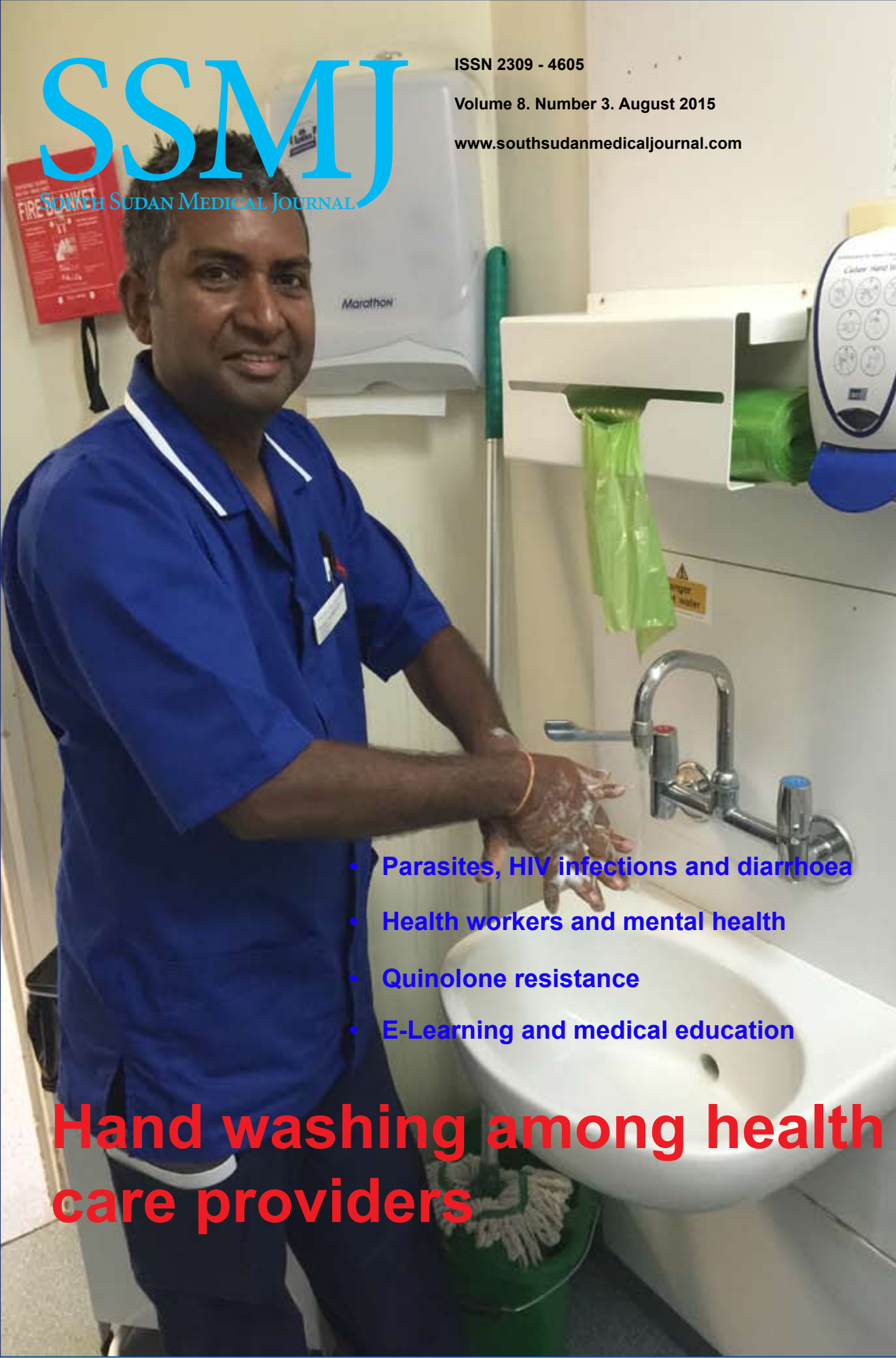


- 
- A man in a blue uniform is standing in a bathroom, washing his hands in a white sink. He is looking towards the camera with a slight smile. The background shows a white wall with a paper towel dispenser, a soap dispenser, and a fire blanket. The man is wearing a blue short-sleeved shirt with a white collar and a name tag. He is also wearing a yellow bracelet on his right wrist. The sink is white and has a chrome faucet. There is a green bucket on the floor next to the sink.
- Parasites, HIV infections and diarrhoea
 - Health workers and mental health
 - Quinolone resistance
 - E-Learning and medical education

Hand washing among health care providers

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The *South Sudan Medical Journal* is a quarterly publication intended for Healthcare Professionals, both those working in the South Sudan and those in other parts of the world seeking information on health in South Sudan. The Journal is published in mid-February, May, August and November. *Reviewers are listed on the website*

Strengthening the healthcare system through an effective General Medical Council

“SSGMC will
endeavour to regain
public confidence
in the healthcare
system”

The Chairman and members of the South Sudan General Medical Council (SSGMC) were formally sworn into office on the 17th November 2014. Establishing South Sudan's first healthcare regulatory body has been a trying process plagued by human capital, fiscal and infrastructure challenges. Despite all the seemingly insurmountable challenges, the SSGMC has finally established its authority to set standards for medical, dental and pharmaceutical practice in the country.

The SSGMC was founded to ensure that doctors and healthcare institutions deliver a high standard of care with emphasis on patient safety. A clear short term strategy for the first year in office is already in place and the council is currently formulating the framework for future activities guided by a vision, mission and core values that will underpin its activities. The council will rigorously monitor and measure the outcomes of its strategic activities to ascertain their effectiveness and determine the way forward.

It is no secret that the average South Sudanese patient is dissatisfied with the quality of healthcare provided in the country. Publicised incidents of negligence and overt malpractice by doctors with unverified qualifications have eroded trust in the medical profession. The SSGMC will endeavour to regain public confidence in the healthcare system by closely monitoring standards of medical professionalism. The inevitable alignment of medical practice in South Sudan with that of neighbouring East African countries may constrain some of our doctors who trained in Sudan due to linguistic and other barriers. The Council will address these issues by promoting continuous professional development and training of doctors to adapt to new concepts while ensuring a favourable work environment.

The SSGMC will soon have a website that will be the hub of all its activities and communication with the profession, public and patients. This has been made possible through direct support from the International Finance Corporation-Health in Africa Initiative group, a subsidiary of the World Bank. The leadership of the organization is fully committed in their support for the SSGMC for which we are truly grateful. We have also engaged the WHO office in South Sudan to help strengthen the effectiveness of the SSGMC in an advisory role and engagement with other regulatory bodies in the region. Our effectiveness as council and regulator in our country will depend on incorporating the views of all stake holders. We humbly call upon all concerned in South Sudan and beyond to join us in our quest to improve the health of our public.

Prof. John Adwok, MMED(Surg.), FRCS(Ed.), FACS, PhD.

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Intestinal parasitic infections and the level of immunosuppression in HIV seropositive individuals with diarrhoea in Kilimanjaro, Tanzania: A cross-sectional study

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Background: Opportunistic and non-opportunistic intestinal parasites play a significant role in the morbidity and mortality of HIV/AIDS-infected patients. The frequency of their occurrence strongly correlates with the patient's level of immunity. The most common clinical manifestation of these intestinal parasites is diarrhoea. Prevalence of intestinal parasites among HIV-infected patients has been found to be as high as 95%.

Objective: To determine the prevalence of intestinal parasites among HIV-infected participants presenting with diarrhoea and association with CD4 cell counts, ART and cotrimoxazole prophylaxis.

Methods: A prospective cross-sectional study was conducted in four HIV clinics in Moshi district, Kilimanjaro Region, Tanzania. Stool samples were collected and analyzed from participants presenting with three or more episodes of loose stool per day or a single bloody bowel movement. The identification of parasites was done using direct microscopy and staining techniques. Demographic data, CD4 counts and stool results were recorded. Data analysis was done using STATA IC/11.1.

Results: The study included 83 adult HIV positive patients. There were 36 males (43.4%) and 47 females (56.6%), with a median age of 36 years (range 30-43). The baseline CD4 count was 150 cells/ul (range 72-295 cells/ul). Of our participants, 47 (56.6%) had a baseline CD4 cell count < 200 cell/uL. Only 6(7.2%) had CD4 counts above 500cells/uL. Of the whole group, 62(74.7%) were on ARV therapy and 33(39.8%) were on cotrimoxazole prophylaxis. Intestinal parasites were detected in 25 of our participants. Among these 25 participants, *Ascaris lumbricoides* was found in 52%, *Giardia lamblia* in 32% and *Entamoeba histolytica* in 16%. The frequency of intestinal parasites was significantly associated with CD4 cell counts <200 cells/ul ($p=0.02$). There was no significant difference in parasitic infections associated with ART status or cotrimoxazole use.

Conclusion: The prevalence of parasitic infection is high in HIV-infected patients presenting with diarrhoea despite the use of ART and other prophylactic medications. Intestinal parasites should not be overlooked in HIV-infected patients presenting with diarrhoea.

Keywords: HIV, intestinal parasites, diarrhoea, immunity, Tanzania

Introduction

HIV/AIDS remains a major public health concern in sub-Saharan Africa [1]. The prevalence in Tanzania is 5.1% in the 15-49 year age group 30 years into the epidemic [2]. Intestinal parasites are endemic in many regions of high HIV/AIDS prevalence [3] including in sub-Saharan Africa [4, 5]. Diarrhoea is reported to occur in 30-60% of HIV/AIDS patients in developed countries, and in up to 90% of patients in developing countries [6, 7].

Intestinal parasitic infections in HIV-infected patients in developing countries is estimated to be as high as 95%. These protozoal and helminthic infections often present with diarrhoea as their main feature [8]. Clinically these intestinal parasitic infections present as both acute and

chronic diarrhoea contributing to significant morbidity and mortality in HIV-infected individuals. The epidemiology and outcome of intestinal parasitic infections has been greatly affected by HIV infection [9].

Tanzania has high rates of HIV and parasitic co-infections. However, there are few reports on the association of intestinal parasites in HIV-infected individuals with the level of immunosuppression. The aim of this study is to assess the prevalence of opportunistic and non-opportunistic intestinal parasitic infections among HIV-infected patients presenting with diarrhoea, including the effect of ART and immunosuppression.

Methods

Study design, setting and participants

Table 1. Socio-demographic characteristics of 83 HIV-infected patients with diarrhoea attending HIV clinics in Moshi district, Kilimanjaro region

Characteristic	Number/Median (Percentage/IQR)
Age (years)	36 (30-43)
Sex	
Male	36 (43.4%)
Female	47 (56.6%)
Education	
No formal education	5 (6.0%)
Primary	51 (61.4%)
Secondary	25 (30.1%)
Higher learning	2 (2.4%)
ART Use	
Yes	62 (74.7%)
No	21 (25.3%)
Baseline CD4 (cells/ul)	150 (72-295)
Cotrimoxazole prophylaxis:	
Yes	33 (39.8%)
No	50 (60.2%)

This prospective cross-sectional study was conducted at four HIV clinics in the Kilimanjaro Region of Tanzania from August to October 2013. The study included 83 adult HIV positive patients aged 18 years and above presenting with three or more episodes of loose stools per day or a single episode of bloody bowel movement. Patients were excluded if they had received any antiprotozoal or anthelmintic medications within the past one-month prior to screening for the study.

Data collection and analysis

Stool samples were collected using a clean wide mouthed container. The samples were then transferred to labeled,

leak proof, clean and sterile plastic containers. All of the collected samples were examined within 2 hours of collection. A direct wet mount of the stool sample was prepared and examined for the presence of motile intestinal parasites and trophozoites under a light microscope. For the detection of cysts, Lugol's iodine staining was used. The microscopic examinations were performed by trained clinical laboratory technicians. Patients' demographic data, baseline and maximum CD4 cell counts and stool results were recorded on a data collection sheet. The CD4 counts were measured using a FACS count system (BD Biosciences, San Jose, CA, US). Data analysis was done using the computer software STATA IC/11.1 (College station, Texas).

Ethical consideration

Approval for the study was obtained from the University of Dodoma Ethics Review Board, Moshi District Medical Officer (DMO) and Mawenzi Regional Hospital Authorities. Also an informed consent was obtained from all patients before their participation in the study. All patients found to have intestinal parasites were managed by clinicians according to available guidelines.

Results

The study included 83 adult HIV positive patients. Of these 36 (43.4%) were male and 47 (56.6%) female, with a combined median age (range) of 36 (30-43) years. Among the study participants, 62 (74.7%) were on ART and 21(25.3%) were not on ART; 33(39.8%) were on co-trimoxazole prophylaxis, while 50 (60.2%) were not on co-trimoxazole. The educational level of the study group was 6.0% (no formal education), 61.4% (primary education) and 30.1% (secondary education). Baseline clinical and socio-demographic characteristics of the study participants are summarized in Table 1.

Stool examination revealed intestinal parasites in 25(30.1%) study participants; out of whom 7(28%) were on cotrimoxazole and 20(80%) were on ART. The parasites found were of three species; *Entamoeba histolytica*,

Table 2. Prevalence of intestinal parasites in 83 HIV-infected patients with diarrhoea attending HIV clinic in Moshi district, Kilimanjaro region by ART and cotrimoxazole status

Parasites	HIV+ with diarrhoea			
	On ART (n=62)	Not on ART (n=21)	On CTX(n=33)	Not on CTX(n=50)
<i>Entamoeba histolytica</i>	2 (3.2%)	2 (9.5%)	2(6.1%)	2(4.0%)
<i>Giardia lamblia</i>	6 (9.7%)	2 (9.5%)	2(6.1%)	6(12%)
<i>Ascaris lumbricoides</i>	12 (19.4%)	1 (4.8%)	3(9.1%)	10(20%)
Stool negative	42 (67.7%)	16 (76.2%)	26(78.8%)	32(64%)

*CTX: Cotrimoxazole

Table 3. Prevalence of intestinal parasites by CD4 cell counts among 83 HIV-infected patients with diarrhoea attending HIV clinics in Moshi district, Kilimanjaro region

Level of CD4 (cells/ul)	Entamoeba histolytica	Giardia lamblia	Ascaris lumbricoides	Total	P-value
<200	4 (21%)	6 (31.6%)	9 (47.4%)	19 (76%)	0.02
>200	0	2 (33.3%)	4 (66.7%)	6 (24%)	

Giardia lamblia and *Ascaris lumbricoides*. *Ascaris lumbricoides* was the most frequent being found in 13(52%) participants of whom 12 were on ART. *Giardia lamblia* was found positive in 8(32%) participants, 6 of whom were on ART. *Entamoeba histolytica* was found in 4(16%) participants, 2 of whom were on ART. Out of the 62 patients who were using ART, 42(67.7%) were not found to have intestinal parasites as summarized in Table 2.

Among the 25 participants with intestinal parasites (see table 3), 19(76%) had CD4 count of <200 cells/ul. Each individual parasite was significantly associated with CD4 counts <200 cells/ul as compared to CD4 counts >200 ($p=0.02$). Cotrimoxazole use was found to be protective against occurrence of intestinal parasites, although the association was not statistically significant (OR=0.48 [IQR 0.17-1.32], $p=0.16$).

Discussion

The main finding from this study is the high prevalence of intestinal parasites despite ART use and cotrimoxazole prophylaxis in this group of HIV-infected patients presenting with diarrhoea. In HIV-infected patients, the immune response is significantly impaired resulting in susceptibility to gastrointestinal parasitic infections, a significant cause of morbidity and mortality in this population. A majority of these patients present with diarrhoea which can serve as an indicator of disease progression. In our study, non-opportunistic parasites were found to be common. The prevalence of intestinal parasites in this study was found to be 30%. This finding was consistent with another study done in Jaipur city [7], whereby non-opportunistic parasites were also found to be common with a prevalence of 31%. The prevalence was even higher in another study in Dhule district, India, at 49% [10]. Other studies, assessing both opportunistic and non-opportunistic intestinal parasites, have reported a prevalence of non-opportunistic parasites ranging from 5-30% [11] and 30-60% [12, 13, 14]. The occurrence of these parasites was significantly associated with low CD4 counts (<200 cells/ul). Similarly in a study done in Benin City, Nigeria the occurrence of intestinal parasites was significantly associated with CD4 counts <200 cells/ul [15]. In other studies however, only opportunistic parasites have been associated with low CD4 counts [7]. The association between the occurrence of intestinal parasites

and the level of immunity in HIV-infected individuals has been well documented in other reports [16, 11, 17, 18].

Our study showed that there was no significant difference between the prevalence of intestinal parasites in those on ART compared to those not on ART. This is in contrast to the findings of a study done in Ethiopia which found significantly lower rates of intestinal parasitic infection in those on ART [19]. Another study comparing the prevalence of intestinal parasites before and after HAART found significant reductions in the prevalence of intestinal parasites with the use of ART [20]. These observed discrepancies might be explained by the difference in study sample sizes, study designs and geographic locations.

In our study, three of the participants with CD4 counts >500 were found to have intestinal parasites. One of them was found to have *Giardia lamblia*, while two of them had *Ascaris lumbricoides*. Similar findings were obtained in a study done in Thailand where three of the patients with CD4 cell counts >500 were found to have non-opportunistic intestinal parasites [21]. *Ascaris lumbricoides* occurrence was also found to be high in seronegative individuals in one study comparing intestinal parasites in seronegative and seropositive individuals [22]. One study found no intestinal parasites in HIV-infected individuals with CD4 count >500 cells/ul [7, 18] contrary to our finding.

Our study involved HIV-infected patients treated or untreated with ART presenting with diarrhoea. Other studies found higher prevalence of opportunistic parasites in patients with diarrhoea [21], with similar rates of non-opportunistic parasites as found in our study [7]. Another study found high prevalence of non-opportunistic parasites that was neither associated with the level of immunity nor with diarrhoea [21].

A limitation of our study is that some important laboratory tests were not performed. We did not perform modified ZN-staining, water-ether sedimentation method or adhesive tape/anal swab for *Microsporidia* and *Enterobius vermicularis* respectively, as well as the Baerman technique or culture for *Strongyloides stercoralis*. Some important intestinal parasites, both opportunistic and non-opportunistic, could have therefore been missed. Other risk factors for acquisition of intestinal parasites such as hygiene, socio-economic and environmental

factors were not included in this study. The sample size for this study was too small to make significant statistical inferences.

Non-opportunistic intestinal parasites were common in this population and significantly associated with low CD4 cell count. These infections therefore should not be overlooked in HIV-infected patients especially those with low CD4 counts and presenting with diarrhoea.

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We express our sincere gratitude to the District Medical Officer, Moshi district. We thank all the HIV clinics staff involved in the study and all the study participants for their acceptance to participate in the study.

Author contributions

TR, AE and BM conceived and designed the experiments. TR performed the experiments. TR, BM, BK analyzed the data. TR, BM, BK and AE did the literature search and wrote the manuscript. All authors have read and approved the publication of the final manuscript.

Conflict of interest: Authors declare that they have no conflict of interest

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INTERNATIONAL ENGLISH LANGUAGE TESTING SYSTEM (IELTS) COURSE IN JUBA

The first of a number of courses to prepare South Sudanese Doctors wishing to undertake postgraduate studies in various branches of Medicine in the UK through the Medical Training Initiative (MTI) is intended to be held in Juba from 21st September to 2nd October 2015 inclusive pending confirmation of funding.

Any Doctor committed to taking the IELTS examination in the near future who wishes to improve their IELTS scores may register for the course by emailing: **Professor Mairi John Blackings**, Department of English Language and Literature, University of Juba at the following email: **mairijb@yahoo.co.uk** and Telephone number **+211 955258192**.

Places on the course will be allocated on a **first come first served basis** as these are limited to 20 only. Once the course is confirmed, the first 20 applicants will be contacted to confirm their place. There will be a booking fee of SSP 350; failure to pay the fee will result in the place being offered to another candidate.

Thank you.

Dr. Eluzai Hakim, MB.Ch.B, FRCP (Edin), FRCP (London), DTM&H

Consultant Physician & International Adviser to the Royal College of Physicians London on South

Non-mental health workers' attitudes and social distance towards people with mental illness in a Nigerian teaching hospital

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Background: Studies on attitudes towards mental health in Nigeria have been mainly community-based surveys.

Objective: To determine the knowledge and attitudes towards mental illness (MI) of health workers in a Nigerian Teaching Hospital.

Methods: A stratified sample of 256 health workers completed an Attitude to Mental Illness Questionnaire (AMIQ) designed for this study.

Results: Most participants (62.1% to 80.9%) identified scientific factors such as genetic inheritance as causes of MI; 24.8% identified spiritual factors as potential causes. Effective methods of treatment identified by respondents include orthodox methods (84.6%) and a combination of traditional and orthodox management (37.8%). There were varying shades of negative attitudes towards mentally ill persons (MIPs).

Conclusion: The health workers showed some degree of social distance to MIPs, and there is need for psycho-education to improve their knowledge in mental health.

Introduction

Studies on attitudes towards mentally ill persons (MIPs) have reported divergent views; but with a number showing psychiatrically ill people are stigmatized [1,2]. According to Erving Goffman (1963), stigma refers to any attribute, trait or disorder that marks an individual as being unacceptably different from the “normal” people with whom he or she routinely interacts and that elicits some form of community sanctioning [3]. The World Health Organization (WHO) also described stigma as a mark of shame, disgrace or disapproval that results in an individual being shunned or rejected by others [4]. Consequently, MIPs and even their relatives have been found to suffer from an insidious form of discrimination particularly in Africa [5,6,7].

Among health care workers, including mental health professionals, studies in Europe and America have also documented their negative attitudes towards MI [8,9].

In Nigeria, a number of community-based studies have shown negative attitudes towards MIPs [5,7]. However, despite the dearth of psychiatrists in Nigeria and the involvement of non-mental health workers in the care of medically ill patients with co-morbid psychiatric complications, there has been no previous study among such workers; hence this study.

Materials and methods

Study setting

The study was carried out in Lagos University Teaching

Hospital (LUTH); Lagos is the commercial capital of Nigeria. LUTH is a tertiary hospital with 761 beds and a staff of about 2620.

Instruments

A questionnaire was used to elicit socio-demographic variables of participants.

The ‘Attitudes to Mental Illness Questionnaire’ (“AMIQ”) constructed for this study was designed to explore respondents’ knowledge about mental illness (MI) such as causes, effective treatment modalities, any relative or friend with MI, how to relate with MIPs, their willingness to befriend, marry or work with a MIP, how to prevent MI, and if MI is infective or not. The “AMIQ” was developed in two stages. First, questions were constructed to cover the identified areas of beliefs and attitudes to mental illness and piloted on 30 health workers of different cadres (who were omitted from the main study). These responses were then used to develop the final 10-item instrument. Some items have dichotomous ‘Yes’ or ‘No’ response options while others contain lists of responses that are not necessarily mutually exclusive.

Subjects and procedure

The study was carried out after approval by the institutional review board. The sample of subjects was obtained through stratified random sampling. Overall, the research questionnaire was administered to 322 subjects who gave their consent to the study, but only 246 (76.4%) completed and returned the questionnaires.

Data analyses

Data were analyzed with SPSS-PC version 13. Descriptive statistics and bivariate comparisons with Chi-squares were obtained, with the level of significance set at 5%.

Results

A total of 246 health workers were studied, with slightly more men (53.7%) than women in the sample. The mean age was 31.7 (± 7.7) years. The largest numbers of respondents were house officers, 82 (33.3%) followed by nurses (28%) – see Table 1.

Perceived causes, effective treatment and prevention of mental illnesses.

Most respondents, 170 (69.1%), believed there were multiple causes of MI, with substance abuse being mentioned most often. The respondents who attributed MI to scientific causes such as substance abuse and genetic inheritance were mostly doctors. Some respondents, especially nurses, laboratory technologists and administrative staff identified spiritual factors of “demonic attacks” (24.8%) and “curses” (15.9%) as possible aetiologies of MI. Only seven (2.8%) respondents indicated MI could be infectious through physical contact with MIPs.

Social distance and stigma

Almost half of the respondents, 122 (49.6%) admitted to have relatives or friends with MI. Slightly over half (51.6%) were unsure of how they could relate with a MIP. Eighty four (34.2%) claimed they would relate normally or cordially, while 23 (9.3%) admitted they would relate with caution or preferably keep a social distance due to perceived dangerousness of MIPs.

Close to two-thirds (64.6%) of the respondents admitted they could not live with or get married to a MIP. Reasons given were:

- “it is difficult to cope with a MIP”,
- “they are dangerous”, and
- “they are emotionally unstable and unpredictable”.

Only 68 (27.6%) of respondents claimed they could live with or marry a MIP. The remaining 19 (7.8%) were not sure if they could live with or marry a MIP.

The majority of the respondents, 176 (71.6%) stated they could be friends and work with a MIP. However, close to one-fifth (19.5%) claimed they could neither befriend nor work with such patients. Twenty two (8.9%) were not sure if they could work with or be a friend to a MIP.

Relationship between socio-demographic factors and beliefs/ attitudes to mental illness variables

Significant relationships were found between some socio-demographic factors and attitudinal variables. Occupation, that is the type of health profession, had

Table 1. Socio-demographic characteristics of respondents

Variable	Number	Percentage (%)
Sex		
Male	132	53.7
Female	114	46.3
Total	246	100.0
Religion		
Christianity	193	78.5
Islam	49	19.9
Others	4	1.6
Total	246	100.0
Marital Status		
Single	137	55.7
Married	101	41.1
Widowed	4	1.6
Separated	4	1.6
Total	246	100.0
Educational Qualification		
Secondary	8	3.3
Post-secondary	53	21.5
University graduate	142	57.7
Postgraduate	43	17.5
Total	246	100.0
Job Description		
Consultants	5	2.0
Resident Doctors	47	19.1
House Officers	82	33.3
Nurses	69	28.1
Others (Pharmacists, Admin. Staff, Lab Tech.)	43	17.5
Total	246	100.0

significant relationship with perceived causes of MI ($X^2 = 48.62$, $df=30$), effective treatment option for MI ($X^2 = 59.01$, $df=25$), prevention of MI ($X^2 = 81.48$, $df=45$) and relating with a MIP ($X^2 = 56.91$, $df=45$) all at $p < 0.05$. Significant relationship was also found between sex and effective treatment option for MI ($X^2 = 11.99$, $df=5$) and relating with MIPs ($X^2 = 17.49$, $df=9$) at $p < 0.05$. Educational qualification had significant relationship with only relating with MIPs ($X^2 = 56.30$, $df=36$), $p < 0.05$.

Discussion

Unlike most previous studies in Nigeria that were community-based, our study attempted to evaluate the attitudes of non-psychiatric health workers to MI in a teaching hospital. Close to two-thirds of the respondents, especially doctors attributed causes of MI to scientific factors such as genetic inheritance. This is not surprising given the clinical background of such respondents. However, most non-clinicians attributed causes of MI to supernatural/ psychosocial factors, and this is in keeping with findings from most previous community-based

studies in Nigeria [5,7].

Most respondents (84.6%) believed in the effectiveness of orthodox medical care; and 26.0% attributed effective treatment of MI to fasting and prayer. This finding supports the fact that Nigerians irrespective of their educational qualification and occupation are known to be religious. When confronted with serious illnesses, such as psychotic disorders, most resort to spiritual intervention for their healing; orthodox psychiatric management becomes the last resort when spiritual interventions fail [10,11].

Varying shades of social distance and stigmatizing relationship with MIPs were given by our subjects; and this is similar to findings from previous community-based studies in Nigeria [5,7,12]. Similar stigmatizing attitudes towards MIPs have also been reported among non-psychiatric doctors and even among mental health professionals in Europe, but psychiatrists were found to exhibit greater advocacy for mental health care than their non-psychiatric counterparts [8,9]. In our study, the observed stigmatizing attitudes of the non-psychiatric health workers may lead to unwillingness to look after patients with concurrent physical and psychiatric disorders, as found in previous studies [13].

Conclusion

In this study, our subjects showed varying shades of negative attitudes towards the MIP. It is thus concluded that to reduce stigma against MI in Nigeria, health workers need to undergo a psycho-educational programme in Continuing Medical Education.

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CORRECTION

Correction for the article: The Winchester/ Yei link by Saeed and Spens in SSMJ Volume 8. Number 2. May 2015, page 41:

The article stated "The Link between Winchester and Eastleigh Healthcare NHS Trust and Yei Civil Hospital and Martha Clinic, and Yei National Health Training Institute has been established since November 2010." We would like to clarify that the link is called Winchester /Yei Link and the main hospital in Winchester i.e. the Royal Hampshire County Hospital is part of the Hampshire Hospitals NHS Foundation Trust as the Winchester and Eastleigh NHS Trust does not exist anymore.

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Assessment of knowledge of hand washing among health care providers in Juba Teaching Hospital, South Sudan

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Background: Nosocomial infections increase mortality and morbidity although adherence to simple hand washing procedures is suggested to reduce these.

Purpose: To assess knowledge of hand washing among health care providers in Juba Teaching Hospital (JTH) in South Sudan and establish associations with demographic, professional and clinical factors.

Methods: A total of 204 participants (126 men and 78 women) enrolled in a cross-sectional survey. Demographic, professional and clinical factors and knowledge scores (correct answers from 25 questions) were obtained and compared using t-test, ANOVA, chi-square test and correlation coefficient (r) as appropriate.

Results: Participants were aged 29.8 (SD, 5.4) years. The majority (62.7%) had no hand washing training within the last three years. Inconsistent answers regarding knowledge were obtained with a mean knowledge score 15.02 (SD, 2.73). Age was associated with hand hygiene training as those untrained (mean 30.6, SD 5.5 years) were significantly older than those trained (28.5, SD 4.9 years); $t = 2.60$; $p < 0.01$. Age was also associated with knowledge score ($r = -0.14$, $p = 0.048$). However, there was no significant association between hand hygiene training and knowledge score (trained, 15.39, SD 3.07; untrained, 14.80, SD 2.48); $t = 1.41$; $p = 0.15$.

Conclusion: Insufficient and inconsistent knowledge of hand hygiene was evident and younger workers were more likely to have attended recent hand hygiene training and had better knowledge of hygienic patient care than older health care workers in JTH.

Introduction

Nosocomial infection is a global public health problem with an estimated 1.5 million suffering consequences at any given time [1, 2] noted that at least 25% of all hospital infections in the developing world are nosocomially acquired. The hands of health care providers are major agents of infection transmission in hospitals leading to the campaign to improve hand hygiene, Clean Care is Safer Care [3]. Two types of hand colonizing flora are predominant in hand skins. These are the Resident flora that are not easily removed by the simple friction associated hand washing and the 'Transient micro-organisms which are not usually hand colonizers but they are most likely associated with infection [4]. Various types of such microbes are found on patients, instruments and other items and are important in infection transmission [5]. Improper hand washing practices serve as means of infection transmission in hospital wards [6,7,8] and proper hand washing is the single most important means of reducing cross-infections in hospitals [3, 9] but adherence remains a major challenge [10,11].

Methods

A cross-sectional survey was conducted among healthcare workers at JHT using a validated self-administered

questionnaire [10]. Data were collected on demographic factors, hand washing training provided within the last three years and knowledge regarding hand washing. Correct answers to the 25 questions regarding hand washing knowledge were summed and percentages calculated. Frequencies for categorical data (sex, education level, profession, department and having received hand washing training within the last three years or not) and means and SDs for age and knowledge scores for participants were determined. The Chi-square test was used to establish which factors were associated with having had hand washing training within the last three years and t-test and

Table 1. Professions of participants

Profession	Frequency	Percent
Nurses	26	12.7
Midwives	16	7.8
Medical Doctors	42	20.6
Nurse Students	7	3.4
Medical Students	89	43.6
Other	24	11.8
Total	204	100.0

ANOVA were used for comparing knowledge scores between groups. Correlation coefficient (r) was applied for association between age and knowledge. Significance was set at $p < 0.05$.

Ethical clearance was obtained from the Ethical committee at the Ministry of Health of South Sudan and the University of Liverpool Research Ethics Committee.

Results

Of the 204 participants, 126 (61.8%) were men and 78 (38.2%) were women and they were aged between 18 and 50 (mean, 29.8; SD, 5.4) years. Educational background was: primary and secondary (36, 17.7%), college (116, 56.9%), graduate and post-graduate (52, 25.5%). Table 1 below shows professions of participants. Participants were from departments as follows: internal medicine ($n = 27$), surgery (20), mixed medicine/surgery (43), obstetrics (32), pediatrics (22) and 'other' (60).

The majority (128, 62.7%) did not receive formal training in hand washing within the last three years.

Table 2 shows a summary of the participants' correct responses to key questions pertaining to hand hygiene knowledge.

The level of knowledge shown by the proportions of participants answering correctly was clearly inconsistent and inadequate in a number of aspects of hand hygiene. For the individual questions there was a wide range of 11.3% to 97.0% of participants providing the correct answer. This variability was further indicated by a mean knowledge score for participants of 15.02 (SD, 2.73) correct answers to the 25 questions asked, or 60.1% (SD, 10.9%).

Association of hand hygiene training received within the past three years with professional and demographic factors.

The mean (SD) age of those who did not have hand hygiene training within the last 3 years ($n = 128$) was 30.6 (SD 5.5) years which was significantly older than those who did ($n = 76$) who were 28.5 (SD 4.9) years ($t = 2.6$; $p < 0.01$). There was no significant association with having received hand hygiene training of sex (χ^2 , 0.03; degrees of freedom (df), 1; $p = 0.87$), education (χ^2 , 4.23; df, 2; $p = 0.12$), profession (χ^2 , 3.00; df, 3; $p = 0.40$) or department (χ^2 , 1.90; df, 5; $p = 0.86$).

Association of knowledge score with professional and demographic factors.

A significant negative correlation ($r = -0.14$, $p = 0.048$) was found between age and knowledge scores implying that younger participants had greater hand hygiene knowledge. No significant difference ($t = 1.90$; $p = 0.058$) was found between knowledge scores of males ($n = 126$; mean = 15.3; SD = 2.76) and females ($n = 78$; mean = 14.56; SD =

2.62), apparently because of the wide variability observed despite the apparent difference in score.

Importantly, there was no significant difference observed ($t = 1.41$; $p = 0.15$) in the level of knowledge between those who had hand hygiene training ($n = 76$; mean = 15.39; SD = 3.07) and those who had not ($n = 128$; mean = 14.80; SD = 2.48). Again, even though those who had training were seemingly more knowledgeable, there was considerable variability that evidently led to the lack of significant difference between the groups.

No significant difference was determined using one-way ANOVA in knowledge between the various educational levels ($F(2,201) = 0.485$, $p = 0.61$), professions ($F(3,200) = 0.51$, $p = 0.67$) or departments ($F(5,198) = 0.69$, $p = 0.63$).

Discussion

Almost two-thirds of participants had not attended hand washing training within the past 3 years which may have been reflected in the variability in knowledge. This is consistent with other studies [12,13,14], although Joshi et al. [10] refute the association of knowledge or training with regular hand washing. Salama et al. [15] found no association between training and practice of hand hygiene, in contrast to other studies [12, 16, 17]. These inconsistencies may be because such studies considered the impact of training and knowledge on practice, with the intention known to participants, while this study only tried to determine the level of knowledge.

No associations were observed between level of hand hygiene knowledge and educational levels, departments of work, sex, etc. In contrast, Sethi et al. [18] found an increased knowledge level among doctors in comparison to nurses suggesting that the type and duration of education may be associated. Although younger age was associated with both hand hygiene training and greater knowledge, there was no association between training and hand hygiene knowledge which may imply that training is not adequate or is too infrequent, a finding consistent with that of Salama et al. [15].

Conclusion

The variability in these findings clearly showed gaps in knowledge of hand hygiene among health care providers at JTH. Although younger age was associated with having recent training and greater knowledge of hand hygiene, there was no association between training and hand hygiene knowledge implying that provision of hand washing training in hospitals may need to be reconsidered.

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Table 2. Frequency and percentages of healthcare participants correctly identifying if each statement was true

Correct statement (summary taken from multiple choice questions; Joshi et al., 2013)	Number (%)
1 That the main route of cross-transmission of potentially harmful germs between patients in a health-care facility was health-care workers' hands when not clean	105 (51.5%)
2 That the most frequent source of germs responsible for health care associated infections was germs already present on or within the patient	44 (21.6%)
3 That hand hygiene actions are necessary to prevent transmission of germs to the patient:	
Before touching a patient	153 (75%)
Immediately after a risk of body fluid exposure	107 (52.5%)
After exposure to the immediate surroundings of a patient	89 (43.6%)
Immediately before a clean/aseptic procedure	135 (66.2%)
4 That hand hygiene actions prevent transmission of germs to the health-care worker:	
After touching a patient	122 (59.8%)
Immediately after a risk of body fluid exposure	130 (63.7%)
Not immediately before a clean/aseptic procedure	91 (44.6%)
After exposure to the immediate surroundings of a patient	112 (54.9%)
5 a That hand rubbing is more rapid for hand cleansing than hand washing	151 (74.0%)
5 b That hand rubbing does not cause skin dryness more than hand washing	46 (22.5%)
5 c That hand rubbing is more effective against germs than hand washing	104 (51.0%)
5 d Hand washing and hand rubbing are not recommended to be performed in sequence	23 (11.3%)
6 That minimal time for alcohol-based hand rub to kill most germs on hands is 20 seconds	47 (23.0%)
7 a That hand washing is required before palpation of the abdomen	84 (41.2%)
7 b That hand washing is required before giving an injection	103 (50.5%)
7 c That hand washing is required after emptying a bedpan	165 (80.9%)
7 d That hand washing is required after removing examination gloves	169 (82.8%)
7 e That hand washing is required after making a patient's bed	153 (75.0%)
7 f That hand washing is required after visible exposure to blood	157 (77.0%)
8 That the following be avoided as being associated with likelihood of colonization:	
a Jewellery	159 (78.3%)
b Damaged skin	197 (97.0%)
c Artificial fingernails	189 (93.1%)
d Hand cream	118 (58.1%)

Conflict of interest

There are no conflicts of interest.

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Continued from page 71

HAND WASHING IN SOUTH SUDAN HEALTH FACILITIES: HOW CAN WE IMPROVE IT?

The article on page 60 shows that there is patchy knowledge about hand hygiene among the health staff at Juba Teaching Hospital (JTH), and that hand hygiene practices there need improving. As the situation in JTH probably reflects that throughout the country, this article suggests ways to ensure better hand hygiene in all health facilities in South Sudan.

Those of us who work in UK know of the intense efforts that have been made to reduce the risks of hand-borne infection in hospitals and clinics. Those of us who know the existing conditions and practices in South Sudan know the challenges that make optimal hand washing practices so difficult to achieve. Using our experiences in UK and South Sudan, we suggest below ways in which health staff and management can aim to achieve optimum hand hygiene. We hope our South Sudanese readers will share with us what is being done in their own health facilities. What are your difficulties? What successes have you had?

Challenges

In many health facilities the challenges to improving hand hygiene include:

- Lack of running, or sufficient, clean water, soap and/or hand cleansing gels;
- Lack of knowledge of the dangers of hand-transmitted infections, and how to avoid them;
- Lack of audits and research to find out existing hand washing practices;
- Lack of adequate, and regular, effective training on hand hygiene techniques for staff, patients and visitors;
- Lack of educational information (e.g. posters, handouts) on why and how to wash hands properly;
- Poor general hygiene, and cleaning, in most health facilities;
- Not enough staff to monitor hand hygiene performance;
- No infection-control departments in most hospitals;
- Existence of many other challenges such as lack of medications thus, rendering hand washing a remote priority in many health providing settings.
- Low staffing levels leading to lack of time for staff to undertake hand hygiene, and for training and monitoring.

Recommendations for improving hand hygiene

- Give regular and effective practical training and demonstrations on correct hand washing techniques (using the existing facilities and supplies) for all levels of health staff in all health facilities. This training should be frequently evaluated and improved as necessary;
- Adopt the WHO hand washing guideline as appropriate for each hospital's needs and abilities;
- Carry out regular hand hygiene practice audits covering the WHO '5 moments for hand hygiene' (see <http://www.who.int/gpsc/5may/background/5moments/en/>). These should include feedback and actions taken where there is non-compliance;
- Improve provision and accessibility of hand rub/hand washing facilities as needed;
- As part of in-patient assessment of patients, the ward hygiene officer should talk to all but severely ill patients about hand hygiene upon admission;
- Provide hand hygiene posters showing correct hand washing techniques throughout health facilities – see page 72
- Appoint 'hygiene champions' in individual wards/departments who can prompt and train their peers;
- Organise hospital- and public- based hand washing campaigns;
- Reward the best performing ward(s) which could be in forms of a day holiday, certificates, publication or any other way to boost morale;
- Make demonstration of hand washing part of job interviews;
- Celebrate 'International hand washing day' in your facility in order to remind staff and patients about the importance of this practice;
- Regularly appraise (by national, state and individual facility) the nosocomial infection rates of each hospital as a means of reducing cost (less antibiotics requirement) and improving mortality (fewer people dying as a result of hospital acquired infections).

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Prepared by Charles O.C. Langoya, Emily MacNaughton, Eluzai Abe Hakim and Ann Burgess

Quinolone resistance in *Salmonella enterica* serovar *Typhi*: Mechanisms, factors driving the spread of resistance, current epidemiological trends and clinical significance

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Introduction

The human restricted bacteria, *Salmonella enterica* serovar *Typhi* is the major cause of typhoid fever (or enteric fever), a characteristic severe systemic illness [1]. In 2010, typhoid fever accounted for an estimated global burden of 27 million new cases and 200,000 deaths [2].

For over two decades, *S. enterica* serovar *Typhi* and other serovars have developed resistance to the first line antimicrobials (ampicillin, chloramphenicol, and cotrimoxazole). As a result of this multidrug resistance (MDR), quinolones became key antibiotics for treatment of *Salmonella Typhi* disease [3]. Quinolones are a group of antimicrobials with a 4-quinolone nucleus [4]. Quinolones target the bacterial enzymes DNA gyrase and topoisomerase IV, which are essential for DNA replication and transcription [4]. They are classified by differences in their in-vitro antimicrobial activity into:

- First-generation (nalidixic acid and cinoxacin),
- Second-generation (norfloxacin, ciprofloxacin, lomefloxacin, ofloxacin, and levofloxacin),
- Third-generation (sparfloxacin, gatifloxacin, and grepafloxacin), and
- Fourth-generation (trovafloxacin, moxifloxacin, and gemifloxacin)[5].

The second, third, and fourth-generation quinolones are also called fluoroquinolones, generated by addition of a fluorine atom and a cyclic diamine piperazine at C6 and C7 positions of the 4-quinolone nucleus respectively [4]. The second-generation quinolones have an expanded gram-negative and atypical coverage but limited gram-positive coverage, while the third-generation additionally have improved gram-positive coverage, and the fourth-generation have an additional anaerobic coverage [6].

Nalidixic acid was commonly used especially in developing countries but as a result of resistance and toxicity, ciprofloxacin became the most commonly used against *Salmonella Typhi*. However, in-vitro resistance to nalidixic acid in *Salmonella Typhi* also indicates resistance to ciprofloxacin [7].

Due to lack of availability and cost, other higher generation quinolones are not used in resource-limited countries.

Ofloxacin, levofloxacin, moxifloxacin, and gatifloxacin are also used in the treatment of MDR tuberculosis; this could also be a reason for lack of their use in countries where tuberculosis is prevalent.

This review focuses on the mechanisms underlying susceptibility and resistances of quinolones in *Salmonella Typhi*; explaining the factors driving the spread of resistance, current epidemiological trends and clinical significance of the resistance.

Methodology

Articles for this review were identified by searches of PubMed, Web of Science, Science Direct, Scopus, Global Health Database, and the Liverpool School of Tropical Medicine electronic library 'DISCOVER' using the search terms "salmonella Typhi", "quinolones", and "resistance". Only articles published in English between 2002 and 2015 were used.

Mutations of gyrase and topoisomerase genes

The primary target of quinolones in gram-negative bacteria is the *gyrA* subunit of DNA gyrase, and point mutations usually occur within the quinolone resistance determining region (QRDR) of the DNA gyrase gene [4]. In *Salmonella Typhi*, single mutation of *gyrA* gene leads to resistance to nalidixic acid and reduced susceptibility to ciprofloxacin [minimum inhibitory concentration (MICs) of 0.125–0.25 µg/mL], whereas complete resistance to ciprofloxacin (MIC > 4 µg/mL) is caused by double mutation in the QRDR region [3]. A non-classical quinolone resistance in *Salmonella Typhi* exhibiting a *gyrB* gene mutation also exists [8]. In Gram-negative bacteria, point mutations in topoisomerase IV subunit genes *parC* and *parE* also occur, but are less common than *gyrA* mutations [4].

Efflux-based drug resistance

Bacteria have the ability to increase the expression of nonspecific energy-dependent efflux pumps that avoid the accumulation of effective intracellular concentrations of quinolones by actively pumping the drug across the cell membrane, thus leading to an efflux-based drug resistance [4]. Efflux-based drug resistance can also be caused by mutation in a drug transporter [9]. *Salmonella Typhi* expresses MDR transporters of the major facilitator superfamily (MFS), which include STY4874 proton-dependent

efflux pump that transports several quinolones [9]. STY4874 pump is considered significant because it pumps quinolones out of the cells and is the most likely MDR transporter, as it confers resistance to quinolones, aminoglycosides and chloramphenicol. Efflux-mediated quinolone resistance becomes of clinical significance only when combined with other resistance mechanisms, such as mutations in target enzymes because they only produce low-level resistance [4].

Reduced outer membrane permeability

Gram-negative bacteria develop antimicrobial resistance (including quinolones) by reducing the levels of outer membrane porins that form the routes responsible for passive diffusion. This results in reduced outer membrane permeability to antimicrobials [4]. It has been shown that exposure of non-dividing cells to ciprofloxacin results in 'adaptive mutation' of the cells, thus resulting in decreased permeability of the bacterial outer membrane. This is considered to be a cause of gradual increase in mean MIC for ciprofloxacin in *Salmonella Typhi* [10].

Plasmid-mediated resistance

The plasmid-encoded *gmr* gene is a naturally occurring gene which can mediate reduced susceptibility to quinolones, but it can cause a higher level of resistance by potentiating the effect of other resistance mutations [4]. Plasmid gene *qnrB* and *qnrS* in *Salmonella Typhi* were shown to be responsible for plasmid-mediated quinolone resistance [11].

Biofilm

Biofilm does not affect drug resistance in *Salmonella Typhi* but results in delayed clearance from typhoid patients [12].

Factors contributing to the spread of resistance and epidemiological trends

The current global *Salmonella Typhi* resistance to quinolones emerged as a result of extensive quinolone use/misuse, including selective pressure from empirical use [13]. The use of substandard fluoroquinolones and their usage in animals also significantly contributed to the resistance [14, 15]. Three trends of antimicrobial resistance to *Salmonella Typhi* occurred as a result of ciprofloxacin use: (i) ongoing resistance to the first-line antimicrobials and low prevalence of quinolone-resistant *Salmonella Typhi*, (ii) equal prevalence of nalidixic acid-resistant *Salmonella Typhi*, and (iii) a slow increase of nalidixic acid-resistant *Salmonella Typhi* (NARST) and reduced prevalence of multidrug-resistant *Salmonella Typhi* (MDRST) [13]— see Figure 1.

Most of the resistant strains of *Salmonella Typhi* (especially the haplotype H58, a prevalent MDR clone that has spread over Asia and Africa) emerged from Southeast Asia and then spread to other regions of the world [13]. Travellers

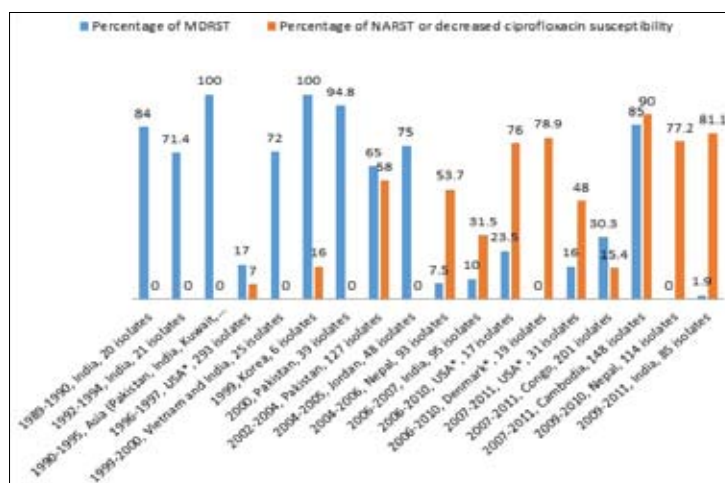


Figure 1. Emergence and global resistance trends of *Salmonella Typhi* to nalidixic acid and ciprofloxacin. Data from Tatavarthy et al. 2014. — see reference 13.

*Indicates foreign travel related.

also played a significant role in spreading the resistant *Salmonella Typhi*, especially to the developed world [16, 17]. The quinolone-resistant *Salmonella Typhi* is not only prevalent in hospital settings but also in the community [18].

Clinical significance and conclusion

Enteric fever caused by NARST isolates which also have reduced susceptibility to ciprofloxacin are associated with poor clinical outcomes including treatment failure [18]. These isolates are usually classified as being ciprofloxacin susceptible when using the previous susceptibility breakpoints for ciprofloxacin [18]. However in order to avoid such misclassifications, the clinical and laboratory standard institute (CLSI) approved a reduced susceptibility breakpoint for *Salmonella Typhi* ($\leq 0.06 \mu\text{g/mL}$) and also suggested that the nalidixic acid screen should be used to test for reduced quinolone susceptibility in *Salmonella Typhi*, although it may miss other quinolone resistant strains [19]. Therefore ciprofloxacin MIC is a significant determinant of clinical response to treatment and it should be considered in all *Salmonella Typhi* isolates [20].

Convalescent faecal carriage as a result of quinolone-resistant *Salmonella Typhi* plays a critical role in spreading the disease in the community [21]. This is difficult to control especially in countries where there is limited access to adequate sanitation and clean water facilities.

Although not available in many resource-limited settings, a community-based drug susceptibility data is critically needed to facilitate rational use of antimicrobials in general and improve antimicrobial choices made for enteric fever.

Third-generation cephalosporins and azithromycin remain the treatment of choice for typhoid fever in areas with quinolone resistance and for travellers returning from these areas [17]. There is some evidence supporting the effectiveness of newer fluoroquinolones (gatifloxacin) in areas where resistance to nalidixic acid and ciprofloxacin

exist [22]. However, cheaper oral quinolones such as ciprofloxacin can still be used where there is evidence of absence of *Salmonella Typhi* resistance. Prevention through access to clean and safe water, adequate sanitation, and education should be encouraged in all settings. A recent Cochrane review showed that both the licensed Ty21a and Vi polysaccharide vaccines and the unlicensed Vi-rEPA vaccine are efficacious [23]. However, their role-out on a large scale, especially in resource-limited settings where typhoid fever is endemic, would be a significant challenge, although travellers to those areas may benefit.

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Using e-learning to support the Basic Medical Training programme in South Sudan

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This article summarises a meeting that was held in London to discuss ways in which the UK medical community, working through existing networks and/or the medical Royal Colleges, can continue to support medical education in South Sudan. In particular, the meeting focussed on the potential for the use of e-learning to enable continuing support during the current difficulties that are reducing the options for direct input.

Background

As the Postgraduate Dean of Postgraduate Education Professor Rich Bregazzi outlined in his article in the May 2015 edition of SSMJ, a two-year programme of postgraduate Basic Medical Training (BMT) has now re-started in Juba. This entails supervised and evaluated clinical practice supported by a programme of formal lectures and tutorials. An intercollegiate group of the UK medical Royal Colleges was formed to support the senior doctors and teaching staff in South Sudan in developing and delivering this curriculum. The support programme was intended to be based on faculty visits to Juba but this was disrupted by the crisis that developed in late 2013.

The group has continued to communicate since December 2013 and has been made aware of the considerable work that has been undertaken in Juba in developing the Postgraduate Medical Education Centre (PGMEC), which has included the development of internet and intranet access. It was therefore felt that the time was right to explore how interested medical parties in the UK could now support BMT in South Sudan using e-learning options.

Meeting

Although having no particular expertise in the technicalities of e-learning, the author (LA) agreed to convene a meeting of individuals who could further this project and eight people met in London on 5th June 2015. The individuals included Royal College representatives as well as people who had been involved in developing the formal BMT lecture curriculum, in developing on-line resources for the undergraduate programme and who had particular expertise in e-learning. Other interested parties who were not able to attend the meeting but have expressed an interest in providing ongoing support have been circulated with the notes of the meeting.

Professor Bregazzi was present and was able to provide a briefing on the current situation in the South Sudan. All attendees were impressed by the work that has been undertaken and were very positively encouraged to hear

that the PGMEC is now well appointed and is due to be opened in 2015. The IT and internet facilities are impressive and, although there was some discussion about the width of broadband available and whether this is currently adequate to support live on-line streaming and it is certainly the case that further improvements could well be of benefit, they are certainly adequate to be able to support good quality postgraduate education.

Future action

Following the meeting a programme of actions was agreed:

- The intercollegiate group will be re-convened and broadened to ensure that it can properly coordinate the UK support for postgraduate medical education in South Sudan. Its priority focus will be to review all aspects of support for BMT and future specialist teaching in South Sudan including the e-learning aspects.
- The BMT formal teaching curriculum will be re-circulated to all UK Royal College representatives for consideration of which sessions they could support on an e-learning basis. Depending on the broadband width available and other technical issues, this input could be via live streamed lectures or pre-recorded lectures made available on the intranet.
- Access by the PGMEC to existing online resources in the colleges or via other sites would also be explored.
- Technical expertise will be provided to Professor Bregazzi to enable the existing on-line resources to be mapped in such a way that they will be more easily accessible to doctors working in South Sudan.
- Further work will be undertaken in developing the on-line resources for the undergraduate programme and this will be coordinated with the resources for the BMT programme.
- College representatives and technical members of the group will arrange to meet with visiting Juba faculty members to the UK as appropriate.

Conclusion

It was generally felt that this meeting had been very positive and had provided impetus to the efforts in the UK to support postgraduate medical education in South Sudan. The encouraging reports of developments in Juba and the commitment shown by leaders and staff there

have provided a new energy and momentum to those of us in the UK who wish to provide help and support. It is appropriate to ensure that modern technology is used in the most effective way possible to support learning and this will be the main focus of our work in the immediate future. However, direct input continues to be seen as important and one outcome of the meeting was that the Royal College of Paediatrics and Child Health is actively reviewing the possibility of an exploratory faculty visit to Juba.

This feels like a pivotal and exciting time for medical training in South Sudan and we look forward to supporting future developments.

Dr Liz Adamson, MBChB, MSc (Clin Trop Med), FRCPCH has recently retired as a Consultant Paediatrician specialising in child development and safeguarding. From 1981 to 1983 she was a member of the British Council team headed by Professor Alan Woodruff which supported the establishment of clinical teaching at the University of Juba medical school.

Gordon Memorial College Trust Fund

At its last meeting the Gordon Memorial College Trust Fund (GMCTF) awarded scholarships/grants to the following applicants from South Sudan and to organisations supporting students at universities in the Sudan.

MAGHRABI BEQUEST

Name	Course	Institution of study
1. Dr. Lucy Theophilus	Master of Restorative Dentistry	Muhimbili University of Health and Allied Sciences, Tanzania
2. Dr. Fardous Abeya	Master in Internal Medicine	Mbarara University of Science and Technology, Uganda

Women's Educational Partnership (W.E.P) – pays fees for 14 scholars and hopes to recruit 9 new scholars to study health sciences at Ahfad University for Women. This will enable more disadvantaged women to acquire the necessary skills to help in the displaced areas, improving the lives of families and the economic growth in poor communities.

Windle Trust - provides accommodation in four hostels in Omdurman to approximately 70 young female students from South Sudan studying at Ahfad University for Women.

GORDON FUND

Name	Course	Institution of study
1. Dr. John Koat	Ophthalmology	Makerere University
2. Dr. John Biar Anyieth	Obstetrics & Gynaecology	Muhimbili University, Tanzania
3. Dr. Koma Akim	Master of Medicine in General Surgery	Kilimanjaro Christian Medical College, Moshi, Tanzania
4. Dr. Gawar Gel	Master Degree Paediatrics and Child Health	Makerere University College of Health Sciences
5. Dr. Moses Taban	Master of Medicine in Obstetrics & Gynaecology	Makerere University

Scientific writing for publication workshop in Juba



Figure 1. Some of the participants of the SSMJ writing workshop in Juba, South Sudan

The South Sudan Medical Journal (SSMJ) organized a one-day scientific writing for publication workshop on Saturday, April 25 2015 at the Juba Grand Hotel in Juba, South Sudan. The workshop was attended by 26 medical professionals.

The objective of the workshop was to equip participants with the knowledge of how to prepare and produce articles for submission to peer-reviewed scientific journals by:

- Stimulating the interest of medical professionals in publishing their work, and
- Increasing the quality of articles submitted to the SSMJ.

At the end of the workshop, the participants were expected to:

- Understand the components of a scientific paper
- Understand different types of publications
- Learn how to structure their papers
- Overcome barriers to effective writing
- Learn how to draft scientific papers, and
- Understand the peer- review process.

The key presentations made during the workshop were:

- Introduction and background of SSMJ
- Components of a scientific paper and authorship
- Writing the abstract and methodology, and
- Writing the results, discussions and references.

Some of the challenges faced by SSMJ which were discussed in the workshop include:

- Staff are volunteers – there is a need for permanent staffing to manage day-to-day activities
- Limited contributions from South Sudan for publication
- Limited funds for printing, and
- Distribution / circulation within the country is very difficult.

The participants recommended the following after the workshop:

- Regular case presentations and discussions on relevant topics, which can be published.
- Organize training for medical professionals on research development and writing, implementation and reporting
- Establish a research body to conduct relevant research in the country and publish its findings, and
- Support medical professionals in developing their manuscripts for publication.

The facilitators of the workshop were Dr. Edward Eremugo Luka, Dr. Oromo Francis Seriano and Dr. Kenneth Lado Lino.

By Dr. Edward Eremugo Luka
SSMJ Editor in Chief

Resources

MATERNAL AND CHILD HEALTH

Progress for Children

UNICEF's latest data-driven report, *Progress for Children*, highlights where attention and action must be directed in order to reach the world's most vulnerable children and achieve sustainable growth. In presenting achievements over the MDG period and the challenges children still face, *Progress for Children* shows both where global and regional gains have been exceptional as well as where disparities have widened since 1990. Analysis of the data reveals inequities that – while not surprising – can no longer be ignored, including:

- Children from the poorest households are two times as likely to die before their fifth birthday as children from the richest households.
- In most sub-Saharan African countries, girls from the poorest households remain most disadvantaged in terms of school participation.
- Adolescent girls are disproportionately affected by HIV, accounting for nearly two thirds of all new HIV infections among adolescents in 2013.

See <http://data.unicef.org/resources/progress-for-children-report>

Making women count

This Lancet article says, “Women and health, not women's health.” The distinction is important because unless the contribution women make to society is recognised, the new post-2015 global goal of sustainability will be little more than a distant utopia. The idea of women and health therefore carries some urgency. The reproductive rights of women are too often marginalised in global health, especially the rights and needs of adolescent girls and older women. But the argument of this article is that the global health and development community needs to go beyond sexual and reproductive health and rights.

Ref: Making women count. Richard Horton and Audrey Ceschia

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)60964-3/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)60964-3/abstract)

Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children

The Interagency Task Team on the Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children (IATT) has released the Option B+ Monitoring & Evaluation Framework for Antiretroviral Treatment for Pregnant and Breastfeeding Women Living with HIV and Their Infants (IATT M&E Option B/

B+ Framework). - see <http://www.emtct-iatt.org/m-and-e-framework> - a tool for national programmes expanding PMTCT Option B/B+ treatment approaches. Prevention of Mother to Child HIV Transmission (PMTCT) programmes have evolved from delivering a single prophylactic drug to mothers to providing lifelong care and treatment for both mothers and children living with HIV. Lifelong treatment approaches – widely known as ‘Option B+’ – are expanding from pilots to universal implementation as revised national treatment guidelines are scaled up across generalized epidemic settings. As service delivery programmes expand lifelong treatment approaches, data systems which collect, report and use routine and enhanced programme information must be strengthened to identify programme successes and challenges.

Initiation of CPAP in neonates with respiratory distress in Malawi

Low-cost bubble continuous positive airway pressure (bCPAP) systems have been shown to improve survival in neonates with respiratory distress, in developing countries. District hospitals in Malawi requested guidelines to enable healthcare workers with basic skills and minimal training to determine when treatment with CPAP is necessary. This simple algorithm ‘TRY (T: Tone is good, R: Respiratory Distress and Y=Yes) CPAP’ was developed and validated to identify neonates with respiratory distress who would benefit from CPAP was developed and validated.

Ref: Arch Dis Child Fetal Neonatal Ed 2015;100:F332-F336 doi:10.1136/archdischild-2014-308082 Development and validation of a simple algorithm for initiation of CPAP in neonates with respiratory distress in Malawi. Hundalani et al.

Benefits of advance oxytocin preparation could extend to newborns

Advance preparation of oxytocin not only facilitates rapid administration after delivery to prevent postpartum hemorrhage but also could free health workers to provide immediate neonatal resuscitation to non-breathing newborns within the critical 1-minute time window. See <http://www.ghspjournal.org/content/3/2/149.full.html>

INFECTION

Deworming revisited

Re-analysis of existing studies by the London School of Hygiene and Tropical Medicine finds that deworming schemes may not improve educational attainment as previously claimed.

See http://www.theguardian.com/society/2015/jul/23/research-global-deworming-programmes?CMP=tw_t_gu

Hepatitis B and C co-infection linked to worse liver fibrosis than hepatitis B alone

People with both hepatitis B virus (HBV) and hepatitis C virus (HCV) co-infection may experience more rapid and severe liver disease progression than those with hepatitis B alone, though HBV and HCV co-infection did not appear to worsen hepatitis C progression, according to a French study presented at the European Association for the Study of the Liver (EASL) 50th International Liver Congress in April in Vienna, Austria. Read more >>

Eradicating Yaws

Yaws is a chronic neglected tropical disease which mainly affects children in poor regions and is caused by a bacteria which affects the skin and bones, causing weeping ulcers and severe bone deformities. This highly contagious infection is prevalent in areas where people have poor sanitation and little access to healthcare services. This study showed that one round of mass treatment with the single-dose oral drug azithromycin, greatly reduced the transmission and prevalence of yaws on Lihir Island in Papua New Guinea. This and other data provide empirical data to support the Morges yaws eradication strategy proposed by WHO in 2012 (see www.who.int/neglected_diseases/yaws_azithromycin_2012/en)

Ref: Mitjà et al, Mass Treatment with Single-Dose Azithromycin for Yaws, *New England Journal of Medicine*. DOI: 10.1056/NEJMoa1408586. And http://www.lshtm.ac.uk/newsevents/news/2015/yaws_eradication.html#sthash.TqbfgrS.dpuf

HEALTH INFORMATION WEBSITES

(from HIFA forum www.hifa.org)

Sustainable Sanitation Alliance <http://www.susana.org> is an open network on sustainable sanitation. It invites international, regional and local organisations to join the network, contribute ideas, and to become active partners in the thematic working groups. It provides resource material for people planning and/or implementing sanitation projects to download including technical drawings, videos, publications, posters and an discussion forum.


The Medical Search <http://themedicalsearch.com> This search engine gets results only from sites relevant to medical professionals and prevents you having to filter out the low quality content one might get back from a generic medical search on Google. For example, if you search for a drug name e.g. “Dalteparin” you will find that the BNF page is referenced.

Hand Washing

Continued from page 62

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Hand Hygiene Technique with Soap and Water

 **Duration of the entire procedure: 40-60 seconds**



Wet hands with water;



Apply enough soap to cover all hand surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



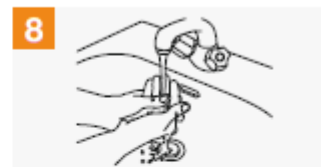
Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



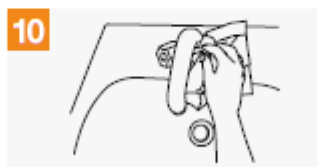
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

Reprinted with permission from 'WHO Guidelines on Hand Hygiene in Health Care' World Health Organization. Figure 11.2 p156. ©2009. <http://www.who.int/gpsc/5may/tools/9789241597906/en/>

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.