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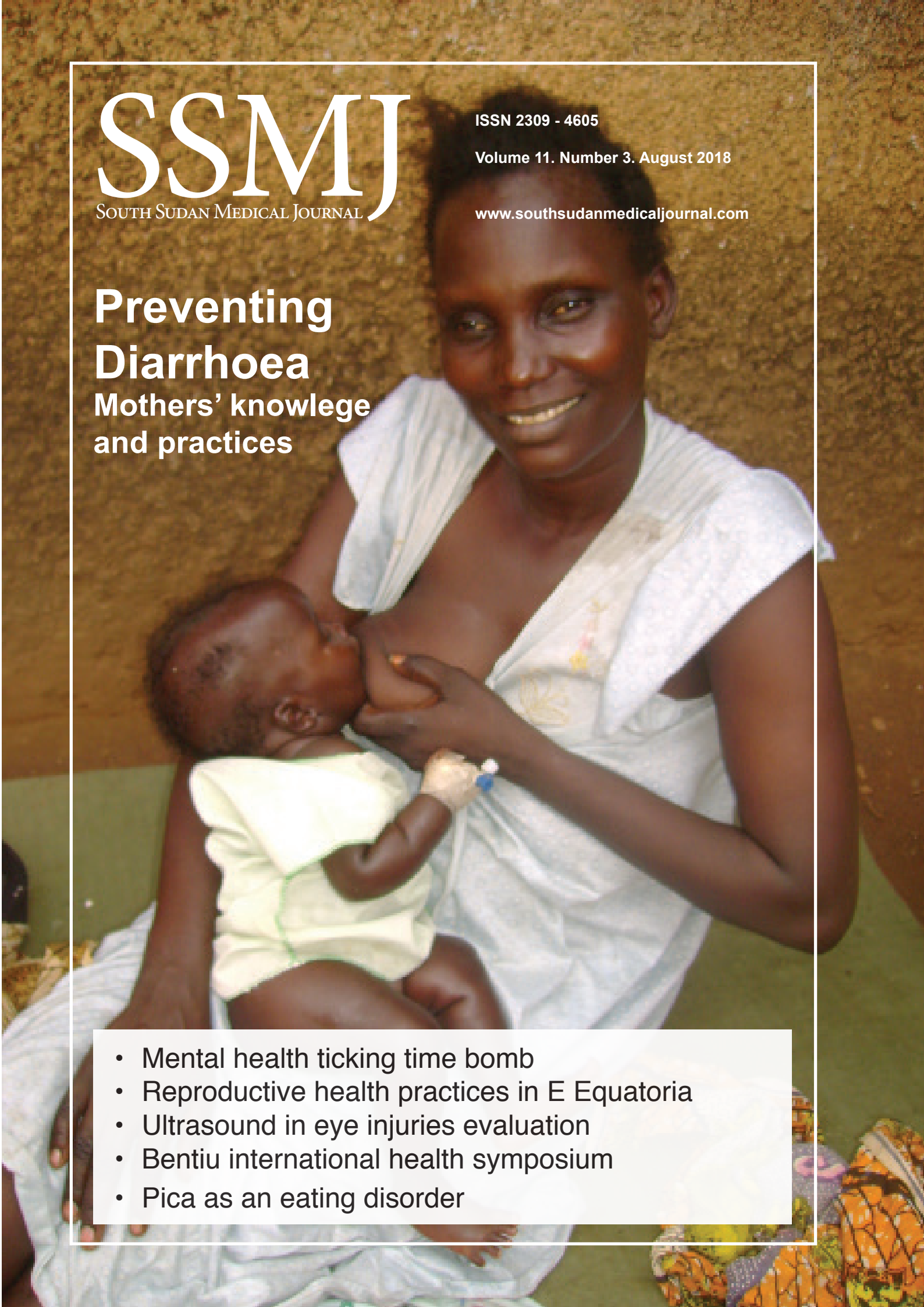
# Preventing Diarrhoea

## Mothers' knowlege and practices



- Mental health ticking time bomb
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**Front cover photo**: A woman breastfeeding a sick child (Credit: David Attwood)

**Back cover:** The poster on the back cover is the **10 steps to successful breastfeeding** published by the World Health Organization 2018 (accessed 24 July 2018)


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# Mental health in South Sudan: a ticking time bomb

Decades of war and conflict have caused a considerable amount of physical and mental trauma among South Sudanese. Mental health remains a heavily neglected, unacknowledged issue in South Sudan despite affecting all facets of society

Mental health (psychiatric) disorders include conditions such as depression, anxiety, schizophrenia and Post-traumatic Stress Disorder (PTSD). These disorders have been associated with substance abuse and violence. Despite the commonality of mental health disorders and their impact on South Sudanese society, they are heavily stigmatised and misunderstood. The negative connotations surrounding psychiatric disorders renders psychiatry one of the most neglected fields of medicine, not just in South Sudan, but worldwide.

Mental health patients kept in chains (file photo - South Sudan)

Data on mental health in South Sudan are limited. However, a study in Juba found that 36% of the sampled population met the criteria for PTSD. Despite this, South Sudan only has two practicing psychiatrists in the entire country. Mental health patients are often neglected or imprisoned, instead of receiving the support that they need.

It's high time that mental health is taken seriously and that mental health issues are tackled with the urgency they deserve. According to the World Health Organization, positive mental health is associated with good physical health, which then has a positive effect on long-term relationships, education and employability in a healthy working environment. Though South Sudan is currently facing economic, political and humanitarian crises, mental health needs to be prioritised as a necessity for a functional, productive society. It is the duty of the government to protect and fulfil every citizen's right to physical and mental healthcare. The general wellbeing of citizens is critical for the rebuilding of the country's social fabric and overall development.

MENTAL HEALTH PATIENTS ARE OFTEN NEGLECTED OR IMPRISONED, INSTEAD OF RECEIVING THE SUPPORT THAT THEY NEED.

The Ministry of Health can invest in mental health by improving mental health services, and training mental health practitioners. There is also a need for public health education to increase mental health awareness through campaigns and community initiatives. This will go a long way in reducing stigma and empowering people to recognise the signs of mental health disorders. Counselling, psychosocial support and training should be made available to the displaced or those living in towns and villages that have recently been under attacks of violence. Training professionals and mental health workers within communities will ensure that these important services are made available to those in very remote areas, which are lacking in access to healthcare in general. The impact of mental health disorders on South Sudanese society has devastating and far-reaching consequences. For the country to have long-lasting peace and a productive society, a healthy population is not an option, but a necessity.

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# How culture shapes the sexual and reproductive health practices among adolescent girls in Eastern Equatoria, South Sudan

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**Background:** From 2011 to 2014, a programme aimed to improve sexual and reproductive health practices among adolescent girls was implemented by the non-governmental organization BRAC in partnership with the Government of South Sudan and with funding from the World Bank. The distinctive culture and norms in South Sudan offered unique challenges to the implementation of such a programme, which this study sought to explore.

**Objectives:** This study investigated the sexual and reproductive health (SRH) behaviour of women and men in Eastern Equatoria State to identify the social norms and beliefs that affect communities' perception and behaviour regarding SRH issues.

**Methods:** Data were gathered from seven key informant interviews and nine focus groups of adult women and men and adolescent girls and boys in Torit and Magwi Counties in Eastern Equatoria.

**Results:** The study found a strong cultural preference for girls to demonstrate their fertility by beginning to have children at an early age (13–16 years) and to have many children (8–12). It also found that education on HIV/AIDS had been effective.

**Conclusions:** To be effective in South Sudan, adolescent sexual and reproductive health programmes must take the current social norms and practices into account and learn from the successes of HIV/AIDS education programmes.

**Keywords:** sexual and reproductive health, South Sudan, BRAC, adolescent girls, cultural beliefs and practices

## INTRODUCTION

South Sudan has one of the world's youngest populations with 72 percent of the population below 30 years of age and 7 percent of adolescent age (15 to 19 years) [1]. After decades of political unrest and civil war, South Sudan's population, especially girls and women, have been left impoverished, undereducated and underemployed with limited access to health services [2]. Data from the 2010 South Sudan Household Health Survey found that 26 percent of adolescent girls (aged 15–19 years) are mothers [1]. However, interventions targeting adolescent girls can both support and empower this group to make safe and healthy choices [3,4].

One such intervention was the Adolescent Girls' Initiative (AGI), created through a partnership between BRAC and the South Sudanese Ministry of Health with funding from the World Bank. The initiative provided opportunities for girls to gain life skills to help them make informed choices about sex, reproduction and marriage. It also offered vocational skills to enable them to start small-scale, income generating activities.

### BRAC South Sudan's Adolescent Girls Initiative and its Evaluation

BRAC South Sudan's AGI was launched in 2011 to socially and economically empower adolescent girls in Central Equatoria, Eastern Equatoria, Jonglei, and Lakes States. Under this intervention (2011–2014), 100 adolescent girls' clubs were formed, reaching a total of 3,000 girls. The clubs served as protected local spaces where girls could meet, socialize, receive information on sexual and reproductive health, and privately discuss issues of concern. Each club had 30 regular registered members between 15 and 24 years old.

The clubs encouraged recreational activities, such as reading, singing, dancing, plays, and games, and held training sessions on health issues, including menstruation, family planning, pregnancy, sexually transmitted diseases, and HIV. Club members also received vocational training in areas such as hairdressing, tailoring, agriculture, poultry care, and starting a small business.

BRAC had implemented similar interventions in Uganda, Tanzania, Liberia, and Sierra Leone in Africa. A study in

Uganda in 2012 found that the intervention contributed to several positive changes: early marriage or cohabitation fell by 58 percent and adolescent pregnancy fell by 26 percent relative to control groups; reported incidents of girls being forced to have sex fell by 41 percent; and there was a 26 percent increase in condom use among girls relative to control groups [5]. When BRAC undertook an evaluation of AGI in South Sudan, however, positive changes in behaviour and practices related to adolescent sexual and reproductive health were not found to be significant. In order to investigate obstacles to the effectiveness of the AGI programme in South Sudan, BRAC undertook a qualitative study in two counties of Eastern Equatoria in 2014, looking into attitudes and practices relating to adolescent sexual reproductive health and other related topics. This paper reports the findings from this qualitative study.

### Context

The study was undertaken in Torit and Magwi Counties in Eastern Equatoria State in March, 2014 (see map Figure 1). These locations were chosen because of BRAC's presence in these counties and the fact that they were less affected by the violence in 2013 than other counties.

Torit County has a population of 110,662 living in 128 villages [6, 7]. It has one state hospital, 4 primary health care centres (PHCCs), and 14 primary health care units (PHCUs) [7]. Magwi County has a population of 169,826 [7]. It has 12 PHCCs and 23 functional PHCUs [7].

## METHOD

A qualitative study was designed on topics related to sexual and reproductive health behaviours, practices, beliefs, and social norms among community members. In-depth interviews with key informants from the Ministry of Health and NGOs directly involved with the health system in the study areas, and focus groups with women, men, and adolescent girls and boys were used. Researchers used semi-structured interviews with key informants; data was collected through a dialogical format, allowing for follow-up and probing questions.

A total of nine focus groups were conducted (five in Torit County and four in Magwi County) with a minimum of two focus groups each for women 20 years of age and over (n=25), men 20 years of age and over (n=15), adolescent girls aged 12 to 19 (n=17), and adolescent boys aged 12 to 19 (n=14) (Table 1). Interviews and focus groups were conducted in the local languages of Juba Arabic and Acholi; they were recorded and then translated into English and transcribed.

The research team consisted of six members, coordinated by Joyce Inna, a South Sudanese Senior Program Officer with BRAC's Health Program who is fluent in Juba Arabic and Acholi. Data from interviews and focus groups were analysed and coded by senior programme staff at BRAC South Sudan to determine factors influencing the uptake of adolescent sexual and reproductive health practices.

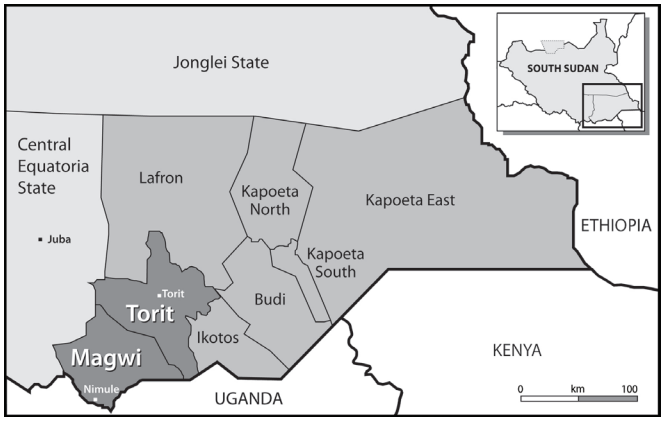


*Figure 1. Torit County and Magwi County in Eastern Equatoria State, South Sudan (credit Rebecca Langstaff).*

## RESULTS

### Health Service Facilities: Long Distance and Inadequate Services

Almost all of the participants mentioned the long distance to health facilities as a major barrier in accessing health services. Respondents indicated that maternal and reproductive health services were extremely limited at facilities. This finding is supported by other literature that has assessed aspects of South Sudan's health infrastructure [1].

When asked about services from community health workers, the participants mentioned that there were no community health workers regularly operating in their communities, although they were seen during specific outreach activities such as immunization campaigns.

Sources of health services used by participants included small private clinics and medicine shops, and local herbalists and traditional healers. In cases of serious illness (especially of children), participants indicated that they travel to a health facility. They noted that the responsibility of taking children to health facilities rests mainly on women.

In terms of the dissemination of health-related information, participants noted that health messages are broadcast on popular FM radio stations, but messages are in English, a language most villagers do not understand. Recognizing this as inadequate, participants noted that schools had the potential to be an important source of health education and information.

**Table 1. Participants and samples for in-depth interviews and focus group discussions**

| Data Collection Method | Number of Participants | Description | Issues Discussed |
|---|---|---|---|
| In-depth Interviews | 7 persons | • Medical Doctor, Torit State Hospital<br>• Monitoring and Evaluation Officer, Torit State Hospital<br>• Assistant Commissioner, Torit County Health Department<br>• Manager in Charge at Magwi Primary Health Care Centre<br>• County Health Officer, Magwi County Health Department<br>• Payam Health Supervisor, Magwi County<br>• Health Systems Strengthening Manager, American Refuge Committee | • Perception of health facilities and services including SRH services<br>• Perception of limitations and barriers to accessing health services with an emphasis on SRH<br>• Presence of health service providers, their programme, and services related to SRH<br>• HIV/AIDS prevalence rate |
| Focus Group Discussions | 71 persons in 9 groups | • Women: 3 groups (>19 yrs; Torit County=2, Magwi County=1); 25 participants (6–9 per group)<br>• Men: 2 groups (>19 yrs; Torit County=1, Magwi County=1); 15 participants (6 and 9 persons)<br>• Adolescent Girls: 2 groups (12–19 yrs; Magwi County=1, Torit County=1); 17 participants (8 and 9 persons)<br>• Adolescent Boys: 2 groups (12–19 yrs; Torit County=1, Magwi County=1); 14 (7 per group) | • SRH knowledge, behaviours, beliefs, and perceptions<br>• Health seeking behaviours<br>• Social acceptance of contraceptive use and other family planning methods<br>• Knowledge and perceptions of HIV/AIDS |

### Child Bearing

Getting pregnant at a young age before marriage was found to be common and socially acceptable. Some women mentioned that getting pregnant at an early age is an obvious sign of proving their fertility to their communities. As one participant stated, "If a girl does not get pregnant at early age, people think she is a barren woman". When asked how many children a woman should have, a majority of participants said that a woman should give birth to eight to twelve children and, therefore, should start giving birth early.

Various social norms in these communities encourage young women to have sex and bear children. For example, participants in focus groups mentioned that young girls and women are known to get drunk at funerals, participate in local dances, and have sexual intercourse. This practice is culturally encouraged, as these communities believe in compensating for a death by giving birth.

Early marriage is common in these communities; the ideal age for women to get married is thought to be between 13 and 16 years old. A dowry, paid in cattle, is an important source of wealth, and families are motivated to marry their daughters at an early age to acquire more cows.

### Family Planning

Participants were not generally knowledgeable about family planning methods. Some women mentioned that their male partners did not want them to use contraceptives. A male participant felt that "People use condoms when they do sex with sex workers, not wives". Participants from both male and female focus groups said that one of the reasons they would not use contraception was because they were afraid of perceived side effects such as "getting infertile," or making the menstrual cycle irregular.

### Other Findings

Almost all of the participants were found to be generally informed about HIV/AIDS. When asked to specify how someone could become infected with HIV, a majority of the respondents mentioned sexual intercourse, needles, used razor blades, and blood transfusions. However, the stigma towards those infected with the virus remained high.

Participants also noted that violence against women is high in their communities. In most of the cases, community leaders and family try to solve the issue at their own level; however, in some extreme cases of violence, the offenders are also reported to police and the courts.

## DISCUSSION AND CONCLUSION

The findings from this qualitative study are relevant for the Ministry of Health and other NGO health programmes, and are consistent with other research[8]. Study findings and recommendations are summarized as follows:

- The rural communities in South Sudan have cultural norms that adolescent girls should begin to bear children at an early age (13–16 years old) and bear many children during their lifetime (8–12).
- There are widely held misconceptions about the use and side effects of contraceptives, leading to reduced use.
- Heath programmes targeted to improve adolescent sexual and reproductive health of women in South Sudan should take the local cultural context in consideration.
- Education relating to how HIV/AIDS is transmitted seems to be relatively effective. HIV/AIDS awareness raising and education techniques should be examined to determine techniques that could be used to similarly improve education on issues related to contraception, and delaying marriage and childbirth.

To be effective in South Sudan, adolescent sexual and reproductive health programmes must take the current social norms and practices into account and learn from the successes of HIV/AIDS education programmes.

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*Disclaimer: The views expressed in this paper are those of the authors and do not reflect the views of the World Bank or BRAC.*

# Mothers' knowledge, attitudes and practices on preventing diarrhoea in Juba, South Sudan

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**Introduction:** In South Sudan, diarrhoeal diseases are leading causes of mortality and morbidity among young children.

**Objective:** To assess mothers' knowledge, attitudes and practices (KAP) on how to prevent diarrhoea among under-five year old children at the United Nation's Mission in South Sudan Protection of Civilian Sites in Juba.

**Methods:** A cross-sectional study was conducted in August 2017 using a four stage sampling technique and analysed using EpiData version 3.1 and SPSS version 20.

**Results:** A total of 410 mothers (98.6% of the selected sample) responded to the study questionnaire; 45.6% were aged 25-34 years, 52.7% were illiterate, 93.9% were housewives, and 84.6% had no source of income. The majority (62%) had a 'low' knowledge, 65.4% had positive attitudes and 57.8% had 'poor' practices; significant associations were observed between: age and attitude, knowledge and education, practices and education, and diarrhoea and income.

**Conclusion:** Many mothers need more knowledge and better attitudes and practices to be able to prevent and manage their children's diarrhoea. The associations between knowledge, attitudes and practices all indicate the need for increased education and schooling of South Sudanese women and girls.

**Key words:** mothers' knowledge, attitude and practices, diarrhoea, prevention, South Sudan.

## INTRODUCTION

Social factors such as mothers' knowledge, attitudes and practices (KAP) related to the prevention of diarrhoea influence child health and survival [1]. We used the World Health Organization (WHO) definition of diarrhoea [2] Diarrhoeal diseases are leading causes of young child morbidity and mortality in South Sudan [3].

In 2014 the two-week point prevalence of diarrhoea among under-five year old children in Rubkona POCS, Unity State was estimated to be 43.6 % [4].

## METHODOLOGY

A descriptive community-based cross-sectional study was conducted in August, 2017 at the United Nations Mission in South Sudan (UNMISS) Protection of Civilian Site 3 (POCS 3) in Juba. This is one of two camps hosting >38,000 people displaced by the December 2013 Juba conflict.

A mixed four stage sampling procedure was employed to select households with mothers who had children aged under five years.

- Stage 1: one of the POCS (1 and 3) was randomly selected using the lottery method (POCS 3 was selected).
- Stage 2: 6 zones (from the total ten zones) were randomly selected using lottery method.
- Stage 3: a proportion to size allocation of the number of households was done (i.e. by allocating the total sample size of 416 to the 6 selected zones) so 69.3 households were allocated to each zone.
- Stage 4: the starting household for each zone was selected by throwing a pen down in the centre of the zone; the household to which the pen's lid pointed was the starting household; then the data collectors moved systematically to the right.

Sample size was calculated using a single population proportion formula by assuming that 43.6% of under-five year old children have diarrhoea, (according to the UNMISS Rubkona/Bentiw POCS study in 2014 [4]) with 95% confidence level, level of precision 5% for four stage sampling and 10% added for non-responses. The estimated total sample size was 416. The study was approved by the Southern Medical University, Guangzhou and permission was obtained from the camp authorities. The purpose of the interview was explained to the respondents, almost all of whom were mothers ('mothers' here includes the very few caretakers), and oral consent was obtained from them. Data were collected by trained data collectors using a questionnaire translated into Nuer [5].

Data were entered using EpiData software version 3.1 and exported into Excel for further cleaning where SPSS version 20 was used for the final analysis. The data were presented as frequency tables and means and proportions were calculated. Pearson's Chi-square and Fisher's exact test were used to find the association between socio-demographic variables and other variables.

There were 5 questions for knowledge, 7 for attitudes and 9 for practices. Each question was given one to three points depending on the number of multiple choices and importance of the question [6].

For the questions on knowledge there were 10 points and the grade of knowledge for each level of score was:

- <6 points = low,
- 6-8 points = medium,
- 8 points = high.

For the questions on attitudes there were 11 points, and attitude was graded as negative and positive depending on the total scores. Those who scored equal to or less than the mean were labelled negative while a score above the mean was labelled positive [7].

For the questions on practices, there were 13 points and practice was graded as poor and good based on the total scores. A score equal to or less than the mean was labelled 'poor' while a score above the mean was labelled 'good' [7].

## RESULTS

### Demographic and socio-economic characteristics

From 416 mothers, 410 responded to the questionnaire; Table 1 shows the mothers' ages, educational levels, occupation and sources of income.

### Knowledge of diarrhoea (Table 2)

Of the 410 mothers:

- 237 (57.8%) gave a correct definition of diarrhoea,
- 305 (74.4%) stated that diarrhoea was due to contaminated food,
- 255 (62.2%) mentioned sunken eyes as the common sign of dehydration,
- 186 (45.4%) mentioned loss of weight as the consequence of diarrhoea,
- 391 (95.4%) knew that oral rehydration solution (ORS) is given to prevent dehydration,
- 242 (59%) did not mention zinc in the treatment of diarrhoea,
- 254 (62%) had low level of knowledge.

### Attitudes to diarrhoea

Almost all the mothers (400) want treatment when their children have diarrhoea; 379 (92.4%) prefer a public health

**Table 1. Demographic and socio-economic characteristics of the 410 mothers**

| Socio-demographic variable | | n | % |
|---|---|---|---|
| Age (years) | 15-24 | 141 | 34.4 |
| | 25-34 | 187 | 45.6 |
| | 35-44 | 64 | 15.6 |
| | > 45 | 18 | 4.4 |
| Educational level | No schooling | 216 | 52.7 |
| | Primary | 139 | 33.9 |
| | Secondary | 50 | 12.2 |
| | College / higher | 5 | 1.2 |
| Occupation | House wife | 385 | 93.9 |
| | Trader | 10 | 2.4 |
| | NGO worker | 12 | 2.9 |
| | Others | 3 | 0.7 |
| Income for the family | Yes | 63 | 15.4 |
| | No | 347 | 84.6 |

**Table 2. Mothers' level of knowledge of diarrhoea**

| Knowledge level | n | % |
|---|---|---|
| Low | 254 | 62.0 |
| Medium | 154 | 37.6 |
| High | 2 | 0.49 |
| Total | 410 | 100.0 |

**Table 3. Mothers' attitudes to diarrhoea**

| Attitude level | n | % |
|---|---|---|
| Negative | 142 | 34.6 |
| Positive | 268 | 65.4 |
| Total | 410 | 100 |

**Table 4. Mothers' level of practice in preventing diarrhoea**

| Practice level | n | % |
|---|---|---|
| Poor | 237 | 57.8 |
| Good | 173 | 42.2 |
| Total | 410 | 100 |

facility, and 347 (84.6%) want immediate treatment. During an episode of diarrhoea, 251 (61.2%) mothers said they want children to receive ORS, 344 (83.9%) want other fluids, 332 (81%) preferred breastfeeding and other fluids. Table 3 shows mothers' attitudes to diarrhoea.

**Practices on the prevention of diarrhoea**

Most mothers (392) had breastfed their children of whom 183 (46.7%) had breastfeed for 23 months. At the time of the survey, 263 (64.1%) mothers were partially breast feeding, and 193 (47.1%) were giving powder milk.

On hygiene the mothers reported the following practices:

- 330 (80.5%) wash their hands before preparing food and eating, of whom 339 (82.7%) use soap,
- 229 (55.9%) treat their water, of whom 170 (74.2%) add chlorine,
- 377 (92%) cover their water containers,
- 408 (99.5%) have latrines of which 403 (98.8%) were public ones.

Table 4 ranks the mothers' levels of practice.

**Prevalence of diarrhea**

In the previous two weeks 236 (57.6%) mothers said that their children had had diarrhoea (Figure 1)

**Association of variables**

Association was observed between the following variables: Education versus Knowledge ($X^2$ = 24.8, P = < 0.000), age versus Attitude ($X^2$ = 16.4, P = < 0.000), Education versus Practice ($X^2$ = 20.8, P = < 0.000) and Income versus Diarrhoea ($X^2$ = 16.6, P = < 0.007).

Table 5 shows there is a strong association between knowledge and level of education. Illiterate mothers tend to have low knowledge (standardized residual = 3.31) compared to those with secondary education (standardized

**Table 5. Cross-classification of mothers' knowledge of diarrhoea and education, with expected frequencies and standardized residuals**

| | Knowledge | | | $X^2$ | P- value |
|---|---|---|---|---|---|
| **Education** | Low | Medium/High | Total | | |
| **No schooling** | 150 | 66 | 216 | | |
| | 133.8 | 82.2 | | | |
| | 3.31 | -3.31 | | | |
| **Primary** | 84 | 55 | 139 | | |
| | 86.1 | 52.9 | | 20.63 | < 0.001 |
| | -0.45 | 0.45 | | | |
| **Secondary and above** | 20 | 35 | 55 | | |
| | 34.1 | 20.9 | | | |
| | -4.20 | 4.20 | | | |
| **Total** | 254 (62%) | 156 (38%) | 410 | | |

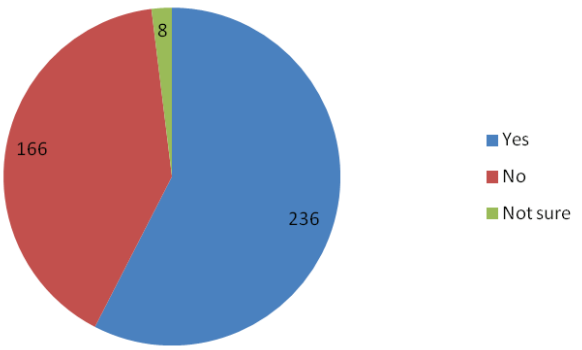


*Figure 1. Prevalence of diarrhea among under-five children*

**Table 6. Mothers' attitude to diarrhoea and age cross tabulated frequencies, with expected frequencies and standardized residuals**

| | Attitude | | | $X^2$ | P- value |
|---|---|---|---|---|---|
| **Age** | Negative | Positive | Total | | |
| **≤ 34** | 98 | 230 | 328 | | |
| | 113.6 | 214.4 | | | |
| | -4.06 | 4.06 | | 16.39 | < 0.001 |
| **>35** | 44 | 38 | 82 | | |
| | 28.4 | 53.6 | | | |
| | 4.06 | -4.06 | | | |
| **Total** | 142 (35%) | 268 (65%) | 410 | | |

residual = -4.20). Overall about 4 in 10 mothers have medium to high knowledge of diarrhoea.

Table 6 shows that younger mothers exhibit more positive attitudes (standardized residual = 4.06) than older ones (-4.06). This result can also be linked to education, as younger mothers tend to be more educated than older ones. Moreover, about 2 in 3 mothers have positive attitudes to diarrhoea.

Table 7 shows that mothers with no schooling have poor practices in preventing diarrhoea (standardized residual = 3.85) compared to those with primary education (standardized residual = -3.93). This implies some level of education does improve mother's practice to prevent diarrhoea. About 2 in 5 mothers show good practice in preventing diarrhoea among children.

Cases of diarrhoea that occurred within the last 15 days of the survey were reported more by mothers without income (Table 8) (standardized residual = 5.9) than by either low income mothers (standardized residual = -5.2) or those with medium to high income (-2.53).

## DISCUSSION

Our study is first of its kind; no similar study had been conducted previously in South Sudan.

More of our mothers: know the correct definition of diarrhoea, its causes and signs, and use of ORS compared to those in a 2010 survey in Sudan [8]. There was a strong association between mothers' knowledge and level of education. Illiterate mothers tend to have low knowledge compared to those with secondary education. (Table 5); this would suggest the need to support female education because in South Sudan prevalence of illiteracy is very high especially among females [9], also majority of our mothers/ care givers have not had any schooling.

**Table 7. Mothers' practice and education cross tabulated frequencies, with expected frequencies and standardized residuals**

| | Practice | | | $X^2$ | P-value |
|---|---|---|---|---|---|
| **Education** | Poor | Good | Total | | |
| **No schooling** | 144 | 72 | 216 | | |
| | 124.9 | 91.1 | | | |
| | 3.85 | -3.85 | | | |
| **Primary** | 59 | 80 | 139 | | |
| | 80.3 | 58.7 | | 20.7 | < 0.001 |
| | -3.93 | 3.93 | | | |
| **Secondary and above** | 34 | 21 | 55 | | |
| | 31.8 | 23.2 | | | |
| | 0.08 | -0.08 | | | |
| **Total** | 237(58%) | 173(42%) | 410 | | |

Younger mothers exhibited more positive attitudes than older ones. This result can also be linked to education, as younger mothers tend to be more educated than older ones.

Most of our mothers stated that they had breast fed their children; which was consistence with another study in South Sudan [10]. There was no any significant association found between breast feeding and diarrhoea, but there was between mother's income and child's diarrhoea. Cases of diarrhoea that occurred within the last 15 days of the survey were reported more by mothers without income

**Table 8. Diarrhoea incidents and mothers' income cross tabulated frequencies, with expected frequencies and standardized residuals**

| | Diarrhoea | | | | $X^2$ | P- value |
|---|---|---|---|---|---|---|
| **Income Level** | Yes | No | Not ure | Total | | |
| **No Income** | 221 | 122 | 4 | 347 | | |
| | 199.7 | 140.5 | 6.8 | | | |
| | 5.9 | -5.16 | -2.8 | | | |
| **Low Income** | 8 | 31 | 2 | 41 | | |
| | 23.6 | 16.6 | 0.8 | | 24.7 | < 0.001 |
| | -5.2 | 4.8 | 1.4 | | | |
| **Medium/High Income** | 7 | 13 | 2 | 22 | | |
| | 12.7 | 8.9 | 0.4 | | | |
| | -2.53 | 1.83 | 2.63 | | | |
| **Total** | 236 (58%) | 166 (40%) | 8 (2%) | 410 | | |

than by either low income mothers or those with medium to high income. This means that even a small income for a mother can reduce the incidence of diarrhoea in children.

Most of our mothers reported washing their hands before preparing food and eating which was better than findings in IDPs camps in Kabul [11]; most used soap and water which was similar with another survey in South Sudan [12]. These similarities and differences may be attributed to differences and similarities in access to health education and other factors, for example, Juba IDPs were more exposed to health education especially on topics related to hygiene and sanitation in the community and in health facilities.

From Table 7 it is clear that mothers with no schooling have poor practices in preventing diarrhoea compared to those with primary education. This again implies the importance of mothers' education in preventing diarrhoea among their young children.

## CONCLUSION

Many mothers need more knowledge, better attitudes and practices in order to improve the prevention and management of their children's diarrhoea. The associations between knowledge, attitudes and practices all indicate the need for increased education and schooling of South Sudanese women and girls.

**Acknowledgements**

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The latest Scaling Up Nutrition (SUN) Newsletter reports on WHO's support for stabilization centres to treat malnourished children in South Sudan, and gives data on the progress of South Sudan towards the SUN movements goals, and nutrition-related statistics.

# Importance of ultrasonography in evaluating eye injuries: data from Birnin Kebbi, Nigeria

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**Background:** Ocular trauma remains an important cause of poor vision and blindness world-wide. Management of ocular trauma with haze media poses a great challenge to ophthalmologist. However the potential role of B scan ultrasonography in the diagnosis and management of a patient with hazy or non-visible posterior segment following ocular trauma has not been fully explored.

**Objective:** To describe the use of B scans ultrasound (US) in the diagnosis and management of posterior segment ocular trauma in patients with media opacities.

**Methods:** This was a 5-year retrospective study of patients with ocular trauma who presented at the Department of Ophthalmology Federal Medical Centre, Birnin Kebbi, Kebbi State, Nigeria and sent for B scan US because of hazy or non-visible fundus. The ultrasound diagnosis was compared with clinical diagnosis. The data were analysed with SPSS 20 Version.

**Results:** A total of 119 patients with ocular trauma had B scan US; 62.2% were male; the mean age was 34.2±20.1years. Patients were either students (27.7%) or full-time housewives (27.7%). Ocular injury was unilateral in 103 (86.6%) participants and bilateral in 13 (13.4%) participants. The right eye, 75 (63%) was most affected by the trauma. Most of the trauma 116 (97.5%) were due to closed eye injury. Ocular B scan was normal in 3 (2.5%) of the patients. The correlation between clinical diagnosis and B scan US diagnosis was 58.9%.

**Conclusion:** B scan ultrasonography enabled diagnosis of 97.5% of ocular injuries not diagnosed at clinical examination due to haze media. Therefore the importance of B scan ultrasonography in the management of ocular trauma with hazy media is underscored.

**Keywords:** B scans ultrasound; ocular trauma, haze media, Nigeria

## INTRODUCTION

Ocular injury is an important cause of poor vision and blindness worldwide [1]. Ocular trauma is more common among males due to their aggressive nature and curiosity [1].The World Health Organization reported 1.6 million people were blind due to eye injuries [2]. The prevalence of traumatic eye injury ranges from 2%-6% world-wide, and 97% is due to blunt trauma [3]. The common causes of ocular injury include motor vehicle incident, sports, falls, and home and industrial accidents [3, 4]. A trivial ocular trauma may result in blindness from consequences such as retinal detachment, macular hole and vitreous haemorrhage.

Proper eye assessment of the posterior segment following ocular trauma may not be possible due to opaque media. This challenge can be overcome by the use of B scan ultrasonography (US).

B scan US was first used in 1958 [5] and since then it has played an important role in the diagnosis of ocular diseases. It is non-invasive, safe procedure for evaluating ocular injury in patients with haze or non-visible posterior segment [6, 7]. If done by experienced radiologist/ultrasonographer, B scan gives more than 90% specificity and 90% sensitivity in the diagnosis of ocular injury [8]. It can give better spatial resolution in the evaluation of choroid, retina and vitreous compared to MRI and CT Scans [9]. Despite its proven high sensitivity, low cost and high safety profile, ocular ultrasonography has been used less frequently to aid diagnosis of posterior segment injuries in patients with hazy media

The aim of this study was to describe use of B scan US in the diagnosis of ocular trauma using data from the Department of Ophthalmology Federal Medical Centre, Birnin Kebbi, Kebbi State Nigeria.

## METHODS AND MATERIALS

This was a 5-year retrospective study (from 1st January

**Table 1. Nature of injury and eye involved in ocular trauma**

| Eye affected | Type of trauma | | |
|---|---|---|---|
| | Closed globe n | Open globe n | Total n |
| **Right eye** | 73 | 2 | 75 |
| **Left eye** | 30 | 1 | 31 |
| **Both eyes** | 13 | 0 | 13 |
| **Total** | **116** | **3** | **119** |

**Table 2. Comparison of clinical and ultrasound diagnosis of the 119 patients**

| Eye condition | Eye condition | Ultrasound diagnosis |
|---|---|---|
| | n (%) | n (%) |
| Vitreous haemorrhage | 6 (5.0) | 8 (6.7) |
| Cataract | 75 (63.0) | 59 (49.6 |
| Retinal detachment (RD) | 11(9.2) | 10 (8.4) |
| Traumatic Uveitis | 17 (14.3) | 14 (11.8) |
| Uveitis + RD | - | 2 (1.7) |
| Traumatic +RD | 1 (0.8) | 12 (10.1) |
| Traumatic +RD+ vitreous haemorrhage | - | 3 (2.5) |
| Hyphaema | 7 (5.9) | 7 (5.9) |
| Cornea laceration | 1 (0.8) | 1 (0.8) |
| Retinal haemorrhage | 1 (0.8) | - |
| Normal ocular scan | - | 3 (2.5) |
| **Total** | **119 (100)** | **119 (100)** |

2010- 31st December 2015) of patients who presented through Accident and Emergency department (A&E) or directly to our eye clinic on account of ocular injury. The patients were evaluated and then sent to Radiology Department for B scan US because of hazy media which prevented the posterior segment view. A detailed history was taken (duration of trauma, circumstance surrounded the trauma, ocular symptoms, past ocular history, treatment offered before presented at our hospital, visual acuity at presentation, anterior segment examination) and ocular assessment with ophthalmoscope and slit lamp were done on all patients.

Inclusion criteria for B scan ultrasonography were patients that presented with ocular trauma with poor view of the posterior segment on examination with either direct or indirect ophthalmoscope. Those with penetrating eye injury had B scan US after ocular surgery. Exclusion criteria were patients with severe ocular injury that warranted destructive ocular surgery.

The information extracted from the patient's folder was: age, sex, occupation, religion, laterality of the eye involvement with trauma, type of ocular trauma (open or closed), and clinical and ultrasound diagnosis. The data were double entered and analysed with SPSS version 20 (SPSS Corp, Chicago, IL, USA). The analysis was done using simple frequency proportions.

Ethical clearance for the study was obtained from the Research and Ethical Committee of Federal Medical Centre, Birnin Kebbi, Kebbi State.

## RESULTS

A total of 8,450 ocular trauma patients were recorded during the study period of which 1331 had clear media while 119 patients, in whom clinical examination of fundus was not possible because hazy media, had B scan US; 74 (62.2%) were males and 45 (37.8%) were females. The mean age was 34.2 years with a range of 1- 69 years; 46 (38.7%) were aged between 25-49 years. Most of the patients were students 33(27.7%) or full term house wives 33 (27.7%). Ocular injury was unilateral in 103(86.6%) participants and bilateral in 13(13.4%). The right eye was mostly affected by trauma, 75 (63%) Both eyes were affected in 13 (10.9%) of patients. Most 116 (97.5%) of the trauma were due to closed eye injury (Table 1). Clinical diagnosis correlated with B scan US diagnosis (Pearson correlation 0.589; p=0.000)

Table 2 compares the clinical and B scan US diagnoses of different types of eye trauma.

## DISCUSSION

Most of study participants were asked to do B scans US because of non-clinical clear view of posterior eye segment following ocular trauma similar to previous reports [1, 11, 13]. In this study the right eye was most affected which is in agreement with previous studies [1, 11, 13].

Most of the injuries were non-perforating and so similar to other reports [10-14].

The causes of hazy media as found in this study were mostly due to cataract (50%) and least to vitreous haemorrhage (9%). This is different from that reported in Ilorin [10] and Benin City Nigeria [14] which found the main cause of hazy media to be retinal detachments. This difference may be due to the difference in the aetiology of ocular trauma. Out of the eleven vitreous haemorrhages diagnosed by B scan US, three were associated with RD, and this would have been missed without B scan US. This agrees with a previous study that B scan US gave additional information to clinical diagnosis which is crucial in informing interventions that would prevent post traumatic visual loss [15]. Clinical diagnosis before B scan US of traumatic RD was only 0.8% which increased

to 10% with B scan US. This supported the usefulness of B scan US in a patient with traumatic ocular injury with haze media. The correlation between clinical diagnosis and B scan US diagnosis was just 58.9%, which is higher than 35.5% reported from Enugu [16] but, lower than other studies from Nigeria [14].

## CONCLUSION

B scan US can play a major role in the management of ocular trauma with hazy media. The correlation between clinical diagnosis and B scan US diagnosis was only 58.9% implying that in almost 41% of instances ocular ultrasonography may make a finding that would have been missed by clinical examination. Hence it is an important investigation in all patients with close globe injury that have hazy media.

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**NOTE:** Although B scan US is not widely available in sub Saharan Africa it should be encouraged where possible.

Do you know the main causes of maternal and newborn mortality and morbidity? Find answers on page 79.

# Acute spontaneous tumour lysis syndrome in a patient with non-Hodgkin's lymphoma: a rare case report

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Metabolic disorders such as hyperuricaemia and hyperuricaemic renal failure, hyperkalaemia and hyperphosphataemia in hematological malignancies with high tumour burden and high turnover and rarely in solid malignancies are defined as acute tumour lysis syndrome. It frequently occurs after treatment (chemotherapy / radiotherapy) and rarely occurs before treatment. In this case, it is called spontaneous acute tumour lysis syndrome. We aimed to remind this rare clinical entity with high mortality risk by presenting a patient with non-Hodgkin's lymphoma and acute spontaneous tumour lysis syndrome.

**Key Words:** Acute spontaneous tumour lysis syndrome, non-Hodgkin lymphoma, renal failure

## INTRODUCTION

Tumour lysis syndrome (TLS) is a serious complication of cancer treatment. Acute TLS, which is a clinical picture with life-threatening metabolic disorders and caused by rapid destruction of tumour cells, occurs in haematological malignancies with large tumour mass (acute lymphocytic leukaemia, non-Hodgkin's lymphoma) and rarely in solid malignancies. Metabolic disorders are characterized by hyperuricaemia, acute renal failure, hyperkalaemia, hyperphosphataemia and hypocalcaemia. Although TLS is most commonly seen in chemosensitive tumours in the first days of chemotherapy or radiotherapy, it may rarely develop spontaneously in the tumours with high proliferation.

Acute spontaneous tumour lysis before chemotherapy is rarely encountered in acute leukaemia and high-grade non-Hodgkin's lymphoma which shows high-grade mitotic activity [1-3]. There is a positive correlation of the development of acute renal failure (ARF) with tumor size, and elevated serum LDH and uric acid levels [2].

## CASE REPORT

An 80-year-old male patient was admitted to the general internal medicine clinic due to a swelling in his neck. It was found out that the swelling in his neck had been there for about 6 months, he had lost 7-8 kg within the last 6 months, and his night sweats had increased for the last one month. Bilaterally palpable cervical and supraclavicular lymph nodes were detected on physical examination. His past medical history revealed that the patient underwent subtotal gastrectomy in 2006 due to gastric adenocarcinoma ($T_1N_0M_0$). He did not receive adjuvant chemotherapy and radiotherapy since it was early stage disease. The supraclavicular lymph node of the patient who was hospitalized in our clinic with the pre-diagnosis of lymphoma was excised. Histopathological diagnosis was CD20 positive diffuse large cell non-Hodgkin lymphoma – a form of high-grade lymphoma. Staging positron emission tomography (FDG-18 PET / CT) showed multiple lymph nodes in the supradiaphragmatic and infradiaphragmatic lymphatic stations with conglomerated-mass appearance and intense / hyperintense metabolic changes, and also in the spleen, and foci in the left proximal humerus, left eighth costa and left part of sacrum in the skeleton.

Spontaneous tumour lysis syndrome was suspected in the patient who had hyperuricaemia, azotaemia, and hyperphosphataemia in blood and who developed oliguric acute renal failure rapidly on the third day of admission. (Table 1) Intravenous fluid replacement, urine alkalization, forced diuresis and allopurinol therapy were initiated immediately. Despite the treatment, severe metabolic acidosis developed and the patient received hemodialysis treatment. However, the clinical picture of acute renal failure worsened and mental confusion developed rapidly, and the patient died in the intensive care unit on the fifth day of treatment.

## DISCUSSION

In haematologic and solid tumours, metabolic disorders such as hyperuricaemia and hyperuricaemic renal failure, hyperkalaemia, hyperphosphataemia with hypocalcaemia

are defined as acute tumour lysis syndrome. Spontaneous occurrence of this syndrome before treatment is rarely observed while it frequently occurs after treatment. Known risk factors for tumor lysis syndrome include elevated LDH ( lactic dehydrogenase) level which is twice more than normal, solid tumors with high proliferation ability, total tumour volume larger than 10 cm, high tumour burden sensitive to chemotherapy or radiotherapy and high white count acute leukaemia (WBC>100,000 cell/µl).

Spontaneous acute tumour lysis syndrome developing without any precipitating factor was reported in the literature for Burkitt's lymphoma [3], diffuse large B cell lymphoma and Richter's syndrome [4], anaplastic large T-cell lymphoma [5], acute myeloid leukaemia [6] acute lymphoblastic leukaemia [7], metastatic germ cell tumour [8], lung adenocarcinoma [9], squamous cell carcinoma [10], breast cancer [11], gastric cancer [12], cholangiocarcinoma [13], myelofibrosis [14], multiple myeloma [15] and myelodysplastic syndrome [16].

What is laid emphasis on the pathogenesis of tumour lysis syndrome is the release of intracellular metabolites (nucleic acid, potassium, phosphorus, uric acid) and cytokines after rapid tumour necrosis. These metabolites cause hyperuricaemia, hyperphosphataemia and hyperkalaemia in blood. The precipitation of calcium-phosphate crystals and uric acid crystals, which develop secondarily to hyperphosphataemia, in the renal tubules causes obstructive nephropathy and renal failure. This metabolic state may cause cardiac dysrhythmias, mental confusion, seizure and sudden death other than acute renal failure. Meanwhile, released cytokines may cause systemic inflammation and multiple organ failure.

Appropriate intravenous fluid replacement, urine alkalization, correction of metabolic acidosis and electrolyte imbalance, and decreasing uric acid synthesis form the basis of treatment in the patients with acute tumor lysis. Also, rasburicase, a recombinant urate oxidase inhibitor, was shown to reduce mortality and morbidity in acute tumour lysis [17]. Haemodialysis can be performed in the patients with life-threatening hyperkalaemia or persistent oliguria despite aggressive intravenous hydration.

## CONCLUSION

Acute spontaneous tumor lysis syndrome is a rare metabolic emergency with high mortality risk. For early recognition and prevention of this syndrome, it should be kept in mind that it may occur in the patients with high risk before chemotherapy treatment and may have a mortal course.

**Table 1. Biochemical and hematological parameters of our patient**

| Parameters | 1st day | 3th day | 5th day |
|---|---|---|---|
| Urea (mg/dl) | 83 | 112 | 182 |
| Creatinine(mg/dl) | 1 | 1.6 | 3.1 |
| Uric acid (mg/dl) | 6.5 | 8.3 | 9.3 |
| Potassium (mEq/L) | 4.9 | 4.8 | 5.8 |
| Calcium (mg/dl) | 9.8 | 10.3 | 10.2 |
| Phosphorus(mg/dl) | 3.5 | 5.4 | 6.1 |
| LDH(IU/L) | 737 | 1100 | 1831 |
| ALP (IU/L) | 250 | 281 | 584 |
| Haemoglobin (gr/dl) | 8.3 | 10.7 | 10.5 |
| Haematocrit (%) | 26.4 | 32.8 | 32.2 |
| WBC (cell/µl) | 12100 | 16100 | 18600 |
| Platelets (cell/µl) | 121000 | 111000 | 53000 |

*LDH : Lactic dehydrogenase*

*ALP : Alkaline phosphatase*

*WBC : White blood cells*

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## World Breastfeeding Week 1 - 7 AUGUST 2018

The World Alliance for Breastfeeding Action (WABA) coordinates the annual World Breastfeeding Week campaign, working closely with many organisations and individuals. In a world filled with inequality, crises and poverty, breastfeeding is the foundation of lifelong good health for babies and mothers. The slogan of World Breastfeeding Week (WBW) 2018 is Breastfeeding: Foundation of Life.

World Breastfeeding Week 2018 focuses on:

1. **Preventing malnutrition in all its forms:** Malnutrition refers both to undernutrition and to overweight and associated non-communicable diseases. This double-burden of malnutrition has major consequences on short- and long-term health.
2. **Ensuring food security even in times of crisis:** Food security means access to food for all people at all times. It is affected by availability to food, affordability and different crises e.g. hunger, natural disasters, conflict and environmental degradation.
3. **Breaking the cycle of poverty:** Poverty is affected by several factors including hunger and malnutrition. Hunger pushes poor families into a downward spiral and prevents them from breaking out of the poverty cycle.

The WABA partners include: the Academy of Breastfeeding Medicine (ABM), International Baby Food Action Network (IBFAN), International Lactation Consultant Association (ILCA), La Leche League International (LLLI), United Nations Children's Fund (UNICEF), World Health Organisation (WHO), Food Agricultural Organisation (FAO) and several other international organisations.

For more information on World Breastfeeding Week 2018, including resources and materials for breastfeeding promotion, see the WABA Website.

The poster on the back cover is reprinted with permission from **10 steps to successful breastfeeding** published by the World Health Organization 2018 (accessed 24 July 2018)

# Pica as a persistent eating disorder associated with iron deficiency anaemia: two case reports

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**Introduction:** Pica is a mysterious condition characterised by patients developing cravings for non- nutritive substances that may escalate into serious medical complications. We present two case reports with a somewhat unusual nature of presentation attributed to iron deficiency. The first is a 25-year old African woman with abnormal uterine bleeding presenting with a fondness for eating clay, cold drinks, and icepacks. The second is 15- year old African girl who presented with bleeding from the nose, habitual smelling of soil, consuming ice packs and chewing rubber bands. Both presented with haematological parameters diagnostic of iron deficiency anaemia.

**Conclusion:** Despite being practised for centuries, the clinical significance of pica symptoms is often not recognised particularly among the younger physicians. Both our patients responded well to managing the primary cause of blood loss and iron supplementation. We are convinced that pica is an important pointer to iron deficiency and clinicians should suspect occult blood loss in a patient presenting with pica symptoms.

**Keywords:** pica, eating disorder, iron deficiency anaemia, case report.

## INTRODUCTION

Pica is typically defined as the persistent ingestion of non-nutritive substances for at least one month at an age when this behaviour is developmentally inappropriate. The definition is occasionally broadened to include the chewing non-nutritive substances. Pica may be benign, or it may have life-threatening consequences [1]. The condition is more frequent in those with autism and intellectual disabilities. It has been reported in all ages, and both sexes, and is particularly prevalent among young children, people of low socio - economic status, and pregnant women as well as in cases with micronutrient deficiencies such as iron and zinc [1–4].

Although the condition has been documented since antiquity [5], many sufferers are diagnosed with life-threatening complications such as intestinal obstruction, electrolyte imbalances, renal and liver damage [4,6].

Pica may present in many forms including the ingestion of ice cubes (pagophagia), clay (geophagia), dried pasta (amylophagia), chalk, paste, starch, kayexalate resin (resinphagia), lemons, tomatoes, cigarette butts, hair, lead, and laundry starch [2,3,7,8].

Most physicians believe pica is an effect rather than a cause of iron deficiency [9]. Pathogenesis of pica is not well understood through the risk factors are well documented. The recognition of pica is often missed so it is important to have a high index of suspicion when people with known risk factors show suggestive signs and symptoms [10].

We describe two patients who presented with a habit of ingesting non-nutritive substances which was associated with iron deficiency and blood loss. All patients met criteria for pica under the DSM-5 criteria [1] and they all responded well to treatment.

## CASE SERIES

### Case 1:

A 25-year old female college graduate presented with a six-month history of abnormal uterine bleeding. The pattern of menstrual bleeding was irregular, prolonged with up to 14 days period between cycles. She had no lower abdominal pain, per vaginal discharge, dyspareunia, or dysmenorrhea and did not use any contraceptives.

Over the past two months she had progressively increased the habit of eating clay, cold drinks and ice packs: behaviour that was accompanied by dizziness and awareness of her heart beat.

Physical examination: a young female who was pale and wasted but fully conscious without jaundice or lower limb oedema. The systemic examination was normal except for a blood pressure of 170/100 and an ejection systolic murmur. Vaginal examination revealed a blood-stained glove.

Laboratory investigations: haemoglobin (Hb) was7.8g/dl. A peripheral blood smear showed anisocytosis and pencil-shaped red blood cells. Abdominal ultrasound and stool analysis was done from a collection of a freshly voided stool which was then processed using direct technique (saline and iodine mounts) to identify intestinal parasites about which all the findings were all unremarkable.

**Case 2:**

A 16-year-old school girl presented with a history of intermittent epistaxes. On arrival she had profuse bleeding that required etamsylate injection and adrenaline nasal pack. She reported a history of periodic dizziness with an episode of fainting. There was no history of bleeding from the gums, easy bruising or familial bleeding disorders.

Over the course of these symptoms she had uncharacteristically been fond of the smell of soil and consuming ice packs followed by chewing rubber bands.

Examination showed that she was pale with active bleeding from the nose. All vital signs were stable. The rest of the systemic examination and mental status evaluation were unremarkable.

Full blood count revealed normal platelet counts but the Hb was 6.8g/dl; the peripheral blood smear showed anisocytosis with pencil-shaped cells. Clotting time was 5 minutes under simplate II technique skin bleeding.

She was discharged on etamsylate tabs and haematinics containing iron and vitamin C. Follow-up two weeks later she was no longer complaining of bleeding, but she was still chewing rubber bands. Hb was 8g/dl. The treatment continued for further two weeks by which time the Hb had risen to 11g/dl, and all the symptoms had subsided.

## DISCUSSION

Pica remains a challenging clinical condition despite being documented for centuries [5]. The condition is often associated with iron deficiency with the majority of cases responding well to iron replacement [9]. It is proposed that the pica behaviour is possibly a mechanism to compensate for a nutritional deficiency. However the nature of some of the ingested items such as ice, rubber, or dirt lack any nutritional value [12]. A plausible hypothesis regarding pica suggests that the appetite-regulating brain enzymes, being altered by an iron or zinc deficiency, trigger specific cravings. Another idea is that eating clay or dirt helps relieve nausea, control diarrhoea, increase salivation, remove toxins and alter odour or taste perceptions during pregnancy [13].

Our cases fuel the debate on the role of iron in the onset of pica. Iron deficiency is usually considered a symptom rather than a cause. However, the beginning of pica symptoms in our cases were preceded by a history blood loss and this may suggest otherwise. These two cases vary from the traditional presentation of pica by exhibiting an uncommon form of eating ice packs and even a rarer form of chewing rubber bands. It is held that swallowing of ice cubes maybe explained by the analgesic properties of ice cubes to relieve glossal pain associated with iron deficiency but it is not clear why a patient would develop a preference substances that have no analgesic properties such as the rubber bands [9].

Eating behaviour patterns suggestive of pica are also commonly associated with people suffering from schizophrenia, obsessive-compulsive disorder and at times of family stress [14, 15]. Alternatively, the behaviour may just be a preference and enjoyment of the taste and texture of the items being consumed [12].

Pica symptoms usually go unnoticed until a physician inquires explicitly about them or when the associated complications occur [4]. Interestingly, though, for our cases, the pica behaviour was noticed by caretakers who thought the behaviour had a medical significance and sought medical attention. It is thus crucial to inquire about pica especially in the presence of any form of bleeding, malignancies, and in cases of pregnancy, where the condition is not uncommon and if not properly managed, may put both the mother and the foetus at risk [16].

**Consent:** Written informed consent was obtained from the patients

**Conflict of interest:** None

**Acknowledgments:** We acknowledge the staff of Paradise specialised clinic for their support.

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## Improving maternal and child health through media in South Sudan: final evaluation (BBC Media Action, 2017)

**July 7, 2018 by C4D Network**

Following decades of civil war, South Sudan still lacks a functioning healthcare system and has some of the worst maternal and child health indicators in the world. To help address this, between 2012 and 2017 BBC Media Action produced and broadcast a range of national radio programmes seeking to influence knowledge, attitudes, discussion and the social norms most likely to drive improvements in the RMNCH-related behaviours of women and their families. It also worked to strengthen the capacity of local radio stations to produce similar high-quality, audience-driven health programming.

This report presents a synthesis of all research and analysis completed under this project. In brief, it finds that the challenging country context (e.g. the limited availability of quality healthcare nationally and the ongoing humanitarian crisis) limited the extent to which the project was able to contribute to improved health outcomes. Despite this, audiences were generally optimistic about the shows' influence and value, and reported gaining knowledge and making some behavioural changes as a result of tuning in.

Click here for full evaluation.

# Proceedings of the Bentiu International Health Symposium

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## INTRODUCTION

Healthcare workers from across the spectrum of health provision in Bentiu, South Sudan participated in a symposium on 28th June 2018. The purpose of the meeting was to discuss problems and share knowledge amongst health organisations and professionals providing care in Unity State. Nearly fifty professionals, including doctors and nurses from South Sudan, Ghana, Zimbabwe, Mongolia, Japan, India and the United Kingdom (UK) participated in the symposium. The meeting was organised and hosted by the UK-provided UN Level 2 Hospital staff, in conjunction with the UN humanitarian Health Cluster and Bentiu Hospital staff. Hiroko Hirahira, the Head of Field Office for the UN in Bentiu, welcomed the local and international experts to the symposium, and further explained that bringing the participants together was an essential element to improve the health of the people in Unity State. She described how building a health community was a core objective of her mission and of the symposium.

The people of Unity State have experienced a protracted humanitarian emergency, including famine, conflict, economic crisis and disease outbreaks. Access to health services across the state is low with many people living several days by foot from the nearest medical office. The situation is exacerbated by the mass displacement of people who have fled their own homes for safety. The UN estimates that there are over 500,000 internally displaced people (IDPs) in Unity State alone [1]. The international community has responded to this crisis in Rubkona County, by establishing the Bentiu Protection of Civilians (PoC) site to ensure the security of at least 120,000 IDPs at any one time. Clean water, sanitation and hygiene are significant challenges within the PoC site, contributing to outbreaks of vector borne diseases, acute watery diarrhoea and hepatitis. The displaced people are also at significant risk of malnutrition, rabies and endemic diseases, such as TB and HIV/AIDS. Furthermore, many adults and children are in psychological distress due to the direct and indirect effects of conflict, disruption in family life and loss of normal education.

*Figure 1. The symposium was an interactive forum to share knowledge and exchange ideas about health in Unity State (credit: Rory Rickard, 2018).*

The Bentiu Health Symposium was an interactive forum to share knowledge; stimulate and exchange ideas, and identify what efforts are needed to address the crisis (Figure 1). The symposium highlighted the importance of collective experience in a situation where published health surveillance data are scarce or incomplete. The participants agreed that it was necessary to understand the local situation, constraints and difficulties in order to identify what can be done next. The following sections provide an overview of the topics presented and the issues that were discussed.

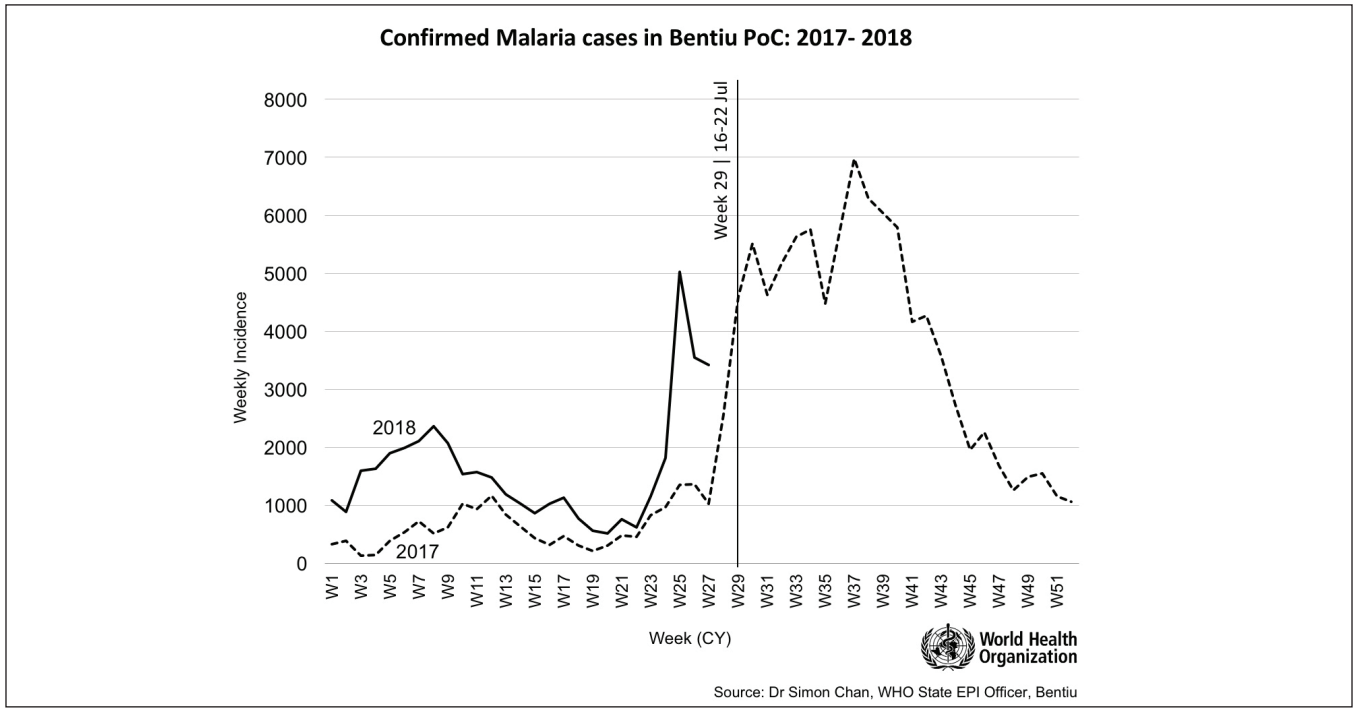


*Figure 2. Trends in confirmed Malaria cases in Bentiu PoC: 2017 - 2018*

## THE FIGHT AGAINST DISEASE IN UNITY STATE

The first session was dedicated to tuberculosis (TB) and was opened by Igama Innocent, Charles Lekson and Pouk Ngueny from the International Organisation for Migration. Igama Innocent explained what determines the TB case definitions used in South Sudan – the site of the disease; sputum or culture status; and the patient's history of previous treatment. This allows proper case registration and notification, which then determines the required treatment. Charles Lekson, an experienced TB/HIV nurse, explained how a TB treatment card simplified the disease management into a workable protocol for a health care system where access to doctors is low. The card records disease site - pulmonary/extra-pulmonary; type of patient (age and weight); sputum smear result; HIV status; and drug treatment. Pouk Ngueny, a community health worker, summarised the key messages. Dr Andrew Williams, Consultant Physician from the UK, gave an update on advances in the diagnostic testing for TB. This focused on Whole Genome Testing, a novel technique that can rapidly determine the exact mycobacterium type and drug resistance against all first and second-line anti-tuberculous drugs. Once this becomes available in a portable platform, it will mean patients can be treated with the right medication from the time of diagnosis. This makes drug susceptibility testing obsolete, in turn reducing the spread of disease and boosting the fight against drug resistance [2].

Malaria remains one of the biggest health challenges in Unity State, associated with long-term morbidity, significant economic consequences and the leading preventable cause of death. Dr Simon Chan reported the WHO data showing the prevalence of active malaria within the Bentiu PoC site could rise to 7,000 cases per week during the rainy season (Figure 2). Eradication remains the goal with prevention, rapid diagnosis and effective treatment the mainstays of control, with effective co-ordination and monitoring critical to the success of these programmes. WHO guidelines are followed in the PoC site, with diagnosis using rapid diagnostic tests (RDT); and thick and thin blood films. Treatment follows with oral artemisinin-based combination therapy (ACT) for the majority of patients and intravenous artesunate or quinine for complicated or severe cases. Dr Thomas James, Consultant Emergency Physician from the UK, updated us on current research about malaria. This included initiatives to accelerate the development of drugs that will combat resistance, improve compliance and realise the ambition of a single medication which will both treat malaria and provide ongoing prophylaxis. One recent clinical trial has reported promising results with an oral insecticide administered to patients with malaria, which kills the biting mosquitos without significant harm to humans [3].

## SEXUAL AND GENDER BASED VIOLENCE

Miss Rungano Bakasa of the Nonviolent Peaceforce gave a presentation on the barriers that survivors of Sexual and

*Figure 3. The participants of the Bentiu International Health Symposium outside the new UN Level 2 Hospital (credit: Simon Turner, 2018).*

Gender Based Violence (SGBV) face in accessing health services within Bentiu PoC site. SGBV refers to non-consensual penetration of the vagina, anus or mouth with any body part. The majority of SGBV survivors are women, who are often at greatest risk of assault when leaving the PoC to collect firewood. The consequences of SGBV to the survivor can be far-reaching. Sexually transmitted infections (STIs) and psychological trauma are common. Assaults resulting in pregnancy may lead to abuse by family members, forced marriage and abandonment of newborn children. Health services within the PoC can provide emergency contraception, post-exposure prophylaxis against HIV, STI treatment and psychological support. However, many SGBV survivors feel ashamed and fear stigmatisation by their family and community if they seek help. Mistrust of PoC health agencies and a lack of literacy also constitute barriers to accessing medical care. Health workers should promote accessibility by ensuring that they are both non-discriminatory and confidential. The Nonviolent Peaceforce support and advise SGBV survivors to ensure they receive the treatment they require.

## WOMEN AND CHILDREN'S HEALTH

The symposium discussed the two biggest contributors to maternal mortality in South Sudan. Dr Frank Abebrese presented on Postpartum Haemorrhage (PPH) and Dr Giel Thidor discussed Hypertensive Disorders of Pregnancy. Common to both is the need for clear guidelines for management and referral between community clinics and hospital. The importance of Active Management of the Third Stage of Labour (AMTSL) to help reduce PPH was stressed and the way in which this is promoted at the community level. A number of available low-resource techniques for more severe cases, such as an intrauterine balloon tamponade device fashioned from a sterile glove and Foley urinary catheter were described. We also discussed the management of Vesicovaginal Fistula (VVF) and its prevention. It was felt that improvements in overall obstetric and midwifery care at every level should be a priority across all sections of society if this terrible condition is to be avoided in the future. Furthermore, the local doctors proposed that they could benefit from expert training in the management of VVF, either in South Sudan or by visiting international centres of excellence.

The afternoon featured a session by Dr Chandrakala Jaiswal, who presented the aims and research behind UNICEF's programme to improve early child development in Unity State [4]. The first 1,000 days programme, from conception to the child's second birthday, addresses this critical period when there is maximal neural development during life. The programme addresses both nutrition and the psychosocial well-being of children during this period, as one cannot work without the other. Good nutrition during pregnancy is essential to development of the foetus and child. Breast milk only is the preferred option for the first six-months of life, then complemented by nutritious foods whilst continuing to breast feed until the second birthday. Proper nutrition in the PoC site is supported with antenatal care, vaccinations, health screening, counselling and support to parents. Psychosocial well-being is also critical because there are high rates of distress amongst adults and children who have been exposed to conflict and internal displacement. Interventions are targeted to support parents, advocate children's rights, and secure good education for children by parents and teachers. For example, emotional and intellectual child development is promoted by UNICEF programmes by encouraging play, and promoting positive experiences with at least one parent or principal adult. Children born within the PoC site are vital to the future, which was appropriately guided by the quotation, "if we change the beginning of the story, we change the whole story" (Raffi Cavoukian, 2016).

## NEW HOSPITAL IN BENTIU

The Clinical Director of the UK-provided UN Level 2 Hospital in Bentiu, Professor Rory Rickard and the UK's senior Engineering Officer, Major Ben Sinclair provided an update and tour of the new UN Level 2 Hospital site. The new hospital has been built during 2017-2018 by a task force of Royal Engineers on behalf of the UK Government for the UN, with a completion date expected in October 2018. The medical facility will have an in-patient capacity of 20 beds and two intensive care beds with specialists in emergency care, medicine and trauma surgery. The hospital will also offer a primary care treatment centre, physiotherapy services, radiology and dentistry. Whilst the hospital's principal mission will be to provide care to the staff and organisations working on behalf of the UN, it will be a significant piece of infrastructure to assist the relief of the humanitarian crisis and is expected to last for many years with the right care and attention. Figure 3 shows a photograph of the symposium participants outside the new hospital.

## SUMMARY

The symposium, for the first time, brought together all healthcare groups, from South Sudanese government-provided healthcare facilities, national and international NGOs and UN medical staff. It highlighted the health risks in Unity State related to disease, SGBV, obstetric care and nutrition. Common to each of these challenges, the presentations identified that systems of care relevant to the situation in Unity State are required. Guidelines for care need to be robust and sufficiently straight-forward, such that care workers with limited training can provide evidence-based healthcare to large populations. Work and engagement is needed to produce these systems of care and to integrate them into the current practices in Unity State and the Ministry of Health, South Sudan. The discussion about midwifery and obstetric care illustrated how guidelines and training might help to reduce maternal and neonatal morbidity and mortality. For example, approved systems for transferring patients to facilities with higher levels of surgical, medical and obstetric services will help to achieve time-critical emergency care. These improvements can only occur if the health community has reliable communications, good transportation and security to transfer patients safely. These are goals that remain a priority for the government and international community.

Many of the participants observed that the optimal allocation of limited health resources is hindered by the scarcity of reliable surveillance information. The response to any humanitarian crisis could be helped with further data on nutrition, child growth, disease incidence, resistance to antimicrobial agents, obstetric problems and mental health. For example, reliable data could justify the case for investment in the most appropriate novel future technologies, such as genotyping for TB and other diseases, or novel medicines to prevent and treat malaria. The information can also be used to drive the training requirement for doctors, nurses and care workers in the region.

The symposium covered a broad range of topics and built new relationships between the different health organisations. We recommended that a regular forum to discuss difficult patient cases or complex health concerns in the Bentiu PoC site and across Unity State would be a worthwhile project. All the participants valued the meeting, departed with new friendships, and a sense of purpose and hope for the future.

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# My experience as an international student at the Southern Medical University in China

*Administrative building Southern Medical University (published with permission)*

*Panom Puok Duoth Kier*

My name is Panom Puok Duoth Kier. I was born in Nasir County, Upper Nile State, Republic of South Sudan. I graduated from Mekelle University School of Public Health with a Bachelor Degree in Public Health in 2009, and have a diploma in Public Health Nursing from Haramaya University, Ethiopia. I have experience in Public Health and Clinical Medicine in government and non-governmental organizations in South Sudan and Ethiopia.

Until recently I was an International Master of Public Health student in the Southern Medical University (SMU) in Guangzhou, China. I started this programme in September 2016 and completed it in June 2018. I would like to share my experience of being an international student at SMU.

SMU, formerly known as the First Military Medical University, was started in 1951; it is a Chinese institution of higher learning with its main campus in Guangzhou city, Baiyun District, while the second campus, known as the Shunde campus, is at Shunde. SMU became one of the key national universities in 1979. In August 2002, the university came under the jurisdiction of Guangdong Province and was renamed as Southern Medical University.

SMU has a long history of training foreign students especially from developing countries. The international training programme was started in 2008 and it is supported by the Ministry of Commerce of the People's Republic of China especially under China's Foreign Aid Fund. So the Master of Public Health (MPH) that I have studied was a two year academic programme under the sponsorship of the Ministry of Commerce and it is organized by Southern Medical University.

The curriculum is in English and was designed for professional personnel with different backgrounds and aims to improve national public health institutions, especially in the areas of public health and medical care systems, in the students' countries of origin. I feel so privileged to have had this opportunity as it will benefit me as well as my country. My batch is the second and I and my class mates are from 15 different countries from Africa, Asia and Latin America.

The curriculum for the MPH includes core and elective courses. The core courses are: Primary Chinese, Health Statistics and SPSS Soft Ware Application, Principles and Methods of Epidemiology, Advances in Tropical Medicine, Health Care Management, Acquisition and Management of Medical Information, Nutrition and Food Hygiene, Health Promotion and Health Education, Occupational Health and Safety, Field Study and Master Dissertation. Some of the elective courses are: Introduction to China, Introduction to Pre-Clinical Medicine, Toxicology, and Introduction to Clinical Medicine, Biosafety, Medical Thesis Writing, Medical Psychology and Health Economics.

I chose to study at SMU because both the university and its Public Health Department are among the most highly ranked in China. It had been my dream to study here because of its highly qualified and prestigious professors, stimulating atmosphere as well as the beautiful scenery.

I have enjoyed studying at this wonderful university and interacting with students and teachers from all walks of life. I have also enjoyed the Chinese culture because the Chinese are very peaceful, caring and hospitable people. I have been impressed by our visits outside Guangzhou which left me with unforgettable memories. Currently I am studying the Chinese language which is another opportunity to explore more of this great culture.

Some of the challenges that I have faced while living here are adapting to the environment, the difficulty of communicating with the local people, adapting to Chinese foods, and writing and remembering Chinese characters.

In conclusion, the two years that I have spent in China are full of wonderful memories and I feel so privileged to have studied for my MPH degree here. I am proud to be part of this great family and SMU will continue to be my second home.

I thank the SMU administration, all my teachers, my friends, the Ministry of Commerce as well as the entire Chinese community.

In Southern Medical University we will keep the dream alive and move forward!!!

**Panom Puok Duoth Kier**

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## ELSSA = Essential Life Saving Skills for Africa

The major causes of Mother and Newborn deaths and morbidity in Africa are: haemorrhage, sepsis, eclampsia, obstructed labour (resulting in obstetric fistulas), miscarriage and poor resuscitation of newborn babies.

ELSSA, a Northern Ireland based charity, provides Essential Obstetric (Mother) and Newborn Care (EONC) training courses for doctors, midwives and clinical officers to address these conditions. All our facilitators are experienced midwives or consultant obstetricians, and are volunteers. We use evidence based 'skills and drills' training specifically developed for Africa.

We have been running EONC courses in South Sudan since 2013 because it has one of the highest rates of maternal and newborn deaths in Africa and a very fragile health system. We now work through the Post Graduate Medical Centre at the Juba Teaching Hospital.

To date 146 South Sudan health professionals – 49 doctors, 16 clinical officers and 73 midwives and 8 midwifery tutors have attended the ELSSA EONC courses and have gained additional knowledge and skills. The value of EONC courses is established beyond question, pre- and post-course assessments show significant increases in knowledge and skills. Increasing the neonatal resuscitation skills will alone save many lives. It is estimated that an EONC attendee (midwife, clinical assistant, doctor) will provide care for 7,000 -10,000 maternities in a 30-year career.

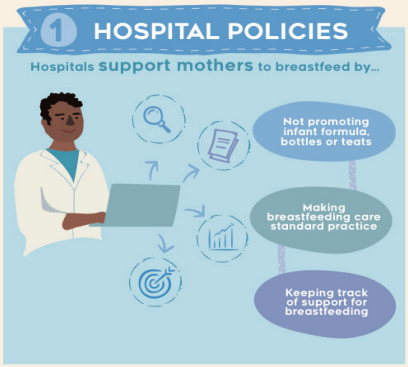
An important objective of the ELSSA team is developing sustainability of EONC training in partnership with the College of Physicians and Surgeons of South Sudan, Post Graduate Centre. The aim is to encourage, develop and mentor South Sudanese facilitators. This is the vitally important group, who with support; will roll out the EONC training to the regional centres and primary health care facilities were the major beneficial impact will occur

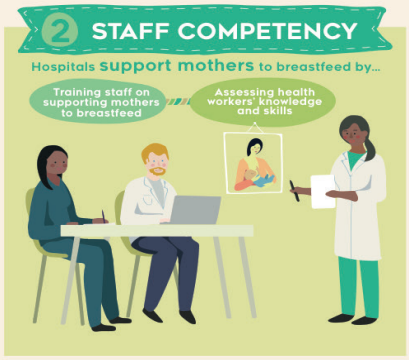
For more information see www.elssafrica.org or contact info@elssafrica.org

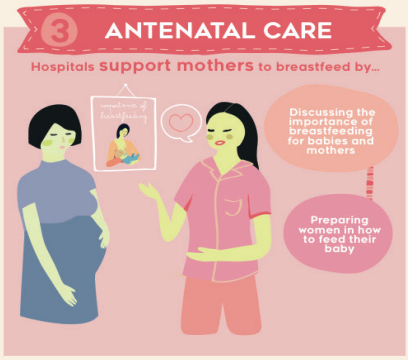
**Dr Paul Weir MD FRCOG**

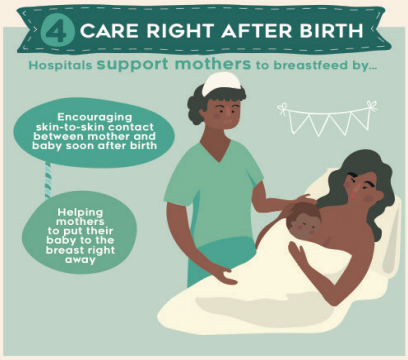
Chairperson, Essential Life Saving Skills for Africa.

# The TEN STEPS to Successful Breastfeeding

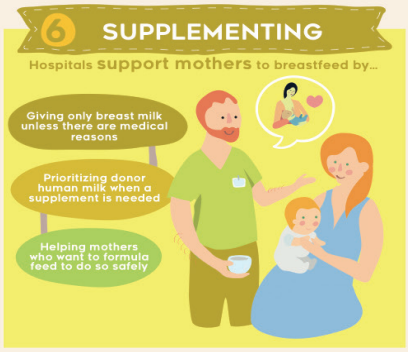


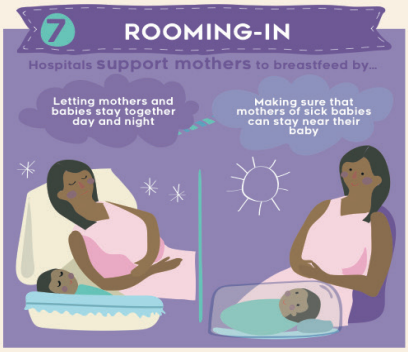



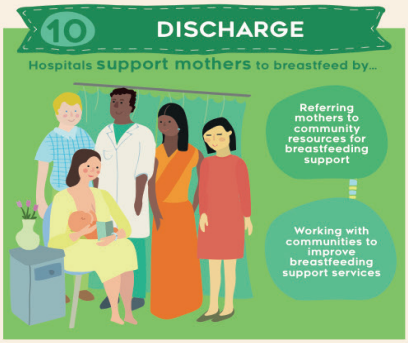










World Health Organization

unicef

Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.