Clinical examination on this admission demonstrated right homonymous hemianopia (with central sparing). The patient denied a family history of ischaemic heart disease, diabetes mellitus, hypertension and hypercholesterolaemia. He admitted to daily use of cannabis (an estimated four self-rolled cannabis cigarettes per day), and tobacco smoking (roughly 10 cigarettes per day), without the use of all other recreational drugs (including cocaine and methamphetamines). He also denied alcohol use (his liver function tests were normal) and his urine toxicology screen was negative. He did not test positive for coronavirus, and was not aware of recent coronavirus infection.

Three years prior to this event, the patient had presented with a 5-day history of central chest pain and a syncopal event. His troponin at the time was raised at 200ng/L

(reference range <14ng/L). This was treated as likely myopericarditis and he was managed with ibuprofen, paracetamol and discharged. His electrocardiogram (ECG) one week following that event displayed new ischaemic changes and his serum troponin level- at this time was 900ng/L. Cardiac MRI demonstrated mild global systolic dysfunction with an ejection fraction of 53%, appearances which were reported to be in keeping with a myocarditis. He was prescribed ramipril and bisoprolol due to the left ventricular dysfunction. Twelve weeks following this scan, a follow up MRI showed that left ventricular function had resolved. He described no family history or features of rheumatological disease. Follow up by a rheumatologist concluded no demonstrable cause for his symptoms.

The patient underwent a brain CT scan, which displayed a region of low density within the left occipital lobe, no acute intra-cerebral haemorrhage and no space occupying lesions. This finding was confirmed by MRI scan, which demonstrated multiple areas of acute cerebral infarction namely areas of high signal with associated restricted diffusion involving the left occipital lobe, left hippocampus



A.

B.

Figure 1.

A. DWI sequence (b1000 image) showing multifocal areas of increased signal from different vascular territories.

B. The ADC map demonstrates low signal corresponding with the foci of high signal on the diffusion weighted imaging, consistent with acute infarcts.

and left thalamus. There were several foci of restricted diffusion within the left frontal and parietal lobes as well as the right external capsule and right corona radiata (Figure 1- DWI (Diffusion-weighted Imaging) sequence and ADC (Apparent Diffusion Coefficient)). This suggested a possible central embolic source or possibly a vasculitic aetiology. He was admitted to the acute stroke unit for further evaluation and management. Full blood count, urea and electrolytes, liver function tests were normal with a troponin level of 33ng/L (reference range <14ng/L). The 12 lead ECG at this point demonstrated ischaemic changes (T wave inversion in anterolateral leads).

Transthoracic echocardiogram did not demonstrate any intracardiac thrombi. Young stroke blood screen which included complement C3, C4, rheumatoid factor, immunoglobulins (IgG, IgA, IgM), vitamin B12, folate, lupus anticoagulant, anti-cardiolipin antibodies, anti-neutrophil cytoplasmic antibodies tested to exclude vasculitis, anti-beta glycoprotein 1 IgG antibody, hepatitis B and C, HIV, homocysteine, syphilis antibody and viral antibody screen, demonstrated no aetiology for his multiple strokes. Tests for prothrombotic conditions, connective tissue disease screen, erythrocyte sedimentation rate and HbA1C were normal, but random serum cholesterol was 5.4mmol/Litre (reference range <5mmol/L). Urine toxicology screen was negative for recreational drugs (including morphine, codeine, dihydrocodeine, 6-MAM (heroin), methadone, cocaine (BZE), amphetamine, 3,4-methylenedioxymethamphetamine, diazepam, pregabalin, ketamine and cannabis).

cvMRI demonstrated acute infarction affecting the left ventricular apex associated with oedema and hypokinesia/akinesia on a background of multiple smaller infarcts elsewhere within the myocardium. Telemetry demonstrated sinus rhythm with ischaemic changes. CT cardiac coronary angiogram demonstrated a single fleck of right distal coronary artery plaque, but otherwise the coronary arteries were normal in calibre without significant atherosclerosis.

He was diagnosed with left occipital infarction, left ventricular apex acute myocardial infarction and multiple previous infarcts.

He was given 300mg of aspirin on admission, followed by dual antiplatelet therapy of 75mg aspirin and 75mg clopidogrel with gastric protection (lansoprazole 15mg) orally daily for a three-weeks, with atorvastatin 80mg. He was scheduled for review a fortnight later at the ambulatory clinic. During his time as an inpatient, his symptoms improved. Although he had residual right

homonymous hemianopia. A referral to the optometrist was made. Fortunately, two months after onset, the visual impairment had improved such that the patient was left with no neurological deficit and was able to return to full time work.

Discussion

Although ischaemic cerebral infarctions are not rare in young people, it is certainly unusual to experience multiple bilateral infarcts under the age of 30.^[1] Increasing age is a significant stroke risk factor, the incident risk of experiencing an ischaemic stroke doubles every 10 years after the age of 55.^[1] In younger patients, genetic pre-disposition and co-morbidities often underlie these diagnoses. Increasingly however, we are aware of the potential impact of modifiable risk factors for these young patients experiencing stroke and other cardiovascular events.

Cannabis is the most popular recreational illicit drug in the world, with the number of people admitting to usage nearing 200 million and rising.^[2] Its legality in the UK remains controversial and is regularly debated within law and politics, particularly since it has been prescribed more frequently for conditions such as cancer pain and neuropathy.^[2] For example, Sativex (nabiximols) is used widely as part of the management of multiple sclerosis. This partial cannabinoid receptor agonist is thought to exert its effect through increase of inhibition of the spinal interneurons resulting in symptom control of spasticity. This medication is not recommended in patients with serious cardiovascular co-morbidities.^[3]

Previous case reports have described similar scenarios in which patients have experienced multi-territory infarctions (cerebral and myocardial), likely associated with regular cannabis use.^[4-6] Pertinent to this case study, many reviews have demonstrated this link to be particularly strong in young adults.^[6] For example, Rumalla et al. carried out a large population-based analysis in the USA and demonstrated that recreational and regular use of cannabis was independently associated with 2.26 relative risk of ischaemic stroke among 25-34 year olds.^[6] Similarly, several recent systematic reviews have demonstrated an association between cannabis use and prevalence of ischaemic and haemorrhagic stroke along with other cardiovascular diseases (e.g. myocardial infarction incidence).^[7,8] Currently, cannabis use is not a recognised risk factor for stroke according to the National Institute for Health and Care Excellence (NICE), however cocaine and methamphetamine are considered risk factors,

therefore cannabis is not included in patient counselling.^[9]

The mechanism of regular cannabis use, as a risk factor for myocardial infarction and ischaemic stroke, may be due to the sympathomimetic effect of the 9-tetrahydrocannabinol component (THC).^[10] THC affects CB1 receptors within the cardiovascular system, leading to haemodynamic changes: increase in blood pressure, vasodilation, alteration of coronary blood flow and tachycardia. These changes may predispose to ischaemia.^[10,11] Similarly, increased vascular tone leads to reduced cerebral blood flow, which may be associated with increased risk of stroke.^[11] Research is ongoing into both the potential pro-thrombotic effect of cannabis and the inflammatory potential of cannabis to contribute to the development of atheroma (both mediated via CB1 and CB2 receptors).^[11] A notably difficult aspect and limitation of this case study, is the potential for an unreliable history from the patient (pertaining to both family history and recreational drug use other than cannabis). Similarly, unfortunately we are unable to demonstrate and prove historical recreational drug use, as investigations are limited, which may restrict diagnostic certainty.

Many studies have determined a relation that is temporal in nature, suggesting that myocardial infarction incidence was almost five times higher than average in the hour after cannabis use.^[12] Reports of left ventricular dysfunction associated with regular cannabis use are reported in the literature, but rarer than those of myocardial infarction.^[13] The regularity of cannabis usage does impact upon risk according to recent studies. One large retrospective study demonstrated a significant increased risk of recurrent stroke in young patients (18-44) with regular cannabis use (cannabis use disorder), and another demonstrated a 3.3-fold increase in risk of stroke/ transient ischaemic attack, but only in patients who used cannabis at least once weekly.^[14,15]

Conclusion

Despite cannabis being a possible risk factor for the development of stroke, research continues to consider the effect of the endocannabinoid system as a therapeutic target for various pathologies. There are over 100 cannabinoids and the mechanism of action of many of these is yet to be understood.^[5] CBD is the major non-psychoactive component of cannabis.^[5] It has been suggested that CBD may be involved in a mechanism that limits the adverse cardiovascular effects of THC.^[5] However, as cannabis is often used recreationally, CBD content of cannabis is variable and often low, whilst the THC component (the

psychoactive element and cardio-adverse component) is trending upwards in concentration.^[5] At present, there is no 'standard' of medical cannabis, the term is used to describe any product with derivatives of cannabis.^[10] With the use of cannabis worldwide increasing, it is vital for further research to be focused on this association and its potential effects going forward.

Learning points

- Internationally, the use of cannabis is rising, with many countries and states legalizing/decriminalizing its use.
- Adults (particularly young adults/males) using cannabis could be at a higher risk of experiencing myocardial infarction, stroke, and left ventricular dysfunction.
- There is increasing use of recreational cannabis in developing countries where the average population age is younger than many developed countries, this could impact sickness-related economic inactivity.
- Despite evidence within the literature regarding the link between myocardial infarction, stroke, and cannabis use, this is not documented as a risk factor by NICE. Currently, the counselling from healthcare professionals regarding risk factors for ischaemic events does not include caution with cannabis use, therefore the general public may not be aware of the true nature of the risks of cannabis use.
- This case highlights the importance of a detailed recreational drug history when considering morbidity and risk factor reduction in adults

Contributions

AC drafted the case report and carried out the literature search. EH identified the case, reviewed the manuscript and followed the patient up in ambulatory clinic. OP reported and selected the images. MD was the named consultant whilst the patient was treated on the stroke unit.

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Gavi and UNICEF welcome approval of new oral cholera vaccine

17 April 2024 UNICEF

GENEVA/NEW YORK, 18 April 2024 – Gavi, the Vaccine Alliance and UNICEF welcome the news that a new oral cholera vaccine (OCV), Euvichol-S, has now received WHO prequalification and can be made available to countries around the world. The prequalification of this new product will help EuBiologics, the manufacturer, produce more volumes of vaccine, faster, and at a lower cost – a key step to expanding supply amidst the on-going acute global upsurge of cholera outbreaks.

<https://www.unicef.org/press-releases/gavi-and-unicef-welcome-approval-new-oral-cholera-vaccine>

A haemopneumothorax revealing thoracic endometriosis

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Submitted: March 2024

Accepted: March 2024

Published: May 2024

Citation: Ghebouli et al. A haemopneumothorax revealing thoracic endometriosis, *South Sudan Medical Journal*, 2024;17(2):66-69 © 2024 The Author (s) **License:** This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.5>

ABSTRACT

Thoracic endometriosis is a rare disease but its actual frequency may be underestimated. Optimal management remains controversial. A multidisciplinary management approach, including surgery and hormone therapy, seems to give the best results and reduces recurrence. We report a case of a patient presenting with recurrent haemopneumothorax caused by thoracic endometriosis and treated surgically by video thoracoscopy and hormonal treatment.

Key words: pneumothorax, endometriosis, surgery, hormonal treatment

Introduction

Endometriosis is a disease where tissue similar to the uterine lining grows outside the uterus.^[1] This tissue has the same characteristics as the eutopic endometrium, thus responding to cyclical hormonal activity.^[2,3,4] Different organs may be affected. There are four thoracic manifestations: catamenial pneumothorax (this is a spontaneous pneumothorax occurring within 72 hours after onset of menstruation), catamenial haemothorax, catamenial haemoptysis and pulmonary endometriotic nodules. Catamenial pneumothorax is the commonest form, most often located on the right side, characterized by diaphragmatic lesions (nodules, dehiscences) and by a particularly high recurrence rate.^[5]

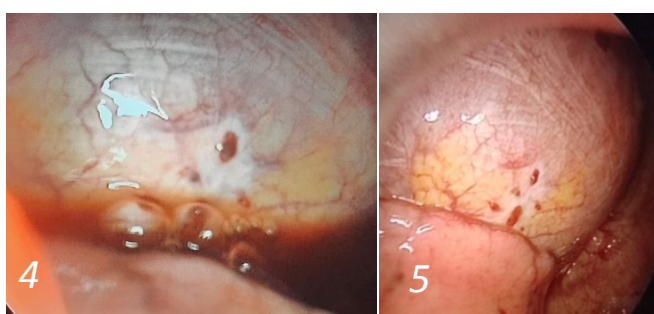
Case Report

A 24-year-old, single lady, presented to the Department of Thoracic Surgery Algeria, with a third episode of haemopneumothorax five days after menstruation. Two years previously she had attended a pulmonology department with a dry cough, dyspnoea and chest pain. These symptoms were worse when supine and relieved by sitting up. Right chest drainage had been successful allowing the lung to re-expand. On her most recent presentation to our facility she had chest pain, dry cough and asthenia. Because of the recurrence of the effusion, she was referred to us for surgical pleurodesis. Chest radiography, ultrasound and chest CT scanning supported a mixed right hydropneumothorax. (Figures 1, 2 and 3). She underwent a video thoracoscopy which showed a haemothorax with multiple pleural and diaphragmatic nodules (Figures 4 and 5).

A resection of the diaphragmatic nodules was carried out with closure of the



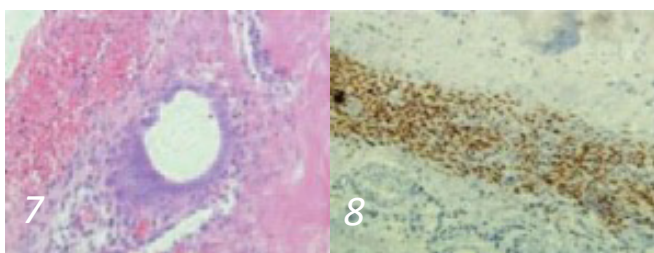
Figures 1, 2 and 3. Chest radiography, ultrasound and chest CT scanning supported a mixed right hydropneumothorax (Credit: Khalil Ghebouli Collection)



Figures 4 and 5. Videothoracoscopic appearance showing a haemothorax (Credit: Khalil Ghebouli Collection)



Figure 6. Videothoracoscopic appearance after pleurectomy (Credit: Khalil Ghebouli Collection)



Figures 7 and 8. Histological study of resection fragments diaphragmatic (Objective x20). Showing a localization of endometriosis. (Credit: Khalil Ghebouli Collection)

diaphragmatic breaches by direct suture associated with a parietal pleurectomy removing the pleural nodules (Figure 6).

The thoracic endometriosis was confirmed by histological study of the surgical specimen (Figures 7 and 8).

The patient was put on hormonal treatment based on danatrol/danazol: antigonadotropin) at 600 mg per day for six months. The short- and long-term evolution was without complications or recurrence. The patient was followed for two years.

Discussion

Catamenial pneumothorax occurs in young women during the first 48 to 72 hours of the menstrual cycle. It was first described in 1958^[6] and called “catamenial pneumothorax” by Lillington in 1972. Catamenial pneumothorax represents 2.8 to 5.6% of spontaneous^[8] pneumothoraces in women, but may be an underestimate. It is not always easy to confirm this diagnosis, and it remains possible that a number of catamenial pneumothoraces are mistaken for primary spontaneous pneumothorax.

The mechanism of catamenial pneumothorax remains controversial. In the presence of pelvic endometriosis, catamenial pneumothorax must be actively sought. There are three hypotheses cited in the literature: anatomical, metastatic and physiological.

The anatomical hypothesis is based on the fact that during the menstrual cycle, the mucous plug at the cervix is absent and would allow the passage of air through the cervix and the tubes into the peritoneal cavity. This air would then migrate through diaphragmatic porosities in the thorax and thus create the pneumothorax.^[6,7]

The metastatic hypothesis is also based on diaphragmatic fenestrations which might allow the passage of

endometriosis implants into the thoracic cavity via the lymphatic system. These implants, via the lymphatic chain or haematogenous route, may involve the pulmonary parenchyma, the visceral and/or parietal pleura, the diaphragm and rarely the tracheobronchial tract.

The physiological hypothesis states that a high serum level of prostaglandins F2 α during the menstrual cycle causes bronchospasms which may lead to alveolar ruptures causing pneumothorax. The rupture of emphysema bubbles is also more common during hormonal changes that occur during the menstrual cycle. The destruction during menstruation of ectopic endometrial tissue appears to cause rupture of the bubbles or blebs located in the visceral pleura.^[10]

The cause of pneumothorax is likely to be multifactorial.

- It is exceptional to encounter a pneumothorax after laparoscopy, despite the presence of congenital diaphragmatic fenestrations.
- Recurrent catamenial pneumothorax has been described after hysterectomy.^[11]
- Diaphragmatic fenestrations have been found in only 19 to 23% of catamenial pneumothoraxes.^[11]
- Pelvic endometriosis is found in only 22 to 37% of cases of catamenial pneumothorax and thoracic endometriosis is found in only 23 to 35% of cases.^[11]

However, in most cases, the likely mechanism is that of a transdiaphragmatic passage of air. The absence during the menstrual period of the cervical mucous plug could lead to the formation of a generally subclinical pneumoperitoneum and the passage into the thorax through diaphragmatic dehiscences, most often acquired secondary to diaphragmatic endometriosis.

Other manifestations of thoracic endometriosis, such as haemothorax and catamenial haemoptysis, are most often the consequence of bleeding linked to destruction of hypervascularized endometrial tissue.^[11]

In rare cases, thoracic endometriosis manifests as isolated pulmonary nodules, without catamenial symptoms. These occur most often in older women, with less pronounced hormonal activity.^[9]

The management of catamenial pneumothorax differs slightly from primary spontaneous pneumothorax. Video-assisted surgery makes it possible to identify and perform excision of endometriotic lesions which allow histological examination. Partial diaphragmatic resection is probably the

best treatment for lesions of the diaphragm (endometriotic nodules or perforations) so avoiding early recurrences which are reported after simple suture.^[9] It also makes it possible to obtain tissue for detailed histological examination. Hormonal treatment interrupts the natural hormonal supply to endometrial tissue hence reducing proliferation of the endometriosis. danatrol (antigonadotropin) which causes atrophy of endometrial cells is frequently used at 600 to 800 mg per day for at least six months.^[11]

Several side effects may occur such as weight gain, virilization and mood disorders. Triptorelin pamoate (Gn-RH analogue: gonadotropin-releasing hormone analogue like) can also be used at a dose of 3.75 mg per month (i.m.) for six to nine months.^[11] However, hormonal treatments can cause permanent sterility limiting their use in women wanting to become pregnant and a surgical approach is favoured.

Surgery must precede medical treatment, allowing:

- Treatment of the cause of the pneumothorax (diaphragmatic perforation, visceral pleura implants, bullae, as appropriate).
- Resection of visible lesions with histological examination.
- Pleural symphysis by pleurectomy, pleural abrasion or talc instillation.

Hormonal treatment should be continued for 6 months and allows the pleura, diaphragm and lung to be "rested" from cyclical stresses for the period necessary for the definitive effectiveness of the symphysis.

Conclusion

Thoracic endometriosis is an often undiagnosed cause of pneumothorax in women. The clinician must be alert to the possibility in women with recurrent, especially if right sided, features of pneumothorax. In most cases, diaphragmatic lesions are found and their excision allows treatment and histological examination. Multidisciplinary care is recommended.

Conflict of interest: None

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Can we end cervical cancer in South Sudan by 2030?

The maternal mortality rate in South Sudan remains one of the highest in the world, with more than 1,150 deaths per 100,000 live births, according to the United Nations. Several factors contribute to this alarming rate, including infections, hemorrhaging, obstructed labor, and a low perception of childbirth risk among the population. Social norms that discourage women from seeking skilled birth attendants or antenatal care further compound the issue.

Dr. Ojukwu, the first female Obstetrician and Gynaecologist in South Sudan, says that the maternal health crisis in South Sudan is a multifaceted issue, with women facing various challenges that can lead to fatal outcomes.

“Some women die on their way to health facilities during labor, while others die in health facilities due to inadequate care. The loss of unborn babies and the development of fistulas are also common outcomes for women who survive labor complications. In addition to the risks during childbirth, women in South Sudan also face challenges in accessing cancer treatment. For instance, cervical and breast cancer are leading causes of death among women, but there is a lack of available treatment facilities and screening programs in the country”

See <https://allafrica.com/stories/202404070004.html>

A giant primary ovarian fibrosarcoma in a South Sudanese patient

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Submitted: October 2023
Accepted: February 2024
Published: May 2024

ABSTRACT

Ovarian fibrosarcomas account for less than 1% of all ovarian malignancies. Clinical diagnosis is extremely difficult. A 20-year-old, illiterate, married nulliparous woman presented to our Outpatient Department Clinic (OPD) with chronic abdominal distension. Ultrasound and CT scan revealed a very large intra-abdominal mass, 23.8x27.8x35.7cm. She underwent a laparotomy and left salpingo-oophorectomy with her uterus and right adnexum conserved. After surgery, the mass weighed 11.1kg and measured 43x38x35cm. Histological findings were in line with a giant primary ovarian fibrosarcoma. To date, as far as we are aware, this is the largest ever recorded primary ovarian fibrosarcoma.

Key words: giant primary ovarian, fibrosarcoma, exploratory laparotomy, salpingo-oophorectomy, South Sudan.

Introduction

Ovarian fibrosarcomas are exceptionally uncommon neoplasms contributing to less than 1% of all ovarian malignancies.^[1] They are of fibroblast origin with slow or rapid growth and a well circumscribed appearance.^[2] There are less than one hundred cases reported in the literature.^[3] They are seen more in the peri or postmenopausal age groups but can occur in other age groups. Furthermore, they present with nonspecific symptoms like abdominal mass, pelvic pain, and heaviness in the lower abdomen.^[4] This makes clinical diagnosis difficult. Diagnosis is mainly based on pathological and immunochemistry investigation. We present a case with a very large ovarian fibrosarcoma in a young married nulliparous woman.

Citation: Rial et al A Giant Primary Ovarian Fibrosarcoma in a South Sudanese patient, South Sudan Medical Journal, 2024;17(2):70-74 © 2024 The Author (s)
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Case Report

A 20-year-old, nulliparous housewife was referred from the Gynaecological Department to the Surgical Department at Juba Teaching Hospital, Juba, which is one of the main referral hospitals in South Sudan.

She presented with a one-year history of abdominal swelling of a gradual onset. The swelling started as from the lower abdomen and gradually reached the epigastric region with extension to both flanks. This was associated with nausea, loss of appetite, weight loss but no abdominal pain, vomiting, diarrhoea, and constipation. She did not notice any swelling of her lower limbs despite the size of the abdominal swelling.

There was no family history of breast, ovarian, uterine, endometrial, colonic or any other known cancers. Her menarche was at 14 years of age with a regular 28 days cycle. However, she started experiencing irregular menstrual cycles at about 3-4 months before presentation. There was no history of abortion or miscarriage and neither was she using any contraceptive pills.

Physical examination showed no cyanosis or jaundice. The abdomen was uniformly distended with prominent striae (Figure 1) and an everted umbilicus. The abdominal mass extending from the pelvic region to the epigastric region, firm and difficult to delineate the edges. There was no tenderness or shifting dullness on percussion. Normal bowel sounds were heard only at the flanks.

The differential diagnoses were mesenteric cyst, hydatid cyst, ovarian cyst and ovarian tumour. Other differential diagnoses include uterine fibroids, appendiceal mass, abdominal malignancy of uncertain location. Pregnancy test was negative.

An abdominal ultrasound showed a large solid abdominopelvic mass most likely of uterine origin, uterine malignancy being a possibility. CT scan with contrast showed a large, abdominopelvic, lobulated, heterogeneous, isohypodense soft tissue measuring 23.8x27.8x35.7cm (Figure 2). Laboratory investigations showed normal electrolytes, renal function tests, liver function tests, full blood count, and normal blood glucose level. She tested for positive HIV. There were no facilities for tumour markers such CA125, Ca119, and CEA.

The patient was counselled and she consented to surgery the following day. An exploratory laparotomy with left salpino-oophorectomy was carried out with no intraoperative complications. A large, fleshy, smooth surface, vascularised, lobulated ovarian mass involving



Figure 1. Distended abdomen with striae and everted umbilicus

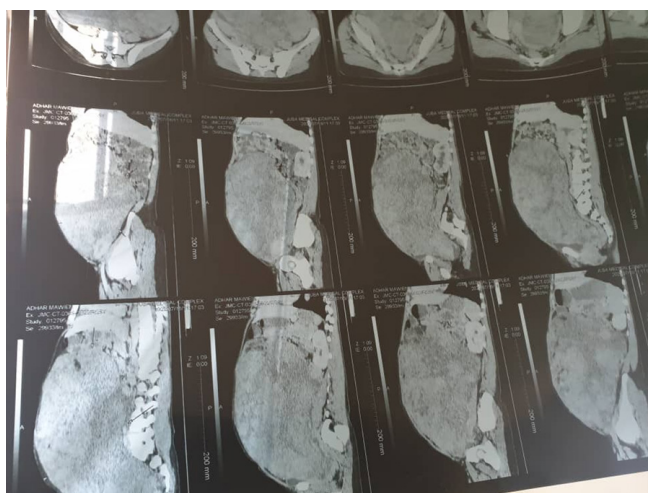


Figure 2. CT scan with contrast of an abdominopelvic mass

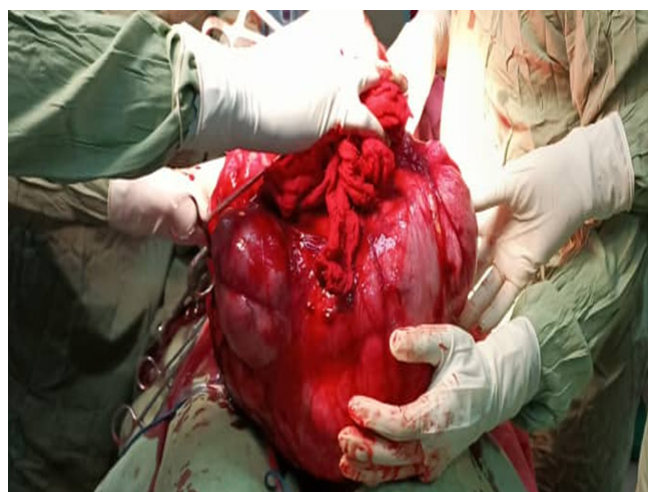


Figure 3. Large lobulated ovarian mass



Figure 4. Large lobulated ovarian mass



Figure 5. Histopathological section of the removed ovarian mass

left ovary was removed in one piece (Figures 3 and 4). It weighed 11.1kg and measured 43x38x35cm. This was sent for histological examination.

The non gravid uterus looked normal with right normal ovary and tube. There were no ascites, the omentum and the peritoneal surfaces looked normal.

The patient had an uneventful recovery from surgery and satisfactory post operative period. She was prescribed ceftriaxone 1g every 12 hours for 3 days and simple analgesia. On the third day she was discharged in good health.

Pathological section (Figure 5) showed a sectioned tumour, mostly grey-white, smooth, and lobulated, with focal haemorrhagic and necrotic areas. There was a separate fallopian tube tissue with fimbria measuring 57x5mm with tan grey colour.

Histopathological results revealed a neoplastic proliferation arranged in a herringbone pattern formed of highly cellular fibroblastic proliferation. The fibroblastic cells had elongated tapering dark staining nuclei with granular chromatin, scant pale eosinophilic cytoplasm and abundant mitotic figures. The stroma was formed of variable collagenous material. The fallopian tube consisted of mucosa thrown into plicae lined by stratified columnar epithelium with round to oval nuclei and moderate eosinophilic cytoplasm. Also seen were foci of hyaline degeneration and haemorrhages. There was no giant cell or significant cellular pleomorphism.

Discussion

Ovarian fibrosarcomas are exceptionally uncommon

neoplasms contributing to less than 1% of all ovarian malignancies.^[1] Ovarian fibrosarcoma is one of the members of ovarian fibroid tumours originating from sex-cord stromal tumours. Sex-cord stromal tumours contribute to 4.3% of ovarian tumours.^[5]

Most of the ovarian fibrosarcomas are seen at peri and post-menopausal women with a mean age of 49 years.^[5] In this case, we presented a 20-year-old woman with primary ovarian fibrosarcoma. This seems to be the youngest in comparison to other case reports^[5] where the reported ages range from 41 to 76 years. Ray S et al reported^[6] a case in a patient who was 23 years old.

It has been observed that patients normally present with non-specific symptoms such as pelvic mass or abdominal pain.^[5] In this case, the patient presented with a painless, large abdominal mass causing abdominal distension. Eventually, as the mass grew into the epigastric region, she started to feel the discomfort and disfiguration which prompted her to seek medical attention. Our case is unique in terms of the young age of the patient, absence of ascites despite the huge ovarian mass, as well as the weight of the ovarian mass.

The sizes of ovarian fibrosarcomas vary from one case report to another. In the literature review conducted by Tingting et al,^[5] ovarian fibrosarcoma sizes ranged from 5 to 23cm. However, Daramola et al^[2] presented a case of size 13.6x8.1cm. There is one case report^[6] of a giant fibrosarcoma measuring 25x17x12cm as the largest recorded. Our case measured 23.8x27.8x35.7cm. All these measurements were based on CT scan images. On a different note, gross measurement of our tumour showed a size of 43x38x35 cm. We believe our tumour to be the

largest so far reported and weighed 11.1kg. This may also be the heaviest registered tumour. The likely reason might be the delay in accessing the healthcare service because the patient lived in a distant rural area. In addition, being immunocompromised (confirmed as HIV positive) might have enhanced the rapid growth of the tumour to the current large size. Furthermore, being illiterate and uninformed, as well as the absence of abdominal pain, might have contributed to her delay in seeking medical attention.

In addition to ultrasound and CT scan imaging investigations, the diagnosis of fibrosarcoma is based on histopathological analysis. This is achieved by microscopic observation of growth patterns, cellular atypia, and mitotic counts. Classification and determination of the tumour is based on the mitotic counts in which counts $<3/10$ high power field (HPF) are considered as benign while counts $>4/10$ HPF are fibrosarcomas.^[7] However, the size of the tumour, growth rate as well as the immunochemical markers like Ki-67 should be included in classification of ovarian fibrosarcomas. Ki-67 plays a key role as a proliferative activity index for these tumours. In South Sudan there is no histopathological laboratory that provides such services which include counts of mitoses.

The important laboratory test was the positive HIV test. A literature review conducted by Bhatia et al^[8] showed that there is an association between immunosuppression by HIV and sarcoma subtypes such as leiomyosarcoma, angiosarcoma, and fibrohistiocytic tumours. This might be the reason why the tumour increased rapidly to a large size. A chest X-ray would have ruled out a pleural effusion which might suggest Meig's syndrome or distant metastasis of ovarian cancer. CT scan of chest would have been an alternative.

The most desirable therapy for fibrosarcoma is surgical excision of the tumour.^[9] This can include removal of the ovarian fibrosarcoma with simple adnexectomy with or without total hysterectomy and total omentectomy.^[2] This depends on how much the surrounding tissues are involved. In our case, we did a total excision of the left ovary with salpingo-oophorectomy. The other nearby tissues were not involved. In view of the age and parity of the patient, fertility sparing surgical treatment is acceptable provided adequate follow up visits are arranged.

Usage of radiotherapy and chemotherapy for fibrosarcoma is very controversial. The response rate of fibrosarcoma is considered very low to radiotherapy and chemotherapy when used as a neo-adjuvant and/or adjuvant tumour

treatment.^[10] In our case, the tumour was very large and there were no metastatic focal areas. Moreover, there is no Oncological centre in South Sudan. Most of the patients who need chemotherapy are managed locally by importing the required chemotherapeutic agents from neighbouring countries. Alternatively, patients are referred to the nearby centres in Uganda, Kenya, and Sudan. Patients with advanced ovarian fibrosarcoma usually benefit from chemotherapy. The commonly used drugs include anthracyclines as the first line treatment. This is combined with doxorubicin or actinomycin D with Ifosfamide.^[8] The risk of developing multidrug resistance (MDR) is high if vincristine, actinomycin D, vinblastine and etoposide are used with the first line chemotherapeutic agent, doxorubicin. Another report^[2] states carboplatin and paclitaxel after primary debulking surgery. Radiotherapy could be of benefit in some cases; however, these services are not available in the country.

We plan to follow-up this patient for early detection of any recurrence of the malignancy. She was advised to attend follow-up and treatment for her HIV.

Conclusion

Primary ovarian fibrosarcoma remains a rare and challenging condition. Management of ovarian fibrosarcoma poses a very serious challenge especially when patients present at late stages in a low resource setting such as South Sudan. Surgical removal of the tumour remains the accepted standard procedure. Presence of imaging facilities as well as pathological services has helped us in the management of this condition. More is required to include immunochemistry analysis as part of pathological diagnostic services. There is a need to establish an Oncology Centre with appropriate human resources as well as modern equipment for better care of cancer patients in South Sudan.

Finally, scaling up health education in different media outlets will increase community awareness of cancer and early presentation to healthcare services at an earlier stage to expedite interventions.

Declaration of patient consent: The authors declare that patient consent was obtained which included usage of the images and other relevant information to be used in any journal or academic activities for educational purposes. The patient understood that her name or initials should not be published.

Conflict of interests: None.

Contributions: IR and LG were the operating surgeons assisted by SA as registrar for general surgery. SA did the clerking, examination, investigations and preparing the patient for surgery as well as postoperative follow up. KS, JT and JW prepared and proof read the manuscript. All authors read and approved the manuscript.

Acknowledgement: We are indebted to the theatre staff who facilitated the smooth success of this difficult operation. We acknowledge too the efforts of the house officers namely: Drs Pasquale Abdallah Deng, Emmanuel Andrew Kenyi, Ater Marial Amoum, Clement Swaka, Dario Jake and Sarah Amani for their time they dedicated to preparing and following up the patient after surgery. This has contributed much to the quick recovery of our patient. Finally, we thank the patient for allowing us to share her information as part of our experience in the management of fibrosarcomas.

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Endoscopically diagnosed hookworm infestation in an adult with chronic iron deficiency anaemia

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Submitted: January 2024

Accepted: February 2024

Published: May 2024

ABSTRACT

Despite advances in hookworm control and prevention campaigns, the prevalence remains high in sub-Saharan Africa. Iron deficiency anaemia is a major complication in those with prolonged infection, a high hookworm burden, and undernutrition, though most infected people are asymptomatic. While infected patients are commonly diagnosed by the presence of ova or cysts in the stool, gastrointestinal (GI) endoscopy is required for those with negative stool tests and chronic iron deficiency anaemia. A 48-year-old female with symptoms of anaemia for nearly two years presented to Mbarara Regional Referral Hospital with worsening palpitations, easy fatigability, and dizziness over a period of one month. She was given blood transfusions on two occasions. She lives near the lake where she also gets water for drinking and domestic use. We advise GI endoscopy for all patients with chronic iron deficiency anaemia of unexplained aetiology on standard non-invasive testing. Hookworm's mass empirical treatment policy in endemic areas should be further emphasised.

Keywords: hookworms, endoscopy, iron deficiency anaemia, Uganda

Introduction

Globally, approximately 740 million individuals are infected by hookworm^[1] and about 34% of these are in sub-Saharan Africa.^[2] In Uganda, the hookworm prevalence ranges between 40 and 51%.^[3,4] Most are asymptomatic. However, iron deficiency anaemia (IDA) may occur with prolonged infection, poor nutrition, and heavy worm burden.^[5] *Ancylostoma duodenale* and *Necator americanus* are the most frequent hookworm infestations in humans.^[6] In our setting, hookworms are commonly diagnosed by the presence of their eggs in the stool. However, we

Citation: Abdirahman et al. Endoscopically diagnosed hookworm infestation in an adult with chronic iron deficiency anaemia, South Sudan Medical Journal, 2024;17(2):75-80
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present a case of a 48-year-old adult with clinical features of anaemia for over a year but had tested twice negative for hookworms by stool microscopy. She was subsequently diagnosed through an oesophagogastroduodenoscopy (OGD). We are not aware of a previous report of endoscopically diagnosed hookworm infestation in south-western Uganda.

Case Report

A 48-year-old Ugandan woman, a peasant farmer, was admitted to Mbarara Regional Referral Hospital complaining of worsening palpitations, easy fatigability, and dizziness over the previous month. She had been well until about eighteen months ago when she developed intermittent palpitations associated with exercise and later at rest. Four weeks before this admission, the palpitations became constant, with easy fatigability and dizziness. She did not report syncope, breathlessness, cough, chest pain, or lower limb swelling but had gradually lost weight unassociated with heat or cold intolerance. She had been admitted five times for this illness, was investigated (Table 1) and transfused with blood and/or given haematinic medications.

During two of the previous admissions, she reported being given proton pump inhibitors. Her social history included drinking water (only occasionally boiled), washing, and bathing from the nearby lake and swamps. Her diet was mainly posho, matooke (cooked banana), beans, groundnut paste, vegetables, and potatoes with chicken, fish, beef, or goat meat, at least once a week. She had no significant past medical history besides a Caesarean Section 18 years ago. She drank 1-3 x 350 millilitre bottles of local alcohol every 2-4 weeks and had smoked 1-4 pipes of local tobacco weekly for the last 35 years. She was menopausal with an uneventful gynaecological history.

Examination on this admission revealed severe pallor of the mucus membranes but no jaundice. She had no koilonychia, leukonychia, cyanosis, or finger clubbing. She had no Muehrcke's lines, blue lanule, palmer erythema, Dupuytren's contracture, or metabolic flap. Orally she had angular stomatitis and glossitis but no ulcers or thrush. Skin and lymphatic systems were unremarkable. A cardiovascular examination revealed systolic murmurs at the left sternal border and apical areas possibly anaemic murmurs. The rest of the systemic examination was normal. Investigations showed features of IDA (Table 2). A stool analysis revealed no ova or cysts, and negative for the *Helicobacter pylori* antigen. Her rapid tests for human immunodeficiency and hepatitis B viruses were negative.

Table 1. Investigations done during one of the previous admissions

Investigation	Finding	Lab reference range
CBC	RBCs: 3.81*106/uL	4-5.2*106/uL
	WBCs: 9* 103 /uL	4-11*103/uL
	Hb: 4.6 g/dl	11.5-14 g/dl
	MCV: 68 fl	80-100 fl
	MCHC: 26.67 g/dl	32-36 g/dl
	MCH: 25 pg	28-32 pg
	RDW: 18 %	11.5-14.5 %
	PLT: 260* 103/uL	150-450* 103/uL
Stool analysis	Negative for ova and cysts	
H. pylori stool antigen	Negative	

Note: Lab: Laboratory, **CBC:** Complete Blood Count, **RBCs:** Red Blood Cells, **WBCs:** White Blood Cells, **Hb:** Haemoglobin, **MCV:** Mean Corpuscular Volume, **RDW:** Red Cell Distribution Width, **PLT:** Platelets, **H. pylori:** *Helicobacter Pylori*

Other tests conducted are shown in Table 2.

Due to the evidence of IDA and the negative stool test results for worms or *Helicobacter pylori* antigen, an OGD was organized after obtaining informed consent from the patient. Two thread-like moving organisms were seen in the pyloric antrum (Figure 1) and a huge number of those organisms of different shapes and sizes were seen in the duodenum (Figure 2, Panel A). Also, features of acute and chronic inflammation were noted on the mucosal background of the duodenum (Figure 2, Panel B).

Mucosal biopsies were taken from the duodenum where the organisms were dense. After a thorough examination by both compound (Figure 3, Panel A) and dissecting (Figure 3, Panel B) light microscopes, an adult hookworm worm with characteristic features of *Ancylostoma duodenale* was observed.

Furthermore, a tissue sample examined confirmed *Ancylostoma duodenale* (Figure 4) with chronic mixed eosinophilic inflammation. Accordingly, the patient was transfused with three units of packed red blood cells and given haematinic and albendazole tablets. She was then discharged after demonstrating great improvement. On her review a month later, all the clinical signs of anaemia and the cellular parameters including haemoglobin of her complete blood count were within normal limits.

Table 2. Investigation done during this admission

Investigation	Finding	Lab reference range
CBC	RBCs: 2.41*10 ⁶ /uL	3.81*10 ⁶ /uL
	WBCs: 3.5*10 ³ /uL	3.50-9.50* 10 ³ /uL
	Hb: 2.8 g/dl	11-15.8 g/dl
	MCV: 60 fl	80-100 fl
	MCH: 18 pg	27-34 pg
	RDW-SD: 60.2	(37-54)
	PLT: 212*10 ³ /uL	150- 438* 10 ³ /uL
Peripheral Blood Film	RBC: Anisocytosis with marked microcytic hypochromic anaemia, no inclusions	
	WBC: Mature cells, no toxic granulation.	
	PLT: Adequate with normal morphology and normal distribution with maturity	
	Conclusion: Features suggestive of iron deficiency anaemia	
Iron studies	Serum iron level: 7.0 umol/l	9-30.4 umol/l
	Serum transferrin: 50 umol/l	26-47 umol/l
	Transferrin saturation: 9.6%	20-55.0%
	Serum ferritin: 26.96 pmol/l	33.70-359.5 pmol/l
RFTs	Creatinine: 70.74 umol/l	53.05- 106.1 umol/l
	Urea: 4162.5 umol/l	1165.5- 4995 umol/l
	K+: 4.0 mmol/l	3.5-5.5 mmol/l
	Na+: 136 mmol/l	135-145 mmol/l
	Cl- : 98 mmol/l	95-105 mmol/l
Stool analysis	No ova or cyst was seen (was done twice before and after endoscopy)	
Abdominal ultrasound scan	Normal findings	
OGD	Comments: Multiple squirming red worms swimming in the duodenum and a few in the pylorus. A worm sample biopsy was taken for microscopic and histology. See figs. 1 and 2.	

Note: OGD: Oesophagogastrroduodenoscopy, RFTs: Renal Function Tests

Discussion

Hookworms are among the commonest intestinal worms in humans, and infections are often caused by the nematode parasites *Ancylostoma duodenale* and *Necator americanus*.^[6] The greatest number of hookworm cases occurs in Asia, then sub-Saharan Africa.^[7] In Uganda, the prevalence is about 45% and 40% in Entebbe and

Kisoro districts, respectively.^[3,4] According to the Centers for Disease Control and Prevention (CDC), hookworm infections are common in places where defecation on soil is a practice including areas that use human stools as fertilisers.

As in our case, individuals with unhygienic habits, who have direct contact with infected water or soil are also at high risk of infection.^[1] A high burden of infection was

Case Report

found in people who walk barefoot outside their homes, the elderly, and those previously treated for worms. Also, illiterate households and those with a primary school education are at a high risk of hookworm infection.^[8]

As with both *Ancylostoma duodenale* and *Necator americanus*, humans become infected when third-stage infective larvae in soil penetrate the skin. However, *Ancylostoma duodenale* can also cause infection after ingestion of contaminated food or water.^[9] The third-stage larvae only grow into adult hookworms in the small

intestine and depend on the host blood.^[10]

While individuals with a light worm burden are usually asymptomatic, individuals with a heavy worm burden often present with recurrent fatigue, epigastric pain, nausea, and exertional breathlessness as well as palpitations, headaches, and fatigue.^[6] In addition, some individuals may develop Wakana Syndrome with heavy *Ancylostoma duodenale* ingestion.^[11]

Hookworms attached firmly to the mucosa and submucosa of the intestine cause blood loss. They suck blood by creating negative pressure by contraction of its muscular oesophagus. Additionally, hookworms secrete hydrolytic enzymes that break the arterioles and capillaries in the intestinal mucosa and release anticoagulant factors.^[6]

An inverse relationship between the hookworm egg burden in the intestine and the haemoglobin and serum ferritin has been drawn.^[1] It has been estimated that each adult hookworm imbibes 0.01–0.04 mL and 0.05–0.3 mL per day for *Ancylostoma duodenale* and *Necator americanus*, respectively.^[10] Our patient presented with many features associated with severe anaemia suggesting the presence of a heavy worm burden. While our case had flow murmurs on the cardiovascular examination, signs of heart failure were absent. In 1959, amongst hospitalised patients in Uganda, K. Somers described cases of reversible acute heart failure due to severe anaemia caused by heavy hookworm infestations.^[12]

Hookworm infection is commonly diagnosed by the detection of eggs in faeces. There are several case reports of

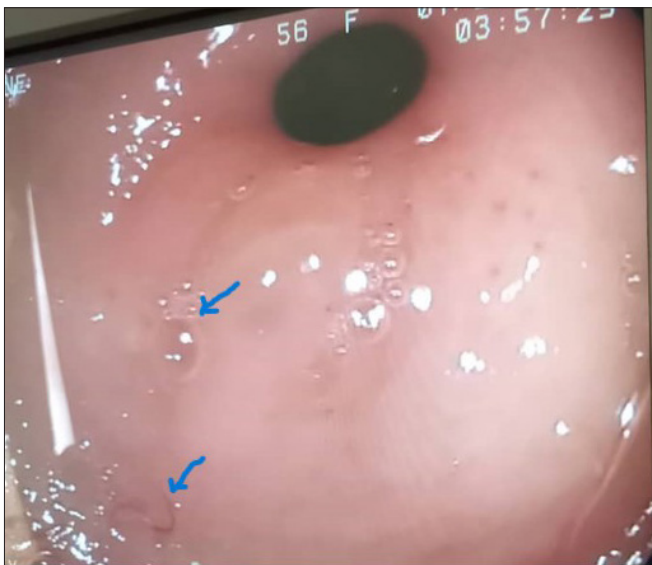


Figure 1. The pyloric antrum of the stomach with two hookworms as indicated by the arrows (Credit: Dr. Boniface Amanee Elias Lumori)



Figure 2. Panel A. The duodenal mucosa with several hookworms as indicated by the arrows (Credit: Dr. Boniface Amanee Elias Lumori)



Figure 2. Panel B. The duodenal mucosa with mixed acute and chronic erythematous lesions (Credit: Dr. Boniface Amanee Elias Lumori)



Figure 3. Panel A. A section of an adult hookworm on the compound microscope (Credit: Robert Wagubi)



Figure 3. Panel B. A section of an adult hookworm on the dissecting microscope (Credit: Robert Wagubi)

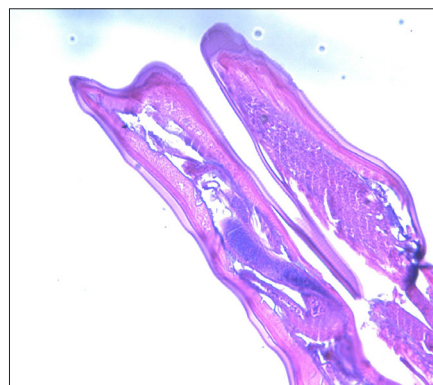


Figure 4. A histopathological analysis showing *Ancylostoma duodenale* (Credit: Dr. Raymond Atwine)

findings on upper GI endoscopy and capsule endoscopy, [5,13,14] but these are limited to areas where such facilities are available. A definitive diagnosis is usually made by repeated examination of the patient's faeces to find the eggs. However, in our case, we could not find ova or cysts in faecal examination twice, and the IDA did not improve despite prior treatment of a proton pump inhibitor and haematinic. Hence, it is recommended to assess the distal duodenum thoroughly during a routine OGD, especially in developing countries where the burden of hookworms is high.^[15] Moreover, ruling out causes of bleeding of lower GI origin such as colorectal cancer, polyps, haemorrhoid, and diverticular disease by a colonoscopy is necessary in such cases.

Conclusion

We present a patient whom we diagnosed endoscopically with gastrointestinal hookworm infestation after nearly two years of symptoms of anaemia and absence of hookworm ova or cysts in the stool. We advise both upper and lower GI endoscopy for patients in hookworm endemic areas with chronic iron deficiency anaemia of unexplained aetiology on standard non-invasive testing. Hookworm's mass empirical treatment policy in endemic areas should be emphasised.

Conflicts of Interest: None

Acknowledgments: The authors acknowledge the patient and clinicians who managed this patient.

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Urgent vaccination campaign needed to halt deadly measles outbreak in Western Equatoria state

MSF press release 26 March 2024

JUBA – A measles crisis is mounting in South Sudan’s Western Equatoria state, just as health authorities struggle to overcome a yellow fever outbreak. Since February, seven deaths among children under five and 460 cases have been recorded as of 24 March in three health facilities in Yambio and Nzara counties; 90 per cent of these children had never been vaccinated against the disease. With measles cases on the rise and vaccination coverage alarmingly low, Médecins Sans Frontières (MSF) urges health authorities and the World Health Organization (WHO) to launch an immediate vaccination campaign to prevent the disease from spreading further.

<https://www.msf.org/urgent-vaccination-campaign-needed-halt-deadly-measles-outbreak-south-sudan>

See also: <https://www.bmj.com/content/384/bmj.q777>

Reflections on a clinical observership in London: Lessons and impact on medical training

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Submitted: February 2024

Accepted: March 2024

Published: May 2024

Citation: Paul, Reflections on a clinical observership in London: Lessons and impact on medical training, *South Sudan Medical Journal*, 2024;17(2):81-83 © 2024
The Author (s) License: This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/)
DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.8>

Introduction

Medicine is a dynamic profession, and international exposure and collaborations are essential for professional growth and the advancement of healthcare practices. Clinical observerships serve as invaluable opportunities for medical professionals to gain first-hand experience in diverse healthcare settings. In this reflective piece, I provide a detailed account of a clinical observership experience in London, exploring its impact on my personal and professional development, and advocating for similar opportunities for doctors, particularly those in South Sudan.

Background to the observership

The clinical observership discussed was initiated by Martina Lagu Yanga, Head of Medical Education and Training NHS England Leadership Education Fellow and Mr Edward Lee, Consultant Ophthalmologist and Vitreoretinal Surgeon at Epsom and St Helier University Hospitals NHS Trust. With a vision to promote global collaboration and knowledge exchange in healthcare, Martina spearheaded this programme to offer international medical graduates, including those from South Sudan, exposure to the UK healthcare system. The observership aimed to bridge cultural and professional gaps, fostering a deeper understanding of medical practices and enhancing skills essential for global medical practitioners.

In terms of professional gaps that this observership bridged, I gained insights into the operational intricacies and best practices of the UK healthcare system, broadening my understanding of different clinical protocols and approaches. In addition, the observership provided exposure to diverse patient demographics and medical conditions, thereby enhancing my clinical knowledge and diagnostic skills. Overall, this observership played a crucial role in equipping me with the necessary skills and perspectives to thrive as a global medical practitioner

Accommodation and activities

As a participant in the observership, I was provided accommodation at the Undergraduate Hostel for International Students, in Epsom, a town near London. This hostel offered comfortable rooms equipped with great amenities such as a sitting room, a well-equipped kitchen, free Wi-Fi and fully furnished common areas, fostering a sense of community among residents.

Activities during this observership included rotations across various medical departments, participation in medical education workshops and events, and



Figure 1. Working at Epsom Hospital



Figure 2. Outside St Helier Hospital

cultural immersion experiences. From attending grand rounds to engaging in leadership training sessions, participants gained invaluable insights into both clinical practices and cultural nuances within the UK healthcare system. Sightseeing tours and cultural events further enriched the experience, offering participants a holistic understanding of life and healthcare in London (Figures 1 and 2).

The day typically began with an early morning start, with participants arriving at their designated hospital sites to commence their rotations. For medical graduates, residents, and international medical graduates, the working hours varied based on their specific rotations and schedules, which could include shifts during the day, evenings, or nights. I mainly rotated in the ophthalmology department with Dr. Edward Lee who is an eye specialist since my clinical background and specialization are in ophthalmology. This was an invaluable clinical experience and exposure as I was able to witness eye surgical sessions and techniques that are not available in my clinical practice at home.

The work ethic and culture fostered during the observership emphasized professionalism, collaboration, and dedication to patient care. Participants engaged in a variety of activities throughout the day, including attending ward rounds, participating in case discussions, conducting clinical assessments, and shadowing consultants in various specialities. Additionally, structured educational sessions, such as grand rounds, journal clubs, and training workshops, were interspersed throughout the week to further enhance participants' clinical knowledge and skills.

I also participated voluntarily as an observer in the Royal College of Physicians PACES exam hosted at Epsom Hospital to learn how professional examinations are conducted in the UK.

Arranging the observership

The observership was facilitated through Martina Lagu Yanga's office, leveraging her expertise and network within the medical education community. As a participant, I communicated directly with Martina to secure my placements and organize logistics. This collaborative effort underscores the importance of mentorship and networking in accessing transformative learning opportunities. Martina's leadership and dedication played a pivotal role in ensuring the success of the observership programme.

Beyond introducing me to the specialists I rotated with Martina meticulously managed the logistical aspects of the endeavour, including arranging visas, flights, and accommodations. She ensured that all necessary visa requirements were met beforehand, navigating any potential complexities, and facilitating a smooth visa interview process. Also, Martina orchestrated my travel arrangements, liaising with airlines to secure flights that aligned with my schedule.

Martina's expertise and guidance streamlined my visa process, and her extensive networks and expertise played a pivotal role in facilitating the seamless arrangement of placements and logistics for my observership programme. Her established connections within the healthcare sector enabled her to navigate bureaucratic procedures and secure placements at Epsom and St Helier University Hospitals

and ensured efficient coordination of accommodation, induction programmes, and other essential arrangements.

Without Martina's guidance and assistance, I may have encountered significant challenges navigating the complexities of securing placements and logistics independently, underscoring the importance of having a dedicated focal person with insider knowledge and networks to facilitate such endeavours effectively in the UK healthcare system.

Personal reflection on the observership

As a participant in the observership, I reflect on the profound impact of the experience on my personal and professional growth. The observership not only enhanced my clinical skills but also broadened my cultural awareness and understanding of global healthcare practices. I emphasize the importance of offering similar opportunities to South Sudanese doctors as part of their postgraduate training. Such exposure not only prepares them for the challenges of modern healthcare but also enables them to contribute meaningfully to medical advancements in their home country. The inclusion of international observerships in postgraduate training programs is vital for nurturing well-rounded and globally competent medical professionals.

Two experiences that stood out for me during my time in London were the Queen Elizabeth's funeral and the Grand Rounds sessions. The Queen's state funeral presented a unique cultural and historical experience for me, allowing me to witness a significant event in British tradition and pay my respects to the late monarch. This provided insights into ceremonial practices and cultural rituals that differ from those in my home country. In addition, participating in Grand Rounds sessions offered me the opportunity to engage with medical professionals from diverse backgrounds and exchange knowledge and perspectives on patient care and treatment approaches. These sessions highlighted similarities and differences in

medical practices between London and my home country, enriching my understanding of global healthcare systems and fostering professional growth.

Conclusion

The clinical observership experience I had in London exemplifies the significance of international collaboration in medical education and practice. Through initiatives led by visionary leaders like Martina Lagu Yanga, medical professionals worldwide, including those in South Sudan, can access transformative learning experiences that shape their careers and benefit their communities. The success of this observership underscores the importance of fostering partnerships and offering opportunities for cross-cultural exchange in the pursuit of excellence in healthcare. As we strive towards a brighter future for global healthcare, initiatives like these serve as beacons of hope, empowering doctors to make a meaningful difference in the lives of patients worldwide.

Acknowledgements: I extend my heartfelt gratitude to Martina Lagu Yanga, Head of Medical Education and Training NHS England Leadership Education Fellow at Epsom and St Helier University Hospitals NHS Trust, for her visionary leadership and unwavering dedication that made the clinical observership experience possible. Martina's commitment to fostering global collaboration in healthcare has opened doors of opportunity for medical professionals worldwide, including those from South Sudan. My appreciation to Dr. Edward Lee, Consultant Ophthalmologist and Vitreoretinal surgeon who provided educational supervision for my specialty attachment during my observership.

I also express my sincere appreciation to Dr Eluzai Hakim for his invaluable support and guidance throughout the observership journey, as well as to the entire team at Epsom and St Helier University Hospitals NHS Trust for their warm welcome and hospitality.

University of Juba launches a Master of Medicine in Paediatrics and Child Health

Justin Tongun, Alice Juan and Kenneth Sube

On 6/03/2024, the Vice Chancellor of the University of Juba launched a three-year Master of Medicine (MMed) programme in Paediatrics and Child Health in the School of Medicine. The first batch of seven students includes five females and two males - see figure.

This is the first time that the University of Juba has initiated a Master's programme in Paediatrics and Child Health. According to unpublished records from the South Sudan Paediatrics Association, there are 42 paediatricians in South Sudan. Of these, only 25 are in the country while the rest are in the countries of their training. The MMed programme is based at Al Sabah Children's Hospital in Juba, the only children's referral hospital in South Sudan.

The need for the establishment of this programme was informed by lack of sufficient paediatricians to cater for South Sudan's population of ten million and the following poor health indices:

- The current estimated maternal mortality ratio has significantly improved, but it is still the highest in the world. It is 1223 deaths per 100,000 live births.^[1]
- The neonatal mortality rate is now 39.63 deaths per 1000 live births (2021), and it is the highest in the world.^[2]
- The infant mortality rate is 63.76 deaths per 1000 live births, and it is the highest in the world, and it has remained constant from 2017 to 2021.^[2]
- Under-five mortality is also the highest in the world, but it has remained constant at 98.69 deaths per 1000 live births (2020).^[2]
- Life expectancy is the lowest in the world. It is estimated at 55.48 years (2020).^[3]
- Skilled birth attendance in South Sudan is still below 20%. It stood at 15% by the end of 2021, and there are/were significant differences between the 10 States.^[4]

Dr Justin Bruno Tongun, an Assistant Professor of Paediatrics at the University of Juba and Consultant Paediatrician at the El Sabah Children Hospital in Juba will be the Postgraduate Programme Coordinator for this course.

For details of our work, interested paediatricians and well-wishers may contact Dr Justin Bruno Tongun on Email: tongunmafi@gmail.com or Phone: +211924004111



The first batch of MMed students: Dalia Hitler, Sarah Pio, Gile Gai, Mabior Majok, Apuot Angelo, Margaret Amum, and Magboula Louice. (published with their permission)

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Dr. Bushra Ibnauf Center for Learning in Juba, South Sudan: Vision and mission

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The Sudanese American Medical Association and Project ECHO

The Sudanese American Medical Association (SAMA)^[1] is a nonprofit organization with offices in the United States (since 2008) and Sudan (since 2017). The organization's mission is to improve the health and wellbeing of our communities through services, capacity building, and education/research. In line with this goal, in 2021, SAMA's Sudan office became a hub for the University of New Mexico's Project ECHO Model.

In 2003, The University of New Mexico, Albuquerque, New Mexico, USA established an E-learning method called Project ECHO (Extension for Community Healthcare Outcomes)^[2] for education and exchanging knowledge by connecting learners with subject matter experts (SMEs) in a weekly or biweekly 60 to 90 minutes session over Zoom®. Unlike other

forms of virtual learning, the ECHO model emphasizes learner engagement through an interactive "All Teach, All Learn" approach. All sessions require a case presentation by a learner from their customary day to day clinical practice. The duration of the session is equally divided between SME didactic, learner case presentation and an interactive discussion.

From August 2021 to April 2023, SAMA established learning sites in Khartoum, Northern, and Gadarif states

and launched "ECHOs" in Cardiology (Frontline ECHO), Dialysis Care (Dialysis ECHO),^[3] Internal Medicine in partnership with the University of Khartoum (UoK ECHO), oral maxillofacial surgery (OMFS ECHO) and general surgery (Surgery ECHO). SAMA's ECHOs reached 3,114 learners in more than 60 countries, predominantly in sub-Saharan Africa in 85 sessions delivered by 114 subject matter experts from across the globe.

War and the establishing of the Bushra Ibnauf Center for Learning in Port Sudan, Sudan

On April 25th 2023, shortly after the war broke out, SAMA's Sudan office director and one of its co-founders, Dr Bushra Ibnauf Sulieman, was killed in Khartoum in the breakdown of the rule of law that followed.^[4] In July 2023, the SAMA Sudan office team regrouped in



Faculty and learners from an anesthesiology workshop held in Bushra Ibnauf Center for Learning in Port Sudan, February 2024 (credit: Mohamed Abdelazim)

Short Communication

Port Sudan and launched the Bushra Ibnauf Center for Learning to commemorate his legacy. From July 2023 to December 2023, we completed two ECHOs, (Trauma ECHO) connecting trauma surgeons in Sudan with global subject matter experts in trauma surgery and (Dental School ECHO) connecting dental students whose education was interrupted by the war and their faculty. Two hundred and fifty learners were reached in 22 sessions delivered by 36 subject matter experts from across the globe.

Bushra Ibnauf Center for Learning in Juba, South Sudan

Before the war, following its successful track record, SAMA had set its eyes on becoming a Project ECHO Superhub, i.e. supporting and training prospective Project ECHO hubs in sub-Saharan Africa. Given the historic ties between the peoples of Sudan and South Sudan, Juba was the natural home for SAMA's Superhub. In partnership with the South Sudan Ministry of Health, SAMA is working towards launching Infectious Disease ECHO in July 2024 that will connect medical professionals in South Sudan and Sudan with experts in Hepatitis B, HIV and TB, sharing experiences in an interactive "All Teach, All Learn" approach. Learners will attend the teachings at the planned Bushra Ibnauf Center for Learning in Juba as well as the Bushra Ibnauf Center for Learning in Port Sudan.

The shared experiences of South Sudan and Sudan in war can be a force to bring people together to work towards a better future free of war and disease.



Anesthesiology and critical care residents attending a workshop in the Bushra Ibnauf Center for Learning in Port Sudan, February 2024
(credit: Mohamed Abdelazim)

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Africa: Disease Outbreak News - Yellow Fever – African Region (AFRO)

Since the beginning of 2023, and as of 25 February 2024, a total of 13 countries in the WHO African Region have documented probable and confirmed cases of yellow fever (YF), namely Burkina Faso, Cameroon, the Central African Republic, Chad, Republic of the Congo, Côte d'Ivoire, the Democratic Republic of the Congo (DRC), Guinea, Niger, Nigeria, South Sudan, Togo and Uganda. Preliminary data for 2023 indicate a case fatality rate (CFR) of 11%. While the overall risk at the regional level was re-assessed as moderate and the global risk remains low, active surveillance is required due to the potential for onward transmission through travel and the presence of the competent vector in neighboring regions. The urban proliferation of *Aedes* spp. mosquitoes, which bite during the day, can also significantly amplify transmission risks, particularly in densely populated areas, leading to swift outbreaks.

https://allafrica.com/stories/202403210175.html?utm_campaign=daily-headlines&utm_medium=email&utm_source=newsletter&utm_content=aans-view-link

Letter to the Editor

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Address risk factors as part of clinical practice to prevent stroke

Dear Editor,

I read with great interest the excellent editorial by Hakim^[1] on addressing risk factors in clinical practice for preventing stroke. Indeed, stroke is a major public health problem with a high morbidity and mortality disproportionately over-represented in low- and middle-income countries.^[2] As the author rightly conveys, there are many factors such as scarcity of stroke units contributing to worse outcomes after stroke.

In addition to the current epidemiological transition, persistence of communicable diseases such as malaria, human immunodeficiency virus [HIV] and tuberculosis coupled with the increase of non-communicable diseases, notably stroke, present a double health burden.^[3] Indeed, stroke is already the leading cause of disability in Africa.^[4] The intricate interplay between conventional risk factors such as hypertension, diabetes mellitus, alongside risks unique to the African population, for instance, sickle cell disease and HIV, in addition to lifestyle behaviours, remain unexplored.

A comprehensive public health strategy aimed at lessening the impact of stroke in Africa requires an evidence-based approach to address knowledge gaps and the evolving nature of stroke care for more than a billion people on the continent. Data infrastructures (such as national registries) that support relevant research in stroke are needed to form the basis for developing robust performance indicators for emergency and hospital management processes related to improving stroke care and reducing disability. Moreover, national health policies and investments in innovative programmes are needed to address the inequity of access to stroke care between and within countries, and for planning new operational models of stroke care such as tele-medicine and mobile stroke units.

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