



MMJ

MAKERERE
MEDICAL JOURNAL

48TH VOLUME



THE MEDICAL
CONCIERGE GROUP



CONTENTS

Foreword MMJ Editor in Chief / MUMSA president / Patron MMJ 3

MMJ Editors & Reviewers 4

ORIGINAL RESEARCH	5
KNOWLEDGE, ATTITUDES AND PRACTICES OF MAKERERE UNIVERSITY STUDENTS TOWARDS VOLUNTARY BLOOD DONATION	5
HEPATITIS B VACCINATION STATUS AMONG STUDENTS AT THE COLLEGE OF HEALTH SCIENCES, MAKERERE UNIVERSITY, UGANDA	15
INCIDENCE OF CANCER AMONG CHILDREN AND ADOLESCENTS IN KYADONDO COUNTY, UGANDA BETWEEN 2009 AND 2014	18
FORMULATION AND EVALUATION OF AN ANTIDERMATOPHYTIC OINTMENT FROM Eucalyptus Citriodora ESSENTIAL OIL	23

CASE REPORTS 27

NEUROINTENSIVE MANAGEMENT OF ACUTE BACTERIAL MENINGITIS IN RESOURCE LIMITED SETTINGS 27

NON-EDEMATOUS SEVERE ACUTE MALNUTRITION (SAM) COMPLICATED WITH ACUTE WATERY DIARRHEA 31

PERFORATED PEPTIC ULCER PRESENTING AFTER AN ACUTE SEVERE ILLNESS 37

PROJECT REPORTS 40

THE HEARTSTRINGS' PROJECT' 40

IMPROVING MENSTRUAL HYGIENE AMONG ADOLESCENTS IN FOUR SELECTED SCHOOLS IN AMOLATAR DISTRICT 43

THE TOTO PROJECT: MAKING MATERNAL AND CHILD HEALTH A COMMUNITY OBJECTIVE 46

EDITORIALS 50

DEPRESSION: SEEK HELP 49/53

POLLUTION CONTROL, A STRATEGY NOT TO FORGET! 50

THE EVOLUTION OF EMERGENCY MEDICINE AT MAKERERE UNIVERSITY 51

MEDICAL TRANSLATION: A NEGLECTED YET VITAL IN UGANDAN MEDICINE FIELD OFTEN 52



Kigozi Enos
(MBChB IV)

Editor in chief

Kigozi Enos is a 4th year medical student, renowned for his medical research and scientific writing aspirations. He has passion for media, publications, community development and transformational leadership. He has risen through the ranks in the Research and writers' club to the position of Editor-in-chief of the 48th edition of the MMJ currently. He is the former publications director at FUMSA. He has presented papers at JISSC and participated in mentoring fellow colleagues.

Welcome to the 48th Edition of the Makerere Medical Journal (MMJ). It is such a great milestone to which we shall always look back medical research and publication to renew medical practices and technologies in our academic and clinical lives. cutting edge research and publication is what we all call for. Therefore, as medical students, we need to build to it day by day starting at the smallest point of impact. I would like to thank and extend my gratitude to my co-editors, editorial board members, reviewers as well as the contributing authors for creating this edition. In this edition, readers will find a diverse group of manuscripts. Ahimbisibwe P et al, explores the knowledge, attitudes and practices of Makerere University students towards voluntary blood donation, Apio P et al, shows the hepatitis B vaccination status among students at the College Of Health Sciences, Makerere University, Walusimbi D et al, shows the formulation and evaluation of an antidermatophytic ointment from Eucalyptus Citriodora essential oil while Abila D et al provides insight to the incidence of cancer among children and adolescents.

In our case reports section, we appreciated the impact of individual cases building up to medical information relevant to fine tune medical practice as observed in Saba I et al, Oriba D et al and Ssenyondwa Jet al.

In our project reports, Wafula M et al describes the TOTO project that made maternal and child health a community objective, she also goes ahead to describe the need to improving menstrual hygiene among adolescents. Menyo I et al describes the heartstrings project under the drive, run for the hearts.

Additionally, in our editorials section, Sauya K et al writes about depression: seek for help, Businge O et al shares about pollution control: a strategy not to forget, Ndyabawe I et al writes about medical translation: a neglected yet vital in ugandan medicine field often and Kalanzi Jet al writes about the evolution of emergency medicine at Makerere university.

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Sauya Kauma is a Biomedical Scientist currently pursuing MBChB at Makerere University. Away from the medical field, she is a creative writer who has recently picked particular interest in mental health, an editor and a proof reader. Some of her work is published on her blog, theprant.wordpress.com.



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Anne Agoe is a 4th year student pursuing a Bachelor's Degree of Science in Nursing. She is the case reports editor for the 48th MMJ edition. She is also the Organizing secretary for Makerere University Nursing Students' Association (MUNSA). One of the most avid readers you'll ever meet, she wishes you all a wonderful read through the beloved journal.



ACAN INNOCENT
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Acan Innocent Immaculate is a third year student pursuing a Bachelor's Degree in Medicine and a Bachelor's Degree in Surgery. She dabbles in writing in her spare time and looks forward to pursuing both careers in the future.

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Forewords



AHIMBISIBWE PROSPER
President Research & Writers club
2016-2017

Dear reader,

Any great piece of writing deserves an equivalent pair of eyes to take a read and appreciate. I welcome you the 48th Edition of the Makerere University Journal (MMJ). The MMJ is the celebration of the gifts of research and writing among the medical fraternity at Makerere University College of Health Sciences particularly undergraduate students.

As the Research & Writers Club of Makerere University, our mission is to improve on the competence of undergraduates, tomorrow's iconic scientists, through research, scientific and creative writing. Our vision is to be a fountain for an African generation that prides in research and publishing scientific materials.

As 2017 marks the sixth year of the existence of the Research Writers Club, we are glad to be at the forefront of this piece of work with beautiful content from our dear authors. Due appreciation goes out to the Research & Writers Club executive, I served alongside, who put in heart and soul all year around. A team of faculty staff and practising health personnel did a nice job in reviewing all the articles. A hand of applause for the editorial team for their meticulous work. And finally, I take this opportunity to our sponsors and partners for their generous contribution that enabled the publication of the 48th Edition of the Makerere Medical Journal possible.

Buckle your seat belt as you take the journey through this edition. May you get thrilled and edified as you enjoy every piece!



KINTU MOSES GRACE
MUMSA president
2016-2017

Welcome yet again to another edition of the prestigious Makerere Medical Journal. Work on the journal has been ongoing for quite a while and much effort has been made towards improving the quality of articles. As with each new edition, we bring you more fascinating clinical case reports, original research articles, project reports to mention but a few, all done and designed by medical students at Makerere University. All the articles included here have been meticulously reviewed by senior faculty to ensure quality. We are greatly indebted to them for the reviews.

Reading through this edition, you'll appreciate the extra brilliance exhibited and the mammoth of knowledge entailed in it. There is a lot of potential among the authors of this journal and the editors of the articles published here. I encourage you all to take your time and read through each article, digesting all the information there in.

I extend my sincere gratitude to the editorial team that has worked tirelessly to avail this edition of MMJ to all the eager readers. I congratulate the Research and Writers' club of Makerere University College of Health Sciences and the MUMSA executive that have seen this work through. Finally, in a special way, I appreciate our sponsors who have supported us and made publication of this journal possible, the College administration for the relentless support and the entire students' community for the readership and articles that you contribute

I wish you an amazing reading experience.



Dr. SABRINA KITAKA
Patron MMJ
2016-2017

It gives me absolute pride to be associated with the 48th Edition of the Makerere Medical Journal (MMJ) which is produced as a tradition and culture by the Makerere University Medical Student's Association (MUMSA). As an Alumnus of the Makerere University Medical School, I am humbled by the great strides made by this reader and the meticulous efforts of the Editorial Team and each and every one of the contributing. Scientific information is of no value without dissemination, and the MMJ continues to offer a worthy platform for original and community projects conducted by the students. Readers will, of course, make their own judgments regarding the importance of a published article, but that judgment will be informed by a rigorous, overarching editorial process helping guide the field. In addition and importantly, the published article will serve as a portal to an array of related resources that inform, amplify, and enrich the readers' experience. I have had the opportunity to read the details of many of the articles which are clearly a true reflection of scientific rigor and disposition. The articles herein dwell on 'hot topics' like Hepatis B, to developmental and social issues like malnutrition, menstrual hygiene and a community project which raised funds for some cardiac patients. To ALL the funders, and reviewers of this specific issue, we are truly grateful. This issue is a 'must read', and I say this with a lot of confidence. Many heartfelt congratulations to the entire team for this 48th Issue.



INFECTIOUS DISEASES INSTITUTE

College of Health Sciences, Makerere University, Uganda

Investing in the Future: Impacting Real Lives



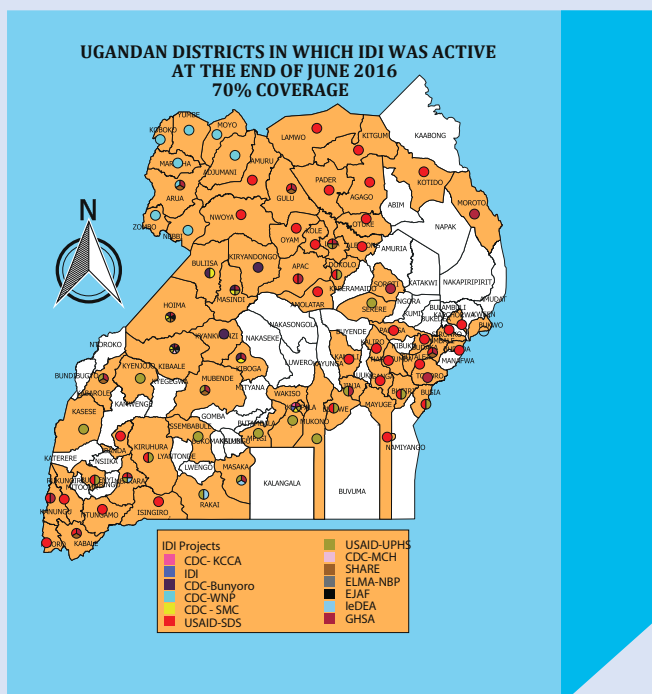
The Infectious Diseases Institute (IDI) is a Ugandan not-for-profit organization dedicated to strengthening health systems in Africa, with strong emphasis on infectious diseases, through research and capacity development. Established in 2002, IDI strives to create a healthy Africa free from the burden of infectious diseases. IDI is an integral component of the College of Health Sciences at Makerere University School of Medicine: and is wholly owned by the university. IDI provides university staff with opportunities to participate in research and career enhancing projects. With a growing portfolio, IDI is currently implementing over 80 projects country wide.

IDI provides treatment and care services to over 100,000 people living with HIV in urban and rural settings in Uganda (both directly, and in partnership with government and non-government health facilities). This translates into about 10% of the national effort. Of the 100,000 people living with HIV, IDI Outreach department cares for over 90,000. Additionally, IDI provides extensive prevention services such as voluntary medical male circumcision and

Prevention of Mother to Child HIV Transmission. As a national referral centre, IDI manages complicated HIV cases.

Committed to capacity building, IDI has trained over 22,000 health workers from Uganda and 27 neighboring countries. Training addresses topics ranging from HIV/AIDS and TB co-infection, malaria, emerging/re-emerging infectious diseases (such as ebola), lab services, pharmacy to systems strengthening (such as monitoring and evaluation, proposal writing and grants management, as well as research capacity building). IDI is also rapidly developing expertise in systematic ongoing distance learning and eHealth approaches including online training. In collaboration with Makerere University and John Hopkins University, IDI houses a lab certified by the College of American Pathologists and recognized by the American Food and Drug Administration. IDI also manages a translational laboratory in partnership with the Makerere Department of Obstetrics & Gynecology and with major international collaborators.

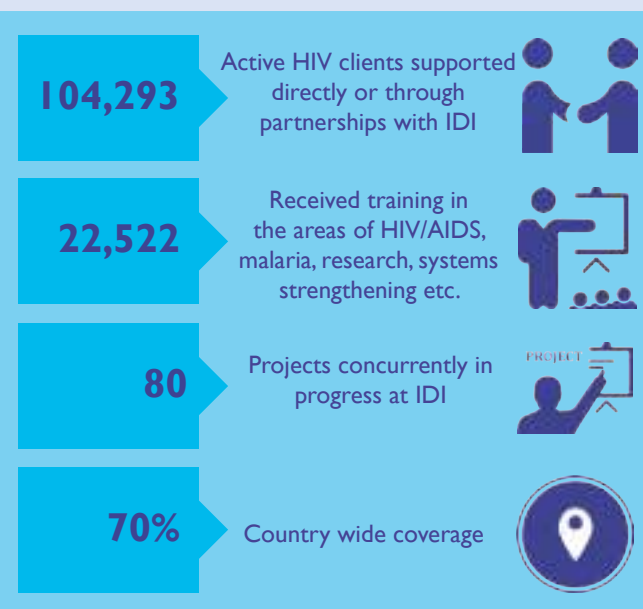
COUNTRY COVERAGE



VISION

A healthy Africa, free from the burden of infectious diseases

PROGRAM ACHIEVEMENTS



MISSION

To strengthen health systems in Africa, with a strong emphasis on infectious diseases, through research and capacity development

KNOWLEDGE ATTITUDES AND PRACTICES OF MAKERERE UNIVERSITY STUDENTS TOWARDS VOLUNTARY BLOOD DONATION



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ABSTRACT

BACKGROUND: Access to safe blood is a key component of an effective health care system and voluntary blood donors are the basis of a safe blood supply. The annual blood donations countrywide, in Uganda, are insufficient to address the high transfusion need. The low rate of blood donation among Makerere University students is similar to countrywide donation rates, and reasons not known.

OBJECTIVE: To assess the knowledge, attitudes and practices of Makerere university students towards voluntary blood donation.

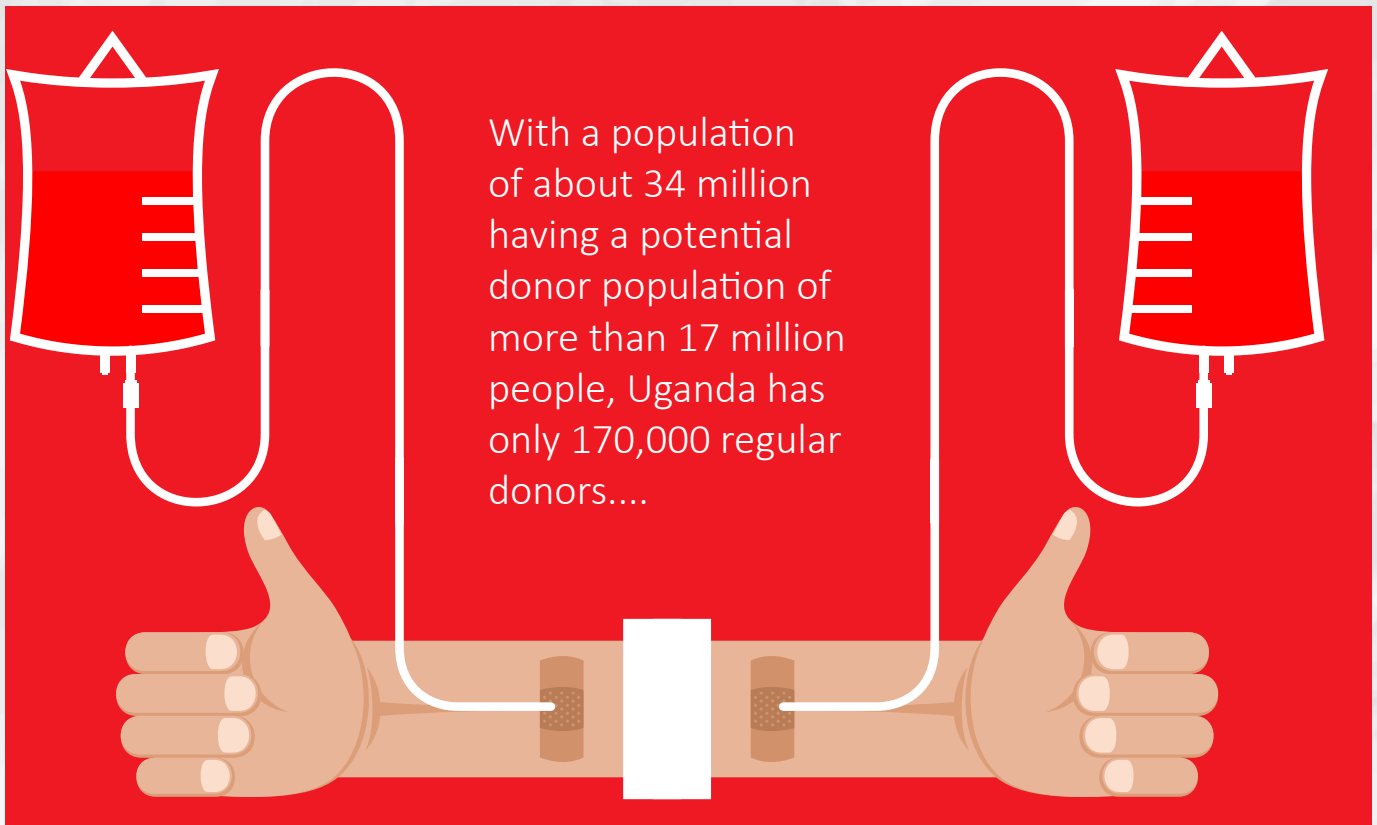
METHODS: A descriptive cross-sectional study of Makerere University students using 424 self-administered questionnaires and two focused group discussions of 20 were done.

KEY RESULTS: The highest percentage for source of information about blood donation came in from media at 37.57% with health worker/center source second at 35.77%, peers 11.50% and high-school at 13.76%. There was

significant difference between sources of information amongst the students with good knowledge about blood donation ($\chi^2=6.8932$, $p=0.075$) with the health centre/worker coming out as the most accurate source at 41.67%. Compared to students from College of Natural Sciences, the students from college of health sciences were significantly more knowledgeable, AOR = 17.746 (3.366-93.549), $p = 0.001$. Students that had good knowledge were also found to have a positive/good attitude towards blood donation ($\chi^2=26.0307$, $p = 0.000$). A significant number of students who had good knowledge about blood donation where found to have actually donated compared to those with poor knowledge ($\chi^2=22.2546$, $p = 0.000$).

CONCLUSIONS: There has been good evidence from the study that one having adequate information about blood donation leads to good attitudes henceforth actual blood donation.

RECOMMENDATION: More effort and focus should be placed upon health workers to equip them with better information and skills to influence actual blood donation.



1. Introduction

Blood donation has been a universal remedy for many centuries all over the world. Blood donation is the act of giving one's blood so that it used for the purpose of transfusion.

Blood is the most donated tissue in medical practice and a veritable tool in many lifesaving situations when used judiciously. In spite of the rapid and remarkable breakthroughs in medical science today, there is still no ideal substitute for blood. Blood donation remains the only way of acquiring blood to meet emergency requirements in cases of road traffic accidents, complications of pregnancy and child birth, various anaemic disorders and surgical emergencies (1).

Access to safe blood is a key component of an effective health care system and voluntary blood donors are the basis of a safe blood supply. Globally 107million units of blood are collected annually, approximately half of these are collected in the high-income countries, home to 15% of the world's population (2,3).The recruitment of voluntary, non-remunerated blood donors poses major challenges to transfusion services throughout the world(4). Efforts

continue worldwide to establish and maintain sufficient numbers of regular, volunteer blood donors to ensure an adequate supply of blood. The constant concern with being able to meet the demands for blood is because of the fact that only a percentage of the eligible population actually chooses to donate blood on a regular basis and that a significant percentage of eligible donors are deferred temporarily or permanently because of a strict deferral criteria continuously being added in the name of blood safety (5). At the same time, the demand for blood and blood products in most countries continues to increase because of the rise in human life expectancy and the implementation of new and aggressive surgical and therapeutic methods requiring large quantities of blood and blood products (6).

It is an irony that despite being a nation with a population of more than 38 million and an annual requirements of 250,000 units, only about 200,000 units are collected. The blood is used by children 0-6years (60%), pregnant mothers (30%) and the rest by the general population .In most developed countries, including Uganda, preventable deaths still occur

each year due to inadequate supply of safe blood and blood products. Most of this burden falls on women and children as a consequence of pregnant-related complications, malnutrition, malaria and other infectious diseases (7).

In Uganda, the blood donation system is decentralized with 7 regional blood banks and 6 blood collection centres all run by the Uganda Blood Transfusion Services(UBTS) under the Ministry of Health. Each is an integral part of a public hospital and has the responsibility of recruiting blood donors, collecting and testing blood and processing it into its components to supply hospitals and clinics. According to UBTS, 196,157 units of blood were collected in 2012, while 203,819 units of blood units were collected in 2011, all below Uganda's annual need of about 250,000 units of blood. With a population of about 34 million having a potential donor population of more than 17 million people, Uganda has only 170,000 regular donors. The annual blood donations are insufficient to cover the high transfusion need especially at Health Center IVs where most of the population lives (UBTS).

However, approximately 80% of the blood donated in the country comes from secondary and post-secondary students, including university students thus creating a risk of shortage in supply during the holidays. It is important to investigate the factors affecting inadequate blood supply (7). The blood stock at most health centers is insufficient. Many preventable deaths from anemia in children, postpartum hemorrhage in mothers and perioperative complications have occurred due to unavailability of blood units at health centers especially in the villages (7,9).

The Makerere University population represents a pool of eligible donors, yet the donation rate is low (7). The reasons for the lack of participation of the university students in blood donation are not clear. An understanding of the existing knowledge, attitudes regarding voluntary blood donation and how these may influence the actual participation in blood donation is important. The information so obtained could be helpful in developing appropriate messages and targeted interventions to create positive attitudes towards blood donation.

2. Methods

2.1 Study Design and Area

This was a descriptive cross-sectional study conducted among Makerere University students using qualitative and quantitative methods of data collection. Makerere University is the oldest and largest public university in Uganda, located about 2Km from Kampala, the capital of Uganda. It is the largest public university in Uganda with a total population of about 40,000 students- 35,761 students in 2013-2014 academic year (12)

2.2. Study Population, Sample Size, and Sampling

Procedures.

We recruited study participants from their places of study-their respective colleges. The students attend to nine colleges and one school of law (27). A formula for cross-sectional studies by Kish Leslie will be used to estimate the sample size

We used the same formula;

Where; N = estimated sample, Z = Z score for 95% confidence interval = 1.96, P = 0.5. Since we found no previous studies, we used the value that would give us the maximum sample size, i.e. 0.5, d = acceptable margin of error, 5%. Substituting in the above formula, sample size (N) = 385, we anticipated a high non-response rate of about 10% of the calculated sample size, 10% of N is 38.5 approximately 39; therefore $N = 385 + 39 = 424$.

We identified 424 students that could meet our inclusion criteria of being active students at Makerere University; who were above 18 years of age. Students were randomly selected through simple random proportionate sampling from their respective colleges with the sampling size from each college being determined according to their percentage to the total Makerere University student population. We recruited 99 from College of Humanities and Social sciences (CHUSS) with a 8395 student population, 81 from College of Education and External Studies (CEES 6867), 71 from College of Business and Management Science (CoBAMS 5966) 51 from College of Computing and Information Science (CoCIS 4255), 38 from College of Engineering, Design Art and Technology (CEDAT 3168), 27 from College of Agricultural & Environmental sciences (CEAS at 2312), 18 from College of Health Sciences (CHS 1543), 16 from School of law (1380), 15 from College of Natural Sciences (CoNAS 1238) and 8 from College of Veterinary Animal resources and Bio security (COVAB 637). In addition

to the questionnaire, we collected qualitative data using focus group discussion methods. Two focused group discussions, comprised of eight respondents each were carried out. The purpose of the study was repeatedly explained to them and they consented to participate in focused group discussions.

2.3. Data Collection Tools and Procedures.

We used a semi-structured questionnaire written in English having both open and close ended questions to collect quantitative data. The questionnaire had five parts. The first part was on demographic characteristics (age, gender, college of study, religion) and had 5 questions. The second part covered awareness of blood group and donation with 4 questions. The third part was on the knowledge of blood donation process with five questions on age limit, minimum weight, amount taken, minimum interval and duration and two on events that require blood transfusion and transmissible diseases through the process. The fourth part covered attitudes with seven false commonly held phrases on blood donation and two questions on "yes/no" what one thinks of blood donation. The fifth part had five questions on practices pertaining to blood donation and the experiences as well as future behavioral practices.

The focused group discussions were conducted by the first and second authors. Two FDGs comprising of eight individuals each were done. Participants for the focus group discussion were drawn from different colleges in the university. Respect for opinions and confidentiality were observed during the session that were held in English and audio tape recorded. We used a semi-structured focus group guide to explore perception of students about voluntary blood donation, previous experience with donations, and whether they would consider

voluntary blood donation in future.

2.4. Data Processing and Analysis.

Questionnaires were organized and checked every day at the field for errors and to ensure their completeness. All quantitative data from questionnaires were entered using Epi Data info version 3.1. The data was entered and analysed using the Statistical Package for the Social Sciences (SPSS) version 10. The first step was data cleaning by running frequency of each variable. Any information which was not clear was rechecked in the questionnaires. Responses from open ended questions were first categorized into themes and coded into categorical responses. We tested the association between the study variables with bivariate regression analysis and p value <0.05 was taken as statistically significant.

The data from the focus group discussions was transcribed and analyzed using thematic analysis approach where categories within the texts were identified and grouped together to form the emerging themes. The qualitative analysis was done with the help of a qualitative research expert at Makerere University College of Health Sciences who independently analyzed the data, identified categories and themes. This analysis was compared with that done by the first and second authors to check for consistency and consensus on data interpretation.

2.6. Ethical Clearance.

The study was approved by Research & Ethics Committee School of Medicine, Makerere University and the National Council of Science and Technology (NCST) in July 2014 before starting the research. Written informed consent was obtained from all participants after explaining the aim of the study before administering the questionnaires. Confidentiality was maintained whereby numbers were used in the questionnaires instead of respondent's names for the purpose of gathering information.

3. Results

3.1. Socio-demographic Characteristics of the Participants.

In the 424 participants, their mean age was 21.25 (Standard deviation = 2.05). Female participation was slightly dominant at 52%. More details are in Table 1.

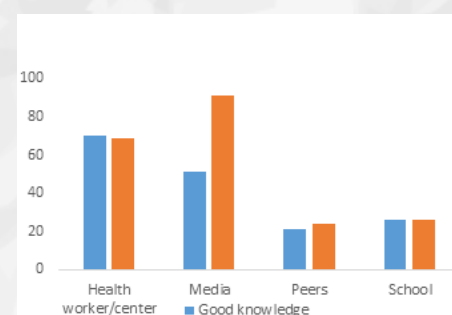
TABLE 1 Socio-demographic Characteristics of participants (N= 424)

	Frequency
Sex	
Male	194
Female	212
Year of study	
Year 1	122
Year 2	125
Year 3	119
Year 4	50
Year 5	0
College of study	
CONAS	23
CHUSS	71
COVAB	8
COBAMS	77
CIT	48
CEDAT	41
CHS	32
CAES	59
COES	46
SCHOOL OF LAW	19
Religion	
Roman Catholic	139
Moslem	46
Pentecostal	89
Anglican	129
Seventh day	12
Jehovah's witness	5

3.2 Knowledge about the process of blood donation.

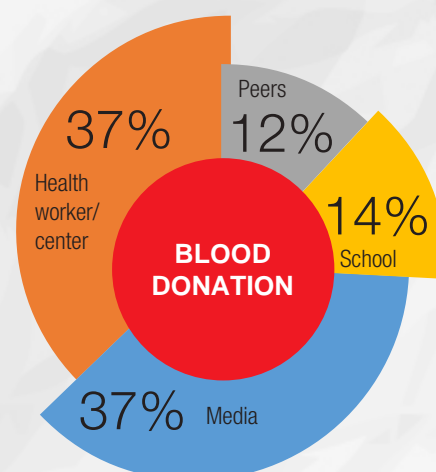
For someone to be categorized as having good knowledge, they must have answered two or more correct entries in questionnaire about age limit, minimum weight, amount of blood collected, duration and the recommended interval for each blood donation session. Only 42.92% of the 424 demonstrated good knowledge about blood donation.

FIGURE 2 Relationship between knowledge and sources of information



Pearson chi—square = 6.8932, p-value = 0.075

FIGURE 1 Sources of information about blood donation.



3.3 Knowledge about the process of blood donation.

For someone to be categorized as having good knowledge, they must have answered two or more correct

3.4 Associations of demographics and knowledge

Table 2 Association between demographic data and knowledge.

Category	cOR	p-value	95% CI	AOR	p-value	95% CI
Sex						
Male	1					
Female	0.944	0.775	0.638-1.399			
Year of study						
Year 1	1					
Year 2	1.203	0.470	0.728-1.988			
Year 3	0.942	0.820	0.565-1.572			
Year 4	0.757	0.423	0.384-1.494			
College for Study						
CONAS	1					
CHUSS	1.130	0.802	0.438-2.911	1.014	0.976	0.385-2.669
COVAB	2.167	0.359	0.415-11.302	1.955	0.430	0.370-10.331
COBAMS	0.625	0.333	0.241-1.620	0.561	0.244	0.213-1.482
CIT	1.011	0.983	0.371-2.755	0.933	0.894	0.337-2.586
CEDAT	0.538	0.253	0.186-1.559	0.530	0.249	0.179-1.561
CHS	19.500	0.000	3.738-101.717	17.746	0.001	3.366-93.549
CAES	0.618	0.339	0.230-1.660	0.565	0.267	0.207-1.546
COE AND EXTERNAL LEARNING	0.762	0.601	0.275-2.111	0.712	0.521	0.252-2.010
SCHOOL OF LAW	1.444	0.555	0.426-4.897	1.286	0.691	0.372-4.442
Religion						
Roman Catholic	1					
Moslem	0.702	0.318	0.351-1.405	0.832	0.625	0.399-1.736
Pentecostal	1.176	0.551	0.689-2.008	1.202	0.532	0.674-2.143
Anglican	1.042	0.866	0.642-1.690	1.188	0.511	0.710-1.987
Seventh day	0.658	0.511	0.189-2.289	0.896	0.866	0.250-3.207

3.5 Attitudes of students towards blood donation.

Table 3 What are the major reasons for lack of participation?

	YES	NO
Blood donation makes you weak	217 (53.45)	189 (46.55)
Blood donation can lead to dizziness	220 (53.92)	188 (46.08)
Blood donation can lead to anemia	236 (58.85)	165 (41.15)
Blood donation can lead to reduced immunity	189 (46.55)	217 (53.45)
Blood donation can cause weight loss	220 (53.92)	188 (46.08)
Blood donation can cause severe fatigue	152 (37.35)	255 (62.25)
Blood bank will sell blood to a patient	147 (36.03)	261 (63.97)

It was fifty-fifty when it came to proportion of students with a positive versus a negative attitude. Good attitude was defined as refuting (saying NO) to three or more of pre-empted negative misconceptions out of six. 81 % of respondents said (YES) when asked if relatives of patients should be asked to donate in case of need.

3.6 Association of knowledge about blood donation and attitude.

Table 4 Relationship between having good knowledge and positive attitude towards blood donation among Makerere university students

	Good knowledge	Poor knowledge	TOTAL
Poor/negative attitude	65 (30.66)	147 (69.34)	212 (100)
Good/positive attitude	117 (55.19)	95 (44.81)	212 (100)

3.7 The practices of blood donation.

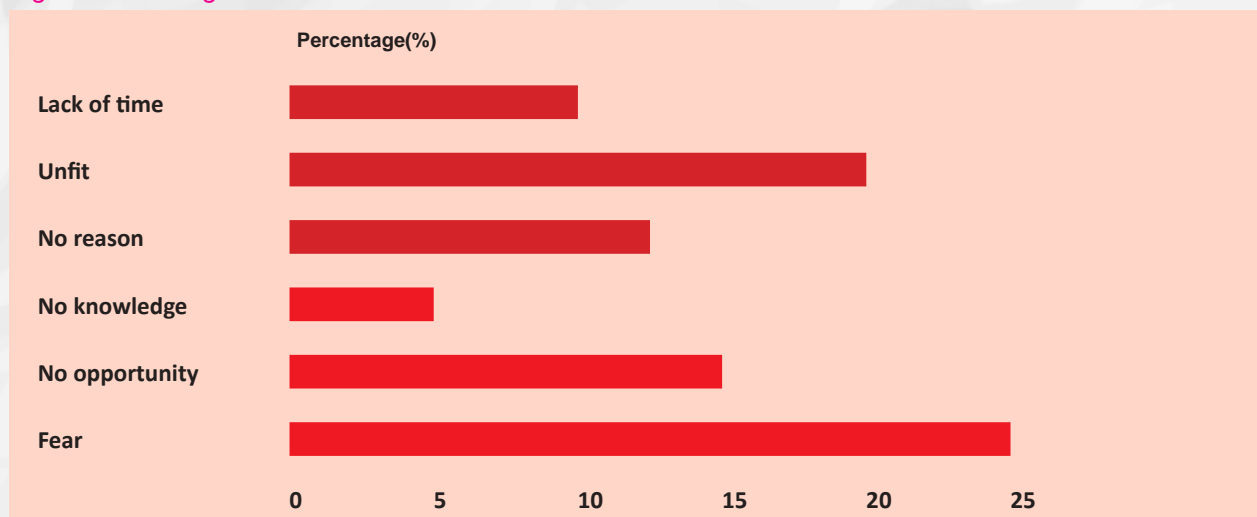
Only 28.15% of those sampled had ever donated. Majority of those who donated (86.7%) cited free will as the reason for donation, followed by emergency at 7%, then organizational activity at 5.3% and least as replacement at 0.9%. Only 46% described some discomfort during the blood donation process.

Table 5 Relationship between knowledge among university students and actual practice of blood donation

Have you ever donated blood?	Poor knowledge	Good knowledge	Poor knowledge	Good knowledge	TOTAL
Yes	43 (37.72)	71 (62.28)			114 (100)
No	185 (63.57)	106 (36.43)			291 (100)

Pearson chi-square = 22.2546, p-value = 0.000

Figure 3 Showing reasons for non-donation



97% of those who had ever donated replied (YES) if they would donate when called upon or reminded to do so. Only 27% of those who had never donated declined the chance to donate if called upon or reminded to do so in the near future.

3.8 Association between knowledge and actual practice of blood donation.

Table 6 What source of information has led to greater actual blood donation?

Have you ever donated?	Health center/ Worker	Media	Peers	School	Total
Yes	44 (41.90)	26 (24.76)	9 (8.57)	26 (24.76)	105 (100)
No	185 (63.57)	106 (36.43)	34 (13.33)	25 (9.80)	255 (100)

Pearson chi-square = 19.7611, p-value = 0.000

Two broad themes emerged from the two focused group discussions (FGD) conducted; reasons for positive blood donation practices and reasons for non-donation. The respondents were given numbers from 0-10 in the first FGD and 11-19 from the second FGD.

Four major reasons for positive donation practices were; Health and Assumed Benefits, Humanity, Peer influence and popular people donating as part of campaigns.

Nine deterrents to blood donation came out of the discussion; Fear, Self-assessed Medical reasons, Stringent blood donor criteria, Blood process being uncomfortable, the Blood donation process being risky, Knowing your HIV status, Blood Donation personnel being an obstacle, Repulsive Campaign material used in blood donation drives and Lack of Time.

4. Discussion

Knowledge

Makerere University student population who were sampled for the study had an average of 21.3 years with standard deviation of 2. This is a representative young population. 41.4 % of the sampled students knew their blood groups and 90.6 % having heard about blood donation. The ignorant 9.4% is a little worrisome.

The highest percentage for source of information about blood donation came in from media at 37.57% with health worker/centre source second at 35.8%, peers 11.50% and high school at 13.76%. These are good avenues for blood donor recruitment with the potential to be maximized to improve on good practices of blood donation. This is similar to the percentages of sources of information among a study done among Kilimanjaro University students; media 39.2%, hospital 33.4% but with blood bank at 21.1% (10).

A minority percentage 42% of those sampled had good knowledge on blood donation. For someone to be categorized as having good knowledge, they must have answered two or more

correct entries in questionnaire about age limit, minimum weight, amount of blood collected, duration and the recommended interval for each blood donation session. There was significant difference between sources of information amongst the students with good knowledge about blood donation ($\chi^2=6.8932$, $p=0.075$) as shown in figure 2. Health centre/worker came out as a more accurate, reliable source to impart good knowledge about blood donation with 41.7% followed by media. Media on other hand contributed most to percentage of students with poor knowledge. This can be due to these outlets now being censored or it coming back to the misinterpretation of message by the receiver depending on the type used.

Compared to students from College of Natural Sciences, the students from college of health sciences (CHS) were significantly more knowledgeable, AOR = 17.746 (3.366-93.549), $p = 0.001$. The levels of knowledge of students from other college was not statistically significant on comparison. This could be that CHS is a training institution for future health worker (doctors, nurses, et al) with a vast background of medical knowledge. It is a good thing that this particular group be equipped with more tailored information to influence more positive choices for blood donation. Blood donation drives can also tap into this category especially when working with other colleges. More investment can be put into these future health worker in terms of short courses or modules about blood donation to enhance their knowledge.

Attitude

58.85% affirmed the hypothetical negative misconception that blood donation leads to anaemia while a majority 63.97% refuted that blood bank sells donated blood to patients. Half the percentage of people had good attitude towards blood donation. Good attitude was defined as refuting (saying NO) to three or more of pre-empted negative misconceptions out of six. This percentage is lower than two studies;

the first in a community study done in Gondar, Northwest Ethiopia were 82% of 772 sampled demonstrated positive attitude and the second among university students in Kilimanjaro which showed 94.7% positive attitude (10,11).

Students that had good knowledge were also found to have a positive/good attitude towards blood donation as shown table 11. ($\chi^2=26.0307$, $p = 0.000$). This evidences strongly that there is link between good knowledge influences good attitude towards voluntary blood donation.

Practices

A majority 71.6% of students had never donated blood with rest 29.4% having donated. This percentage is similar to one got in a similar study with university students in Kilimanjaro, Tanzania which showed 30% blood donation(10). However the percentage of people is way above that got in a community based study done in Gondar, Northwest Ethiopia at 18.4%(11). At a community level, there is a diversity of people in the all age groups with less and less people donating as they age.

Among the reasons for non-donation, a 39.86% feared to donate, 20.28% who considered themselves unfit and 13.64% who lacked the opportunity. This is a different picture from one of the similar study in a university setting in Kilimanjaro where respondents pointed out lack of knowledge as leading reason for non-donation at 36% followed by fear at 13%(10).

It is good that only 53.98% of people who ever donated felt no discomfort during the process. A significant number of students who had good knowledge about blood donation where found to have actually donated as compared to those with poor knowledge ($\chi^2=22.2546$, $p = 0.000$) as shown by the table 7. This clearly stamps out the positive correlation between good knowledge and actual practice of blood donation.

Educating and equipping masses with good accurate knowledge translates into good attitudes, henceforth good

blood donation practices.

Relating one's religion and good blood donation practice showed a noticeable 80% of Jehovah's had never donated blood relatively insitu group.

There is a significant variation between the sources of information for the students that have ever donated blood as shown in table 22. ($\chi^2=19.7611$, $p=0.000$), with the greatest source being health workers /health centres 41.90% (44) and least being peers 8.57% (9). Health workers stood out as the greatest source of information that lead to actual blood donation. This should be an issue of trust of information with health worker coming off as more authentic and credible. More effort and focus should be placed upon health workers to equip them with better information and skills to influence actual blood donation.

Among those who donated, 86.73 % donated out of free will. This is similar in relation to a study done in university in Kilimanjaro, where a majority 90.5% of those who donated did it out of voluntarism (10). This good reason shows a majority of people are still willing to donate and there is a potential of people out there who will donate if hit with the possibility. In comparison, these two studies done carried out among respondents from universities showed a significantly higher degree in voluntarism than among respondents in a community based cross-sectional study at 61%(11).

Organizational activity as a reason for blood donation came in third after emergency. This gives a firm recommendation that more cooperate drives can be carried out to increase on the units of blood donated to save lives. 97% of those who had ever donated replied (YES) if they would donate when called upon or reminded to do so. Only 27% of those who had never donated declined the chance to donate if called upon or reminded to do so in the near future. This was more similar to a similar study done in Kilimanjaro which showed willingness to donate in near future at 95% among those who had ever donated and 80% among those who

had never donated. The Uganda Blood Transfusion Services (UBTS) should use this opportunity and come with tailored strategies to target this group in order to increase their proportion of voluntary blood donation. Priority should be to conveying of accurate information and education messages to university students and general public and packages with simple and short messages to address the misinformation especially in main stream media.

4.1 Strength and Limitations of the study

This is the first study in Uganda that sought to provide data on proportion and factors associated with blood donation among university students. The data is important for the Uganda Blood Transfusion Services and the Ministry of Health as it will enlighten challenges or barriers in addressing the increase of voluntary and non-remunerated blood donors among university students.

The study was carried out in a student population at a University setting. Further studies should include other levels of study. The study was also carried out in a narrow age bracket as compared with the general population so it is very hard to transpose these findings on the general population in Uganda. So further research should try to encompass people in older age bracket

Competing Interests

The authors declare that there are no competing interests.

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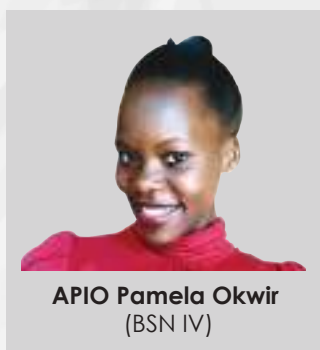
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**MAKERERE UNIVERSITY
COLLEGE OF HEALTH SCIENCES**

HEPATITIS B VACCINATION STATUS

AMONG STUDENTS AT THE COLLEGE OF HEALTH SCIENCES, MAKERERE UNIVERSITY, UGANDA



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INTRODUCTION

Hepatitis B virus infection is caused by hepatitis B virus (HBV) which affects the liver causing chronic infection which puts people at a high risk of death from cirrhosis and liver cancer (World Health Organization, 2015a). Globally, over 2 billion people are living with HBV infection. Hepatitis B virus is highly endemic worldwide. The annual mortality rate is 650000 due to liver cirrhosis and hepatocellular carcinoma (World Health Organization, 2015b). In Uganda, more than 1.4 million people are living with chronic HBV infection (Bwogi et al., 2009). According to World Health Organization, health care workers (HCWs) including medical students who are exposed to blood and blood products through their work are at high risk of acquiring this infection (World Health Organization, 2015a). A study done in Uganda, among HCWs showed that 60.1% had HBV infection out of which, 8.7% were chronically infected (Braka et al., 2006). In Mulago National Referral Hospital, the prevalence of HBV in 370 HCWs was 30 (8.1%) (Ziraba, Bwogi, Namale, Wainaina, & Mayanja-Kizza, 2010) and among 183 medical students at College

of Health Sciences, 20 (11.0%) had HBV infection and the prevalence was higher in the clinical students (Pido & Kagimu, 2005).

According to WHO, the vaccine against hepatitis B is highly protective (World Health Organization, 2015a). The recommended dose schedule is a three intramuscular injections at 0, 1 and 6 months. A complete vaccination induces up to more than 95% protection lasting for more than twenty years or even lifelong (World Health Organization, 2015a). Unfortunately, in Uganda, the immunization status of HCWs in Mulago National Referral Hospital is quite low, 23 (6.2%) (Ziraba et al., 2010) however a study among medical students at BP Koirala institute of health sciences in Nepal showed that 521 (86.5%) out of 602 students were vaccinated against HBV with over 436 (72.4%) full vaccination. (Bhattarai, Smriti, Pradhan, Lama, & Rijal, 2014).

Unfortunately in Uganda, no studies have been done to assess the vaccination. Hepatitis B vaccination among HCWs has been associated with a number of factors like how someone perceives the vaccine safety and the risk of acquiring the infection (Topuridze

et al., 2010) and the other factors include; never thought of vaccination (23.5%), lack of motivation (34.2%), afraid of needles (8%), lack of belief in the vaccination (8%), and no need felt (26.3%) (Ibrahim & Idris, 2014). Therefore, studies aimed at determining the vaccination status of medical students in Uganda against hepatitis B and the associated factors should be done.

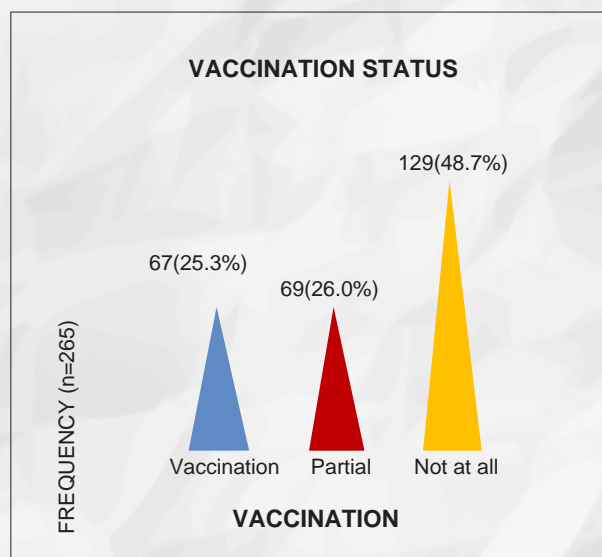
METHODS

In this cross sectional study we collected data from 265 students at college of health sciences, Makerere University. Data was collected using a self administered questionnaire. Eligible participants were students from second to fifth year from MBChB, Nursing and BDS programs. Proportionate to size sampling was used to determine the number of participants from each program and year of study, we then used simple random sampling to select participants. Ethical approval was obtained from IRB School of health sciences. Data collected was analyzed using SPSS version 16 computer program.

RESULTS

About half (51%) of the 265 participants received at least one dose of HBV vaccine. Only 67(25%) had received the recommended three doses.

Figure 1 Hepatitis B vaccination status of 265 students at MAKCHS



Having been screened for HBV (OR=0.13, 95% CI 0.04-0.39) and being in clinical year (OR=3.17, 95%CI 1.17-8.60) were independent predictors of complete vaccination status.

DISCUSSION

Although WHO recommends HBV vaccination for all risk groups especially HCWs and Health professional students (World Health Organization, 2015b), almost one half (48.7%) of the participants in this study had never been vaccinated at all. For those who have ever been vaccinated, only one in four (25.3%) had completed the recommended 3 dose schedule of the vaccine. Higher proportions were seen in studies conducted in other African countries among clinical students. Okeke (2008), Nigeria reported almost one half(47.7%) complete vaccination status and Peterside (2015), Nigeria reported 34.8% complete vaccination status(Okeke et al., 2008; Paul & Peterside, 2015). The low proportion in this study could be attributed to the difference in study population which was among clinical and preclinical students and the fact that infant vaccination against HBV under Uganda national EPI was introduced in 2002 which was several years after all the participants in this study population were born. This is also probably because of the difference in the geographical location.

Contrary to these, other surveys especially in the western countries also found low proportions in the vaccination status. Ibrahim and Idris (2014) reported less than half(43.8%) vaccination status, Pathoumthong and others (2014) reported only one in five(21%) participants with complete vaccination status and Othman and colleagues (2014) reported that less than half(45%) were vaccinated (Ibrahim & Idris, 2014; Othman et al., 2014; Pathoumthong et al., 2014). This could be related to the similarity in the curriculum of medical students worldwide, the study design and work environment during clinical practice.

Participants with a previous history of screening were 11 times more likely to complete HBV vaccination than those who did not. This was statistically significant at bivariate (OR=10.80 CI 4.46-26.14). It is probable that a participant who takes the initiative to screen for HBV has a positive attitude towards HBV vaccination. From this study, hepatitis B vaccination status was also seen to be higher among students in the clinical years. Higher proportions of students in clinical years was also reported in other studies; Othman and colleagues (2014) reported over two thirds(68.0%) and Souza and colleague (2014) reported close to three quarters (70.6%) students in clinical years vaccinated (Othman et al., 2014; Souza & Teixeira, 2014). The explanation for this could be probably because clinical students have had more time at the faculty and therefore have had a higher chance of being vaccinated.

CONCLUSION

Hepatitis B vaccination status among health professional students at Makerere University College of health sciences is low therefore these students are at high risk of acquiring HBV infection. HBV vaccination should therefore be promoted at CHS, Makerere.

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INCIDENCE OF CANCER AMONG CHILDREN AND ADOLESCENTS IN KYADONDO COUNTY, UGANDA BETWEEN 2009 AND 2014



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ABSTRACT

Background: Cancer may be relatively rare in childhood compared to later in life but is one of the more frequent causes of non-traumatic deaths in children worldwide. The common malignant diseases of childhood are leukaemia, lymphomas, tumors of the central nervous system and embryonic solid tumors (such as neuroblastoma and nephroblastoma) whereas among the adolescents, sarcomas of bone and soft tissue, and tumors of the male and female genital tracts. In Africa, the distribution of childhood cancers is quite similar. The commonest being Kaposi sarcoma, Burkitt's lymphoma, retinoblastoma, leukaemia and Hodgkin lymphomas.

Methods: This was a retrospective cross-sectional study. This study involved review of cancer patient's information in the Kampala cancer registry. The study population was children (0-14 years) and adolescents (15-19 years) diagnosed with cancer from January 2009 to December 2014.

Results: A total of 752 patients i.e.

children (0-14 years) and adolescents (15-19 years) diagnosed with cancer between January, 2009 and December, 2014 were included in the study. 71.7% (n=539) were children while 29.3% (n=213) were adolescents of age. Non-Among the children, Hodgkin lymphoma was 21% of diagnosed childhood cancers, 12% Kaposi Sarcoma, 9% nephroblastoma, 7% retinoblastoma, 11% unspecified malignancies and 40% others. Among the adolescents, 20% were Kaposi Sarcoma, 18% Non-Hodgkin lymphoma, 8% Hodgkin lymphoma, 7% Hodgkin Lymphoma, 6% Chronic Myeloid leukaemia and 41% other malignancies..

Conclusion: Cancer common among children compared to adolescents. Nephroblastoma and retinoblastoma cases were found in only children.

INTRODUCTION

Cancer may be relatively rare in childhood compared to later in life but is one of the more frequent causes of non-traumatic deaths in children



worldwide. Cancer continues to be the leading disease-related cause of death among children and adolescents in the United States.

As new medical treatments are developed, cancer in children is no longer equated with death, and more children survive and continue normal lives after treatment. World age-standardised incidence rates in Ireland averaged 142 cases per million children per year, slightly higher than the European average and slightly lower than the US average, although differences varied by diagnostic group (Siegel et al., 2014; Stack, Walsh, Comber, Ryan, & O'Lorcan, 2007).

The common malignant diseases of childhood are leukaemia, lymphomas, tumors of the central nervous system and embryonic solid tumors (such as nephroblastoma and neuroblastoma) whereas among the adolescents, sarcomas of bone and soft tissue, and tumors of the male and female genital tracts. Moreover, the epithelial tumors (carcinomas), so prevalent in adults, occur (but at much lower frequencies) in adolescents (Siegel et al., 2014) (Petridou et al., 2008).

In Africa, the distribution of childhood cancers is quite similar. The commonest being Kaposi sarcoma, Burkitt's lymphoma, retinoblastoma, leukaemia and Hodgkin lymphomas (Stefan, 2015) (Stefan, 2015)(Mostert et al., 2012; Stefan, 2015). The distribution of childhood cancer in Africa has changed in the past decade due to the Human Immunodeficiency Virus (HIV) epidemic and the appearance of Kaposi sarcoma. Southern Africa remains the region mostly affected by this HIV related

malignancy (Chintu, Athale, & Patil, 1995; Stefan, 2015)

The current patterns in Uganda are not available, but trends in the 1990's showed that lymphomas (35.8%), Kaposi sarcoma (25.1%), leukaemias (6.9%) nephroblastoma (Wilms' tumour) (6.2 %), and retinoblastoma (4.8%) had the highest incidence rate (D. M. Parkin et al., 2010; Wabinga et al., 2014)..

In Uganda in particular, little emphasis has been put in identification of the commonest malignancies among children and adolescents, with most of the research focusing on adulthood cancers. This study describes the incidence rates of cancer among children and adolescents in Kampala, Uganda from 2009 to 2014.

METHODS

This was a retrospective cross-sectional study in which we reviewed 754 cancer patients' data entered into the Kampala Cancer registry from January 2009 to December 2014. The registry covers Kyadondo, a region in central Uganda whose commonest tribe is Ganda. 32.2% of the population are children 0-14yrs and 10% adolescents 15-19yrs. A data extraction questionnaire was used to capture data from the registry. It was pre-tested prior to collecting data. A database was created; analysis was done using STATA 13 and Microsoft Excel 2013

Ethical approval was obtained from the Institutional Review Board (IRB) of Makerere University, College of Health Sciences, School of Biomedical Sciences. The Director of Kampala Cancer Registry approved collection of data from registry.

RESULTS

Demographics: A total of 752 patients were included in the sample i.e. children (0-14 years) and adolescents (15-19 years) who had been diagnosed with cancer between January, 2009 and December, 2014. 71.7% (n=539) were children (0-14) years while 29.3% (n=213) were adolescents (0-15) years of age. According to fig. 1, 56.4% (n=304) of the children were male whereas 43.9% (n=235) were female. Among the adolescents, 50.2% (n=107) were female whereas 49.8% (n=106) were male.

Figure 1: Numbers of children and adolescents by gender who were diagnosed with cancer between 2009 and 2014 in Kyadondo County, Uganda.

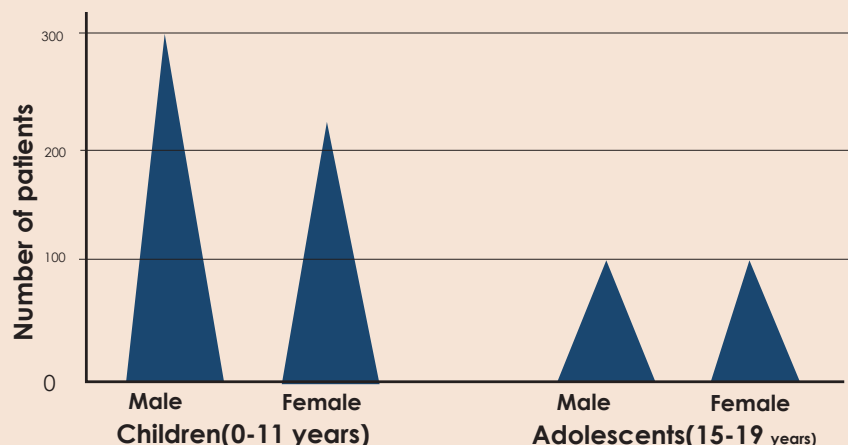
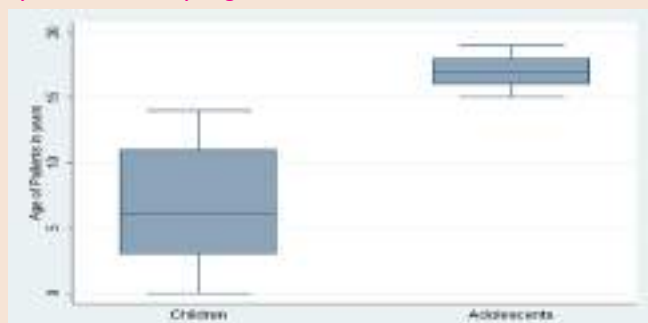


Figure 2: Distribution of ages of the children and adolescents who were diagnosed with cancer between 2009 and 2014 in Kyadondo County, Uganda.



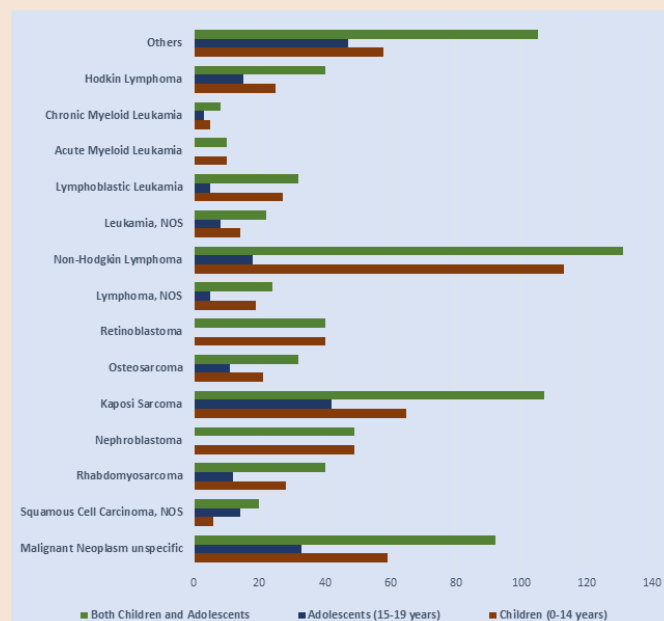
Most commonly diagnosed childhood and adolescent cancers

Cancers in the population aged 0 to 19 year: According to fig. 3, Non-Hodgkin Lymphoma was the most commonly diagnosed with 131 cases among population aged 0-19 years, followed by Kaposi Sarcoma with 107 cases, Unspecified Malignant Neoplasms with 92 cases, and both Rhabdomyosarcoma and Hodgkin Lymphoma with 40 cases each respectively. The other cases of cancer totalled to 342 cases.

Cancers among children: According to fig. 3, Non-Hodgkin lymphoma is the most common cancer among the children aged 0-14 years with 113 cases, followed by Kaposi Sarcoma with 65 cases, Unspecified Malignant Neoplasms with 59 cases, Nephroblastoma with 49 cases and Retinoblastoma with 40 cases respectively. The other cancers were 213 in total. Nephroblastoma and Retinoblastoma cases were found in only the children.

Cancers among the adolescents: According to fig. 3, Kaposi Sarcoma is the most common cancer among the adolescent with 42 cases between 2009 and 2014, followed by unspecified malignant neoplasms with 33 cases, Non-Hodgkin lymphoma with 18 cases, Hodgkin lymphoma with 15 cases and Chronic Myeloid leukaemia with 14 cases respectively. The other cancers totalled to 91 cases.

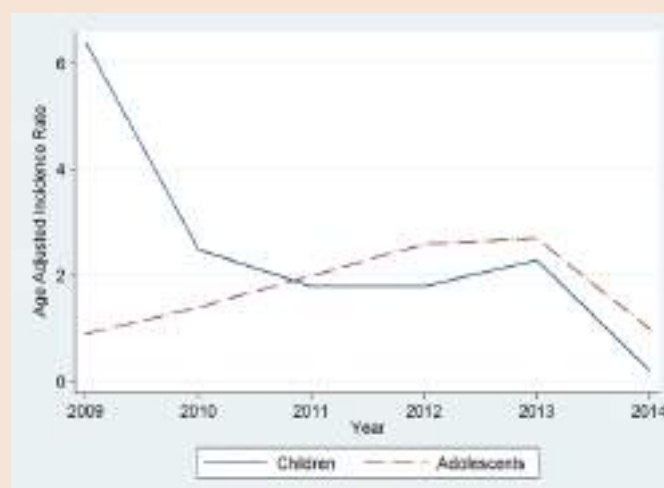
Figure 3: Distribution of childhood and adolescent cancers by age group in Kyadondo County, Uganda between 2009 and 2014.



Age Standardised Incidence Rates (ASR)

The age standardised incidence rate per 1,000,000 were calculated for the children (0-14 years), adolescents (15-19 years) and for a combination of both age groups (0-19 years) for each of the individual cancers from 2009 to 2014. The ASR were standardised to the WHO world standard population. Table II shows the age standardised incidence rates of the childhood and adolescent cancers by gender in Kyadondo County, Uganda from 2009 to 2014.

Figure 4: Trends in age standardised incidence rates of Kaposi Sarcoma among children and adolescents, Kyadondo County, Uganda 2009 to 2014 (n=752)



According to fig. 6, the incidence of Retinoblastoma in children was higher than that of nephroblastoma in 2009, but the trend has changed over time from 2011, with the incidence of nephroblastoma being slightly higher than that of retinoblastoma.

In 2014, the incidence rates of retinoblastoma and nephroblastoma in Kyadondo County were 0.2 and 1.4 per 1,000,000 children respectively.

Figure 5: Trends in age standardised incidence rates of Retinoblastoma and Nephroblastoma among children (0-14 years) in Kyadondo County, Uganda 2009 to 2014

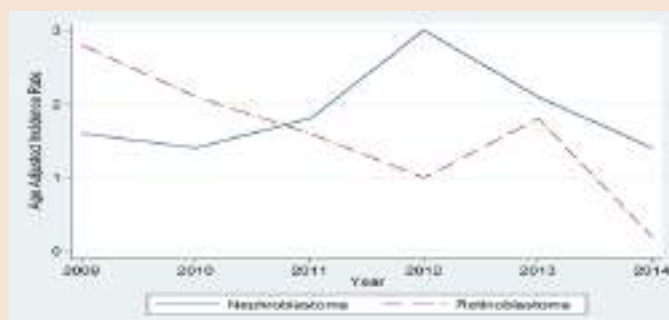
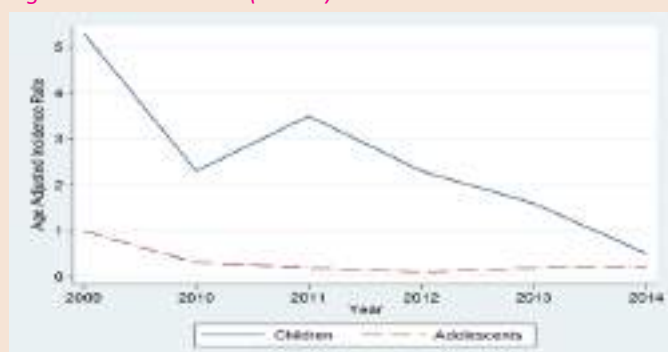


Figure 6: Trends in age standardised incidence rates of Burkitt's Lymphoma among children and adolescents, Kyadondo county, Uganda 2009 to 2014 (n=752)



Relationship between childhood and adolescent cancers

Nephroblastoma and retinoblastoma were common among the children only. The other types of cancer were distributed among the children and adolescents. There was no cancer that was found to be associated with only the adolescents.

DISCUSSION

Among children

In studies that were carried out in other African countries, it shows that the results obtained from this study are similar in terms of the most common cancers among the children.

In studies done in Kenya and Rwanda that used population based cancer registries, the most common were Non-Hodgkin lymphoma, leukaemia, Kaposi Sarcoma and nephroblastoma respectively (Mostert et al., 2012; Stefan, 2015). In West Africa, Mali, Non-Hodgkin lymphoma, Kaposi Sarcoma, leukaemia and Hodgkin lymphoma are the most common cases of childhood cancers. In a study done in Malawi using a national cancer registry, it was found that Non-Hodgkin lymphoma, Kaposi

Sarcoma and Nephroblastoma were the most common cancer among the children (Stefan, 2015).

The findings from this study differed from that in countries outside Africa. Haematological malignancies, solid tumors brain tumors were the most common cases of childhood and adolescent cancers (Howard et al., 2007; Link & Donaldson, 2003; McNally et al., 2001; D. M. Parkin, Kramaroya, & Draper, 1998; Siegel et al., 2014).

This was a trend common among the developed countries. In United States of America, leukaemias, CNS tumors and lymphomas were the most common (Yamamoto & Goodman, 2008). In North West Iran using a population based cancer registry, the findings showed that leukaemias, CNS tumors and neuroblastoma were the most common (Fathi, Bahadoram, & Amani, 2015). The distribution of childhood cancer in Africa has changed in the past decade due to the human immunodeficiency virus (HIV) epidemic and the appearance of Kaposi sarcoma. Southern and East Africa remains the region mostly affected by this HIV related malignancy (Stefan, 2015).

Among adolescents

The trends of adolescent cancers in Uganda were quite similar to those in other African countries although Kaposi Sarcoma was the most incident which was not the case with other African countries (Stiller, 2007). This study found out that Kaposi Sarcoma had the highest incidence rates followed by Non-Hodgkin lymphoma and Chronic Myeloid Leukaemia respectively. In comparison to other studies in Africa, in Zimbabwe, leukaemia, osteosarcoma, Non-Hodgkin lymphoma and Kaposi sarcoma had the highest incidence rates (Stiller, 2007). Non-Hodgkin lymphoma and bone tumors were the most common in Algeria.

The incidence of the most common adolescent cancers obtained from this study varied from those of countries outside Africa. In Oceania countries that is New Zealand and Australia, Melanomas are the most common followed by Non-Hodgkin lymphomas, leukaemia, bone tumors and CNS tumors (especially Epidermoid) which also had high incidence rates respectively (Stiller, 2007). In south and East Asia, generally the incidence of cancer among children is low. Above all, leukaemia, Non-Hodgkin lymphoma, bone tumors and CNS tumors have high incidence rates (Stiller, 2007).

In West Asia, Non-Hodgkin lymphoma has the highest incidence, followed by leukaemia, bone tumors and thyroid tumors which are quite rare in other regions of the world.

In the United States of America, Non-Hodgkin lymphoma, leukaemia, gonadal tumors (particularly Germ Cell tumors) and thyroid tumors have high incidence rates (Stiller, 2007).

In European countries, Non-Hodgkin lymphoma, CNS tumors (Astrocytoma), soft tissue tumors (Rhabdomyosarcoma) and melanoma have high incidence rates respectively.

Hodgkin lymphoma, bone tumors i.e. osteosarcoma and Ewing's tumor, soft tissue tumor are the most common in the United States as well as European countries. Leukaemia is more prevalent in Asian countries (Stiller, 2007).

Contrast between childhood and Adolescent cancers

The results of this study were comparable to others studies and showed that nephroblastoma and retinoblastoma were common among children and were rare among adolescents. Leukaemia and lymphomas cut across the children and adolescents.

Cancer may be relatively rare in childhood compared to later in life but is one of the more frequent causes of non-traumatic deaths in children in worldwide (Stack et al., 2007). The spectrum of cancers affecting the adolescents reflects a similar transition (Stack et al., 2007). The common malignant diseases of childhood are leukaemias, lymphomas, tumors of the central nervous system and embryonic solid tumors (such as nephroblastoma and neuroblastoma) which are replaced in relative frequency by sarcomas of bone and soft tissue, and tumors of the male and female genital tracts. Moreover, the epithelial tumors (carcinomas), which are so prevalent in adults, occur (but at much lower frequencies) in adolescents (Stack et al., 2007).

CONCLUSION

Cancer was found to be higher among the children compared to the adolescents.

Nephroblastoma and retinoblastoma were found to be in only the children and not adolescents.

RECOMMENDATION

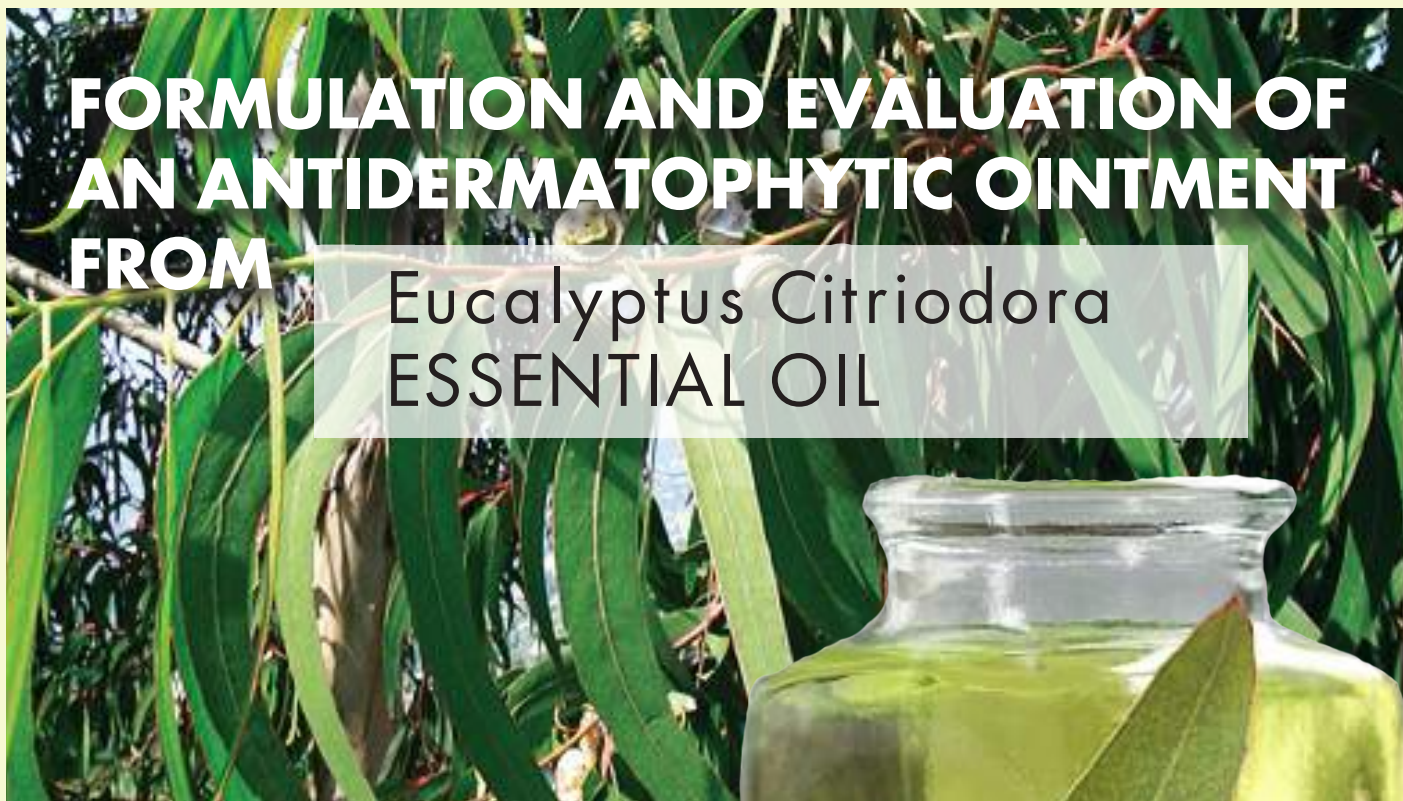
National cancer registries should be put in place.

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FORMULATION AND EVALUATION OF AN ANTIDERMATOPHYTIC OINTMENT FROM

Eucalyptus Citriodora ESSENTIAL OIL



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ABSTRACT

Eucalyptus citriodora essential oil is documented to have activity against dermatophytes and could provide cheaper and safer alternative to combat the high prevalence of *Tinea capitis* especially among children. The available remedies are costly, have numerous adverse effects and known resistance patterns, thus the need for novel, cheaper and safer products. The main objective of the study was to develop an antidermatophytic ointment from *Eucalyptus citriodora* essential oil and test its activity against *Trichophyton rubrum*. The essential oil obtained by hydro-distillation was incorporated together with vitamin E into an ointment base consisting of white bees wax, olive oil and soft paraffin. The antidermatophytic efficacy of the 1%, 2%, 4%, 6%, and 8% v/v

ointment formulations was determined in duplicates by inoculation using the well-diffusion method, and later measuring their zones of growth inhibition diameters. Clotrimazole cream 1% Denk® and the ointment base with vitamin E were used as the positive and negative control respectively. The 8% ointment formulation showed highest efficacy and most consistent results although its average zone of inhibition diameter was only approximately half that of the positive control. There was a concentration effect relationship ($r=0.5821$), although the difference in activity between the individual ointment strengths was not significant at 5%



confidence level ($p=0.285$). This study shows that the essential oil retains its antidermatophytic activity even when formulated into a topical product. Recommendation was made to develop formulations of higher strengths in order to achieve better results

INTRODUCTION

Dermatophytes are responsible for the majority of fungal infections involving skin, hair and nails, with a prevalence varying from 10%-30% in many African countries [1]. Fungi are of special significance in tropical environments including Uganda, because of the high temperatures and high humidity conditions in these regions which enhance their growth [2]. A previous study carried out in Uganda showed that 24.3% of the 436 participants, 13 years of age and older had either *Tinea corporis* or *Tinea capitis* [3]. *Tinea capitis* is a common contagious dermatophyte disease infecting the scalp and occurring mainly in children and immunocompromised adults with *Trichophyton* and *Microsporum* species as the causative agents [2]. Inadequate treatment of

Tinea capitis is likely to result in infections and permanent alopecia with scarring. Increasing resistance hampers the commonly used antifungal agents, with most being relatively expensive and some having a high degree of

relapse [4]. The commonly used antifungal agents also have numerous adverse effects and interactions and thus a herbal ointment formulated from *E. citriodora* essential oil is likely to be a more cost effective and safer option [4]. *Eucalyptus citriodora* essential oil is extracted from the plant leaves by either solvent extraction or distillation, with the latter giving a higher yield. The essential oil contains more than 80 components with citronellal, a sesquiterpene, constituting over 86% and being the major active constituent [5,6,7,8,9]. The essential oil is powerful antiseptic and has widely been

used externally for management of cuts and skin infections [10]. Previous *in-vitro* studies on the antifungal effects of the essential oil extract have shown activity against all the common causative organisms including *Microsporum gypseum*, *Trichophyton mentagrophytes*, *Trichophyton rubrum*, *Trichophyton violaceum* among others [11,12]. An *in-vivo* study evaluating antidermatophytic activity of a 1%v/v essential oil ointment among 50 patients showed a 55.5% cure rate, with the rest having significant improvement [13]. However, this study evaluated only one ointment strength and lacked a standard comparison therapy. In this study, the efficacy of various strengths of ointment formulated from *E. citriodora* essential oil was evaluated with clotrimazole cream 1% Denk® as

positive control and ointment base with vitamin E as negative control.

MATERIALS AND METHODS

This was an experimental study design carried out at the Pharmacy, Microbiology and Pharmacology laboratories of Makerere University College of Health Sciences (MakCHS) Plant Material. The leaves of *E. citriodora* were collected from Makerere University Agricultural Research Institute Kabanyolo (MUARIK) in February 2015. Extraction: The leaves were wilted at room temperature for 12 hours and the essential oil extracted using hydro-distillation method. The distillate obtained was shaken with dichloromethane and the organic and aqueous phases then separated using a separating funnel. Anhydrous sodium sulphate was added to the organic phase to absorb residual water. The organic solvent was then evaporated off with a rotary evaporator to recover the essential oil [7, 14].

Formulation: The formulae used modifications of the formula adopted from www.pindariherbfarm.com to attain the desired and suitable physical properties [15]. White bees wax, soft paraffin and olive oil were mixed in various proportions and then spreadability, texture, greasiness, hardness and color assessed. The base with desired properties was then selected for

formulation of the ointment. The ointment base was prepared by fusion method. The constituents of the base were melted together in a 1000ml glass beaker at 70°C with continuous stirring. The base was allowed to cool to 50°C and then vitamin E added. Formulation of the ointment was done by incorporating the essential oil into the base with vitamin E by trituration on a glass tile, using a spatula [15,16, 17, 18,]. The base formula, general ointment formula and the final composition for each ointment strengths are shown below.

White beeswax..... 05%
Soft paraffin..... 35%
Olive oil..... 60%

Ointment base formula

E. citriodora essential oil..... z%v/v

Vitamin E..... 10%w/w
Base..... Qs

Where z is the ointment strength

General formula for the various ointment strengths

The Fungal isolate *Trichophyton rubrum* was obtained from patients infected with *Tinea capitis* who were referred to Medical mycology laboratory, Mulago National Referral Hospital. Samples were taken from infected areas and cultivated on sterilized sabouraud Dextrose agar with chloramphenicol, which was incubated at 27°C for 2weeks. Identification of the isolate was based on gross colony characteristics and

microscopic morphology of its micro and macro conidia and accessory structures. Evaluation of efficacy The antifungal activity of the 1%, 2%, 4%, 6% and 8% v/v ointment formulations of E. citriodora essential oil was evaluated using well diffusion method. Sterilized saboraud

Dextrose agar with chloramphenicol was stabilized at 50°C; its pH was determined and the agar then poured into sterile petri dishes and allowed to set. A 1cm² well was created in the center of each of the agar plates using sterilized forceps. The samples were placed in the wells and the plates then inoculated with fungus, using a sterilized inoculating loop. The inoculated plates were incubated at 27°C

for 1 week and the diameters of the zones of growth inhibition then measured using a calibrated ruler, at the end of the incubation period. Clotrimazole cream 1% Denk® and ointment base with vitamin E were used as positive and negative controls respectively. The samples were analyzed in duplicates.

RESULTS

All ointment strengths had activity against *T. rubrum* as presented in table below. The 2% and 8% ointment strengths had the highest activity although their zones of growth inhibition were approximately half that of the positive control

In vitro antidermatophytic activity of the ointment strengths, negative control and positive control

Sample	Zones of Growth inhibition diameter (mm)		
	Plate1	Plate2	Average (±SD)
Ointment base with vitamin E			
Clotrimazole cream 1%	50	53	51.5±2.12
1% ointment	20	15	17.5±3.54
2% ointment	19	25	22±4.24
4% ointment	22	19	20.5±2.12
6% ointment	20	18	19.0±1.41
8% ointment	26	22	24.0±2.83

DISCUSSION AND CONCLUSION

The ointments formulated were tested on *T. rubrum* one of the most commonly identified species causing *Tinea Capitis* at Mulago Hospital. All the different ointment strengths produced some degree of inhibition although their activity was lower than that of clotrimazole cream 1%-Denk®. The 8% formulation was noted to have the highest activity. The results obtained are in agreement with several studies which found activity of E. citriodora essential oil against *T. rubrum*. Incorporation of

the oil into the ointment still preserves the activity as shown by our study [12, 13]. This is in agreement with Shahi's study in which a 1% ointment formulation was found to be effective on patients with dermatophytic infections. Higher essential oil concentrations ranging from 50%-100% were found to be fungicidal with 100% inhibition on *T. rubrum* and other dermatophytes [12]. Such findings imply that increasing the ointment strengths can increase the degree of inhibition produced by the ointment. The results obtained from this study indicated a directly proportional concentration effect relationship ($r=0.5821$), although the difference in activity between the individual ointment strengths was not significant at 5% confidence level ($p\text{-value}=0.285$) which could have resulted from having a smaller number of observations, unequal distribution of the essential oil in the ointment and possibly non uniform amount of inoculation on the agar plates. *E.citriodora* ointment is effective against *T. rubrum*, fulfills USP requirements and is safe for topical use. However higher strengths of ointments should also be evaluated for efficacy and dermal irritation.

RECOMMENDATIONS

There is need to study the activity of higher ointment strength formulations, with a standardized volume of inoculation per agar plate. Drug release profile of the ointment formulation should be determined as well as testing the ointment on other commonly isolated species.

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NEUROINTENSIVE MANAGEMENT OF ACUTE BACTERIAL MENINGITIS IN RESOURCE LIMITED SETTINGS

A CASE OF STREPTOCOCCUS PNEUMONIAE ACUTE BACTERIAL MENINGITIS



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ABSTRACT

Meningitis is the inflammation of the membranes surrounding the brain & spinal cord-dura, arachinoid & pia matter. Acute bacterial meningitis (ABM) is still associated with a high mortality rate of 33% for patients with meningococcal meningitis and 15% for those with nonmeningitic infections, mainly because of cerebral herniation as a result of increased intracranial pressure (ICP). Even though a growing number of studies have shown that high mortality and morbidity benefit from aggressive reduction in ICP, there are still a few reports and barely any studies on this topic in resource limited settings pointing out neurological outcomes. Below is a case of acute streptococcal meningitis with a clinical diagnosis of raised ICP and aspiration pneumonia, which was treated largely by I.V antibiotics, hyperventilation, dexamethasone and nursing in a reverse Trendelenburg position, leading to favorable neurological outcomes.

CASE PRESENTATION

A 36 year-old female HIV seronegative peasant farmer and alcohol abuser referred to St. Mary's Hospital Lacor from Kalongo Hospital upon request on 5th November 2016 with a 1 day history of high grade fever, generalized headache, neck pain and stiffness, few minutes/hours later her level of consciousness decreased with associated aphasia, restlessness, difficulties in breathing and finally generalised convulsion prior to referral. She had no history of trauma preceding illness. Review of other systems was unremarkable. No prior history of chest infection or cough & and no family history suggesting any significant illness, including tuberculosis. No history of diabetes, she was a known alcoholic and a breastfeeding mother of a 3 months old infant.

At the time of admission, she was unconscious with a Glasgow Coma Score (GCS) of 8 (E-2, V-2, M-4) and pyretic at 39.0°C, SpO₂ 87% at room air, and actively convulsing. She had poor general appearance, was tachypneic at 36 breaths/min, lung fields had

diffuse bilateral crepitations but with normal broncho-vesicular breath sounds & normal percussion note. BP was 130/86mmHg, PR 102bpm, HS I & II were normal. Unremarkable skin condition, neurological examination revealed neck rigidity, Kernig's sign was positive and Equivocal Babinskis, a left sided hemiparesis, with decerebrate posturing on painful stimuli. Pupils were equal but poorly reactive to light with absent oculocephalic reflexes, and absent corneal reflex. No auricular discharges on autoscope and no mastoid tenderness.

Intravenous diazepam was immediately given at a dose of 10mg twice, at intervals of 20 minutes and phenobarbitone 100mg OD for 3 days as a maintenance dose and seizures stopped within 48 hours. She got high flow oxygen by facemask at a rate of 8L/min, this improved her oxygen saturation from 87% to 96%. An NGT was inserted and a urinary catheter placed to monitor Kidney Function.

With reference to history and examination findings, acute bacterial meningitis was suspected and a diagnostic lumbar puncture (LP) was performed. Rapidly flowing, non-traumatic cloudy/ very turbid CSF of about 5mls was collected for CSF analysis. Patient was admitted in Medicine Ward, HDU for close Monitoring, and started empirically on IV Ceftriaxone 2g BID, Gentamycin 160mg OD, IV Dexamethasone 4mg BID & IV Metronidazole 500mg TID.

72 hours post admission, the patient's condition deteriorated with SP02 dropping to 49%, reduced breath sounds and effort. She however had a regular breathing pattern of 30 breaths/min. She was rapidly transferred to the intensive care unit where endotracheal intubation was performed and she was stabilized with mechanical ventilation and later tracheostomy. While in ICU she was on Ceftriaxone, Gentamycin and Metronidazole but on the 3rd day with CSF Culture and Sensitivity results, Gentamycin was stopped and a 14-day course of Chloramphenicol 2g 6-hourly was started. She was then scheduled for physiotherapy and discharged on Amoxiclav 615mg BID for 7 days and for review 4 weeks post discharge.

Table 1: Summary of patient's laboratory investigations.

CBC	<ul style="list-style-type: none"> HB 10.2g/dl normocytic normochromic. WBC 14,700μ/L predominantly Neutrophils 11,500μ/L & platelets of 158,000μ/L
Serum electrolytes	potassium, sodium and chloride were normal
ESR	48mm/h.
Renal function tests	Cr 0.8mg/dl, Urea 58mg/dl
Liver Functions Tests	GOT 20U/L, GPT 18U/L
Blood cultures	No growth
CSF	CSF was turbid, Glucose 52mg, Pandy's Test Positive, WBC, 560cells/mm ³ predominantly 95% polymorphs, Gram Positive Diplococci and short chains. CSF Culture <ul style="list-style-type: none"> Streptococcus Pneumonia, High sensitivity to Ceftriaxone, Chloramphenicol & cotrimoxazole, Intermediate sensitivity to Ampicillin, Resistant to Erythromycin & Ciprofloxacin

CASE DISCUSSION

Meningitis is a common cause of death in Africa. Historically in the African meningitis belt, bacterial pathogens such as *Neisseria meningitidis* and *Streptococcus pneumoniae* have been the most common etiologies, resulting in an estimated 800,000 cases between 1996 and 2010.(1,2) During non-epidemic situations in the African meningitis belt, surveillance conducted in Burkina Faso, Ghana, Niger, and Mali estimate that the most common etiological agents of meningitis are *Neisseria meningitidis* (37–52%), *Streptococcus pneumoniae* (27–43%), and *Haemophilus influenzae* (5–31%).(2)

Despite advances in antibiotic therapy, the morbidity (20 to 30%) and case fatality (21 to 28%) (2–4) associated with pneumococcal meningitis have changed little in the past 30 years. This justifies the need for additional, cost effective advances geared towards improvement of outcomes in resource limited settings that still have the highest burden of bacterial meningitis.

S. pneumoniae belongs to the α -hemolytic group that characteristically produces a greenish color on blood agar because of the reduction of iron in hemoglobin. The bacteria are fastidious and grow best in 5% CO₂ but require a source of catalase (e.g. blood) for growth on agar plates, where they develop mucoid (smooth/shiny) colonies.

In our patient meningitis appeared to be the primary presenting pneumococcal syndrome. It can however be a complication of other conditions such as skull fracture, otitis media, bacteremia, or mastoiditis. Pyogenic meningitis, including that due to *S. pneumoniae*, is associated clinically with findings that include severe, generalized, gradual-onset headache, fever, and nausea as well as specific CNS manifestations such as stiff neck, photophobia, seizures, and confusion. The above patient, similar to other case reports, presented with clinical signs including a toxic appearance, altered consciousness, bradycardia, and later Cheyne-stokes breathing indicative of increased intracranial pressure. A small proportion of adult patients have Kernig's or Brudzinski's signs or cranial nerve palsies (particularly of the third and sixth cranial nerves).

The mortality rate for Pneumococcal meningitis is approximately 20%. In addition,

up to 50% of survivors experience acute or chronic complications, including deafness, hydrocephalus, and mental retardation in children; and diffuse brain swelling, subarachnoid hemorrhage, hydrocephalus, cerebrovascular complications, and hearing loss in adults.

In the pathogenesis of raised intracranial pressures, exposure of cells (e.g., endothelial cells, leukocytes, microglia, astrocytes, and meningeal macrophages) to bacterial products released during replication and death, incites the synthesis of cytokines and proinflammatory mediators, TNF- α and IL-1 being the most prominent among the cytokines that mediate this inflammatory cascade. IL-1, previously known as endogenous pyrogen, is responsible for the induction of fever during bacterial infections. Nitric oxide is a free radical molecule that can induce cytotoxicity when produced in high amounts. PGE₂, a product of cyclooxygenase (COX), appears to participate in the induction of increased blood-brain barrier permeability. PjAF, with its myriad of biologic activities, is believed to mediate the formation of thrombi and the activation of clotting factors within the vasculature.

The net result of the above processes is vascular endothelial injury (vasculitis), neuronal damage and increased blood-brain barrier permeability; which contributes to vasogenic and cytotoxic cerebral oedema, ischaemic and thromboembolic strokes.

The ensuing cerebral edema (i.e. vasogenic, cytotoxic, and interstitial) significantly contributes to intracranial hypertension and consequently decreases cerebral blood flow which is the lynchpin to the final clinical outcomes and some clinical presentations of these patients. Anaerobic metabolism ensues, which contributes to increased lactate concentration and hypoglycorrhachia. In addition, hypoglycorrhachia results from decreased glucose transport into the spinal fluid compartment. Eventually, if this uncontrolled process is not modulated by effective treatment, transient neuronal dysfunction or permanent neuronal injury results.

Internationally the standard of care for acute bacterial meningitis includes

initiation of adequate antibiotics to speed up bacteriolysis, corticosteroids in meningitis doses within one hour of admission to control the subsequent inflammatory response, and if impaired mental status or other signs of increased ICP exist, intensive care with proper analgesia and assisted mechanical ventilation. A growing number of studies are depicting a high mortality benefit and better neurological outcomes if early neuro-intensive care using ICP-targeted therapy, mainly cerebrospinal fluid drainage, moderate hyperventilation, osmotherapy with hypertonic saline and mannitol, nursing in reverse Trendenberg position, and craniotomies are considered in critical cases of ABM, and is well established in patients suffering from traumatic brain injury (TBI)

Table 2: Outcomes of studies assessing the impact of neurocritical care on outcomes of ABM.

STUDY	OUTCOME
Martin Glimåker, Bibi Johansson, Halla Halldorsdottir, Michael Wanecek, Adrian Elmi-Terander, Per Hamid Ghatan, Lars Lindquist, 2 and Bo Michael Bellander Neuro-Intensive Treatment Targeting Intracranial Hypertension Improves Outcome in Severe Bacterial Meningitis: An Intervention-Control Study. Published online 2014 Mar 25. doi: 10.1371/journal.pone.0091976	The mortality was significantly lower in the intervention group compared to controls, 5/52 (10%) versus 16/53 (30%; relative risk reduction 68%; $p < 0.05$). Furthermore, only 17 patients (32%) in the control group fully recovered compared to 28 (54%) in the intervention group (relative risk reduction 40%; $p < 0.05$).
Kumar R, Singhi S, Singhi P, Jayashree M, Bansal A, Bhatti A. Randomized controlled trial comparing cerebral perfusion pressure-targeted therapy versus intracranial pressure-targeted therapy for raised intracranial pressure due to acute CNS infections in children. Crit Care Med. 2014 Aug;42(8):1775-87. doi: 10.1097	A 90-day mortality in intracranial pressure group (38.2%) was significantly higher than cerebral perfusion pressure group (18.2%; The cerebral perfusion pressure group in comparison with intracranial pressure group had shorter length of PICU stay (13 d [10.8-15.2 d] vs. 18 d [14.5-21.5 d], $p = 0.002$) lower prevalence of hearing deficit (8.9% vs 37.1%); and neurodisability at discharge from PICU (53.3% vs. 82.9%)
Kramer .A. H, Bleck T.P. Department of neurology, University of Virginia. Neurocritical care of patients with central nervous system infections Current infectious disease reports. Vol 9, Issue 4, July 2007. pages 308-314	50% (n=30) full neurological recovery when neurointensive management targeting raised ICP protocols were instituted early.
Edberg, M., Furebring, M., Sjölin, J., Enblad, P. Department of neuroscience, University hospital, Uppsala University Neurointensive care of patients with severe community acquired meningitis. Acta Anaesthesiologica Scandinavica Vol 55, Issue 6, July 2011 page 732-739	Retrospective study over a period of 7 years reviewed acute clinical course, management and outcome in bacterial meningitis (n= 30) 14 showed good recovery.

These (National Institute of Health and Care Excellence) NICE indications for assisted mechanical ventilation can also be used to guide the decision in acute CNS infections; Threatened (for example, loss of gag reflex) or actual loss of airway patency.

The need for any form of assisted ventilation, for example bag-mask ventilation.

Clinical observation of increasingly laboured breathing.

Hypoventilation or apnoea.

Features of respiratory failure, including:

- Reduced or fluctuating level of consciousness (glasgow coma scale score less than 9 or a drop of 3 or more)
- Irregular respiration (for example, cheyne –stokes breathing)
- Hypoxia (pao₂ less than 13 kpa or 97.5 MmHg) or decreased oxygen saturations in air or niv
- Hypercapnia (paco₂ greater than 6 kpa or 45 mmHg).

Signs of raised intracranial pressure.

Impaired mental status, including: reduced or fluctuating level of consciousness (Glasgow Coma Scale score less than 9 or a drop of 3 or more), moribund state.

Control of intractable seizures.

Need for stabilisation and management to allow brain imaging or transfer to the paediatric intensive care unit or another hospital.

CONCLUSION.

Acute Bacterial Meningitis still has a high mortality rate in resource limited settings. Introduction of new antibiotics will not reverse this state, however early recognition of patients who will most likely benefit from neurocritical care with cost effective methods like reverse Trendelenburg, use of hypertonic saline and less preferably mannitol, assisted mechanical ventilation is most likely to have a positive impact on outcomes.

We hope that this case report together with the growing evidence from the developed countries, will herald the need for more studies to evaluate the impact and feasibility of neurocritical care in the management of meningitis in resource limited settings.

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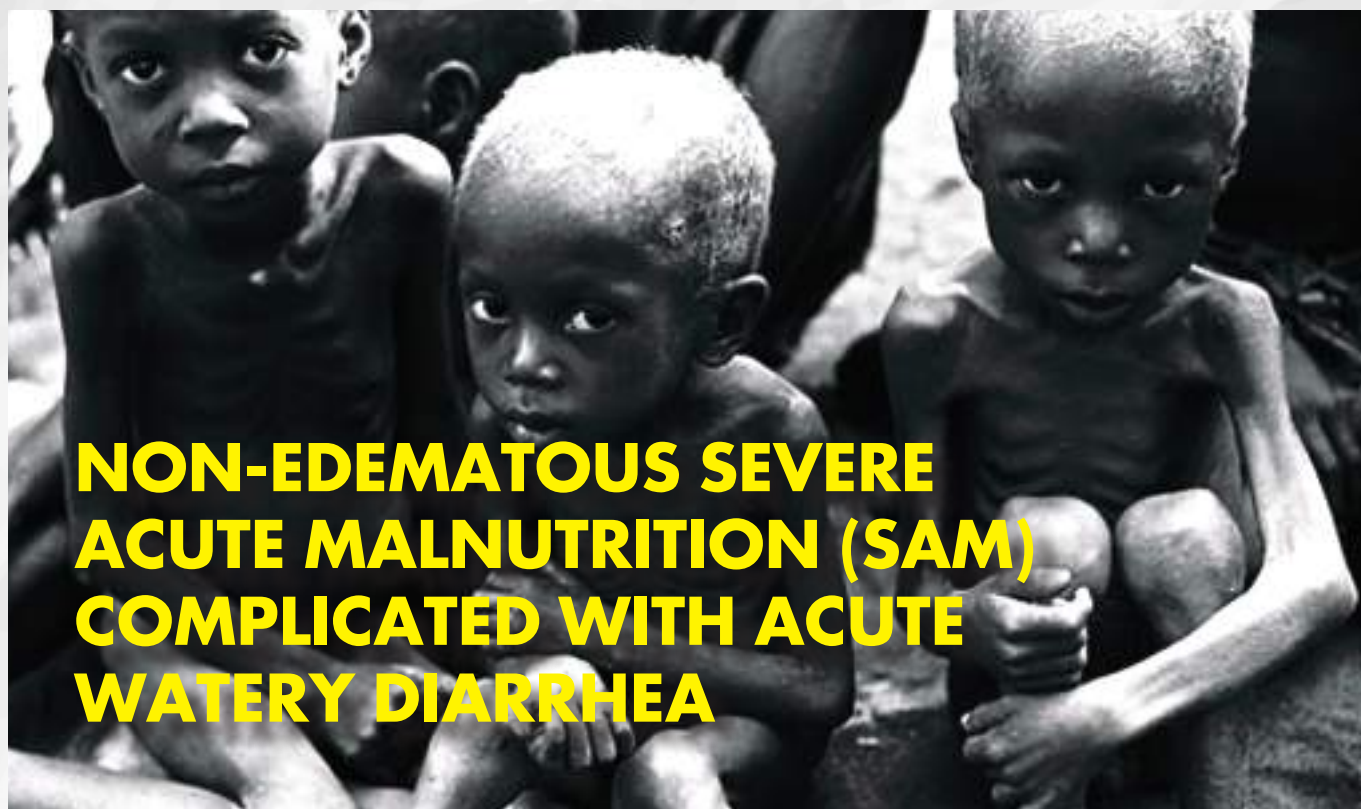
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NON-EDEMATOUS SEVERE ACUTE MALNUTRITION (SAM) COMPLICATED WITH ACUTE WATERY DIARRHEA



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ABSTRACT

Severe acute malnutrition (SAM) is the presence of edema of both feet and severe wasting (extreme thinness) diagnosed by weight for length/height and Mid Upper Arm Circumference measurements (MUAC). In children aged 5 and below, it increases the risk of death in the presence of underlying medical conditions and their complications. It is therefore imperative that early detection and appropriate management are undertaken as means to prevent these childhood deaths. The diagnosis of SAM is based on comprehensive nutritional and clinical assessment. The etiology is multifactorial; socio-economic status, feeding habits and early weaning, infections and lack of immunization among others can contribute to this presentation, as well as physiological mechanisms. The management of SAM is divided into stabilization and rehabilitation phases in a multidisciplinary approach, and healthy feeding practices should be encouraged by way of promoting health and combating morbidity and mortality. We discuss a case of a 13 months old female with non-edematous SAM complicated with acute watery diarrhea.

CASE PRESENTATION

A 13 month old female, a 2nd twin, was brought into Mwanamugimu ward, Mulago hospital with profuse, watery, non-bloody, mucoid but non-foul diarrhea, and non-projectile vomiting unassociated with feeding, yellow and non-bloody but with solid food particles which had lasted for 3 days. According to the mother, the child had lost appetite, become excessively thin in the past few days and had less micturition frequency and output of colorless, sometimes pale-yellow non-bloody urine since the diarrhea started, there was no crying on voiding and the rest of the systems were unremarkable.

The child's 1st twin succumbed to a diarrheal illness two days prior to this index admission, and neither of them received any immunization from birth onwards due to lack of socio-economic support. Both were exclusively breastfed for two weeks, and were supplemented with diluted cow milk. At 6 months of age, they were complemented with solid food, which they had together with the other family members and were fed passively rather than actively by the mother. For the 2-3 days a week that the mother had to go to work for

MALNUTRITION COMES IN MANY WAYS



Stunting

(People are too short for their age)



Wasting

(People are too thin for their height)



Obesity

(People are over weight)

4-6 hours, the children and their feeds were left under the care of a neighbor, and breastfeeding was stopped at 8 months of age.

Developmentally, the child had started sitting with support at about 4 months of age and without support at 5 months like any normal child. However, she had not yet started walking or even crawling despite being 13 months old which is not appropriate for age.

General examination and assessment of nutritional status revealed a lethargic, weak sick-looking irritable and visibly wasted toddler with sunken eyes, baggy pant appearance, little muscle bulk and prominent scapulae, ribs and costo-chondral junctions (the rachitic rosary appearance), sparsely distributed thin brown hair without scars on the head and no frontal bossing, a palpable anterior fontanel. She was not in respiratory distress. On the AVPU scale, she responded to voice. There was no jaundice, moderate pallor of the conjunctiva and palms, no central cyanosis and finger clubbing or edema but a palpable 0.5mm non-tender and mobile posterior auricular lymph node, and poor skin turgor. Corneas were clear, no oral lesions; wet mucous membranes, no leukonychia or koilonychia. Child was eager to drink when offered a drink. There was poor skin turgor hence skin pinch was not assessed. She was afebrile with a temperature of 36.9°C, Respiratory rate was 28/minute, warm peripheries with a capillary refill <3seconds but was tachycardic with a pulse rate of 125bpm.

Anthropometric measurements revealed a head circumference of 44cm which was normal for her age, MUAC of 9cm indicative of severe acute malnutrition, weight of 4.3kg, length of 61.3cm and a Z-score less than -3SD, also indicative of severe acute malnutrition.

The rest of the systems were unremarkable.

CBC- revealed very slightly decreased MCV and MCHC suggesting normocytic, normochromic anemia, renal functional tests (RFTs) and liver functional tests

(LFTs) had parameters within normal ranges ruling out any hepatocellular or kidney damage. All serum electrolytes were normal, and the B/S for malarial parasites was negative.

The child also failed the appetite test.

A diagnosis of complicated non edematous Severe Acute Malnutrition was made in view of the Z-score being less than -3SD of the WHO child growth standards and the MUAC of 9cm; with acute watery diarrhea with some dehydration, in view of the frequency of 4-5 watery non-bloody stools with signs of some dehydration including sunken eyes, irritability and eagerness to drink.

She was immediately managed with

- (i) F75 starter feeds at 130mls/kg/day at 2 hour feeding intervals

The feed quantity was calculated by multiplying the total calorie requirement (130kcal) with the child's weight (4.3kg) and dividing this by 12 hours to get a 2 hourly feed quantity

$(130 \times 4.3) / 12 = 46.6$ mls of F75 every 2 hours

- (ii) ReSoMal (Rehydration Solution for Malnourished children) 5mls/kg every 30 minutes for the first 2 hours

Then 5-10 mls/kg/hour for the next 4-10 hours alternating with F75

Reassess hourly, after 3-6 hours, reclassify hydration status and manage accordingly.

- (iii) IV antibiotics

IV ampicillin 50mg/kg 6 hourly for 1/52

IV gentamycin 7.5mg/kg O.D for 1/52

The patient was followed up for 4 days on the ward.

On day 1, there were no new complaints, the child was still very sick looking and irritable, vomiting had stopped and the frequency of diarrhea had reduced to about two times a day although appetite was still poor. She was afebrile (36.7°C) and still at 4.3kg with the same MUAC and a Z-score of <3SD.

The plan was to continue with

management as of the previous day, with ReSoMal at 5ml/kg after every loose stool.

On day 2 the mother reported an improvement in the child's condition as well as appetite, but not satisfactory enough for transition to F100. The frequency of stools was twice a day but were semi formed. There was a weight gain of 0.2 kg and she was afebrile (37.1°C).

Plan in place was to stop ReSoMal and continue with the F75 feeds, 3 hourly and IV antibiotics.

On day 3 the mother reported marked improvement in the child's condition, she was generally fair, diarrhea had completely resolved, the appetite was good and the child was readily taking feeds, there was an additional weight gain of 0.15kg, and MUAC of 9.1cm. She was afebrile (36.5°C).

The IV antibiotics were continued and rehabilitation phase started with F100, 130mls/kg/day for 2 days.

On day 4, the mother was very contented about the child's response to treatment, the child was happier and playful in bed. Sunken eyes were less prominent. Ribs and scapulae which were very prominent on the day of admission were less prominent though still visible. The child gained an additional 0.09kg and MUAC increased by 0.5cm from 9.1 to 9.6cm.

Plan was to continue the F100 feeds at 130mls/kg/day at 3 hourly feeding intervals. Since the child had a good appetite and was stable on F100, each subsequent feed was increased by 10mls until some feed remained uneaten. Also to give Iron supplements at 3mg/kg/day, provide sensory stimulation by giving the child toys to play with and administer measles vaccine upon discharge.

CASE DISCUSSION

Malnutrition occurs when the dietary intake of an individual is either insufficient for or exceeds their nutritional needs hence harming health, wellbeing and productivity. This includes both undernutrition and over nutrition.

Undernutrition is caused by inadequate or un-balanced food intake and/or illness. It includes acute malnutrition, chronic malnutrition and micronutrient deficiencies such as vitamin A, Iron, Iodine and Zinc (Ministry of Health 2015).

Acute malnutrition is further subdivided into Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM).

Severe acute malnutrition is defined as the presence of edema of both feet and severe wasting (extreme thinness) diagnosed by weight for length/height and Mid Upper Arm Circumference measurements (MUAC) (WHO 2013).

SAM especially in children below 5 years increases the risk of death in the presence of medical conditions, and therefore early detection and appropriate management are keys to prevention of these childhood deaths.

One such aspect of detection is carrying out a complete and comprehensive nutritional assessment, including the medical and nutritional history, clinical examination, anthropometric measurements and laboratory investigations as shown for the above patient. A 24 hour recall is essential in helping predict the development of hypoglycemia (Ministry of Health 2015).

Anthropometric measurements consist of the MUAC in cm, the body weight in kg and the length for children below 2 years or less than 87cm (as for this child) and height for children above 2 years of age or 87cm or more (Ministry of Health 2015).

Once weight and length/height have been measured, a standard deviation score (SD/Z-score) is determined, which mainly compares the weight for length/height of a child with the values of an

average child and is used to classify the degree of malnutrition as obtained from WHO standard growth charts. Z-scores simply describe how far a measurement is from the median. A negative Z-score compared to the standard indicates wasting while a positive or higher score indicates that the child is heavier compared to the standard (Ministry of Health 2015).

In the above patient, the Z-Score was less than -3SD from the median indicating severe wasting.

The diagnosis of SAM in this patient was made based on clinical assessment as shown above and these two measures; A Z-score <-3SD and a MUAC of 9cm. The child however did not have bilateral pitting edema thus excluding the diagnosis of edematous SAM.

Other features such as dermatosis of the skin which is common in children with edema and eye signs of vitamin A deficiency such as corneal ulcerations, corneal clouding, pus, inflammation and bitot spots were not seen in this patient but need to be looked out for in malnourished children (Ministry of Health 2015).

SAM usually occurs with medical complications. In addition to examining the patient for complications such as hypothermia and hypoglycemia, in order to differentiate complicated SAM from uncomplicated SAM; and appetite test has to be done. When offered a therapeutic feed, RUTF, this patient did not accept the feed and failed the test. Poor appetite reflects the severe disturbance in metabolism indicating that the child was already suffering from a subclinical complication (Ministry of Health 2015).

Etiology of SAM as regards the above patient was multifactorial;

Poverty, given the family's poor socioeconomic status, inadequate food intake, it is questionable whether the neighbor fed the children well in the mother's absence, and also the passive feeding was not beneficial given children are curious and easily distracted and

cannot therefore sustain enough attention to eat by themselves. Lack of immunization, early weaning, and the extremely brief period of exclusive breastfeeding (2 weeks) led to nutrient deficits and vulnerability to pathogens and infections.

Other factors which can contribute to the development of malnutrition but were not contributory in this patient include climate changes, war and conflicts, intra-household food distribution and health seeking behaviors of patients.

In regard to pathophysiology, when dietary intake is insufficient to meet daily needs, physiologic and metabolic changes take place to conserve energy and prolong life in a process called reductive adaptation-when the body slows down all of its functions in order to allow survival on limited resources (Ministry of Health 2015).

Fat stores are utilized first to provide energy and later protein in the muscle, skin and gastrointestinal tract is mobilized. Energy is conserved by reducing physical activity and growth, reducing basal metabolism and functional reserves of organs. Inflammatory and immune responses are also diminished. All of these culminate into making the individual more susceptible to infections, loss of weight and muscle wasting accompanied by lethargy in more severe cases, and coma/death in extreme cases (Robert M. Kliegman 2016).

The phenomenon of reductive adaptation as explained above greatly affects care and management of the patient.

The management of SAM is divided into two phases; stabilization and rehabilitation phases.

The aim of the Stabilization phase is to repair cellular function, correct fluid and electrolyte imbalances and restore homeostasis and prevent death while the rehabilitation phase aims at restoring wasted tissue.

All children with SAM should have their blood glucose measured as

malnourished children have an increased risk of developing hypoglycemia. If this is not available, hypoglycemia should be assumed and treated accordingly (This child received 10% glucose at first contact in the Acute Care Unit for one night before being brought to Mwanamugimu ward), and further be prevented by regular feeding as was done in this child with F75 starter feeds. Hypothermia which often coexists with hypoglycemia is present when axillary temperatures are $<35^{\circ}\text{C}$; in malnourished children is indicative of infection as opposed to hyperthermia in well-nourished children. This was prevented by regular temperature measurements to detect hypothermia, keeping the child warm, changing any wet clothes, and regular feeding. Also, kangaroo mother care for infants and using a lamp to provide warmth.

Dehydration as a complication of SAM is difficult to diagnose because some signs of SAM mimic those of dehydration. All malnourished children with acute watery diarrhea should be assumed to have some dehydration and treated accordingly (as the above patient received ReSoMal). IV rehydration should not be used except in cases of shock, as is ORS because it has high sodium and low potassium levels unsuitable for maintaining cellular function. However during ReSoMal unavailability, standard ORS can be used to prepare a ReSoMal-like solution by using 1 sachet of standard ORS and mixing it with 2 liters of clean boiled water instead of the 1 liter used in normal ORS preparation.

Electrolyte imbalance and micronutrient deficiencies are also common in malnourished children. F75 (which the

above child was given) contains these. For commercial feeds that do not contain vitamin A, it should be given on days 1, 2 and 14 only if signs of vitamin A deficiency are present. Iron was prescribed later in the rehabilitation phase because of fear of promoting bacterial growth.

For infections which are common in all malnourished children, broad spectrum antibiotics are recommended (this child received Ampicillin and Gentamycin). In uncomplicated SAM, oral amoxicillin, 25mg/kg twice a day for 5 days can be used. IV antibiotics are ideally used for two days then switched to oral. This patient received IV antibiotics for five days for easy monitoring of adherence, as per facility protocol.

Re-feeding; frequent 2-3 hourly feeds of low osmolality and low lactose content are required as part of the reductive adaptation therapy, to avoid exposing a frail body to sudden high amounts of energy nutrients and protein load, by using F75 that has a low protein content. Children with edema should be started on lower calorie intake of 100kcal/kg/day. However this child without edema was put on a 130kcal/kg/day feed. Breastfeeding is usually encouraged, but this child was already weaned.

Catch-up feeding forms part of the rehabilitation phase. When the child regains appetite, or there is a reduction in or disappearance of edema, F100, which contains more protein than F75, can be started, replacing F75 with an equal amount of F100 for two days.

Once the child is stable on F100 as was the case in this child, the amount of F100 is increased by 10mls at each successive feed starting on day 3 of catch-up feeding and this is continued

until some feed remains uneaten.

Alternatively Ready-to-Use Therapeutic feeds (RUTF) can be given in place of F100 with the advantage of not having to be freshly prepared. However it needs to be given with plenty of water because of a thicker consistency.

Sensory stimulation; additionally, children should be offered suitable toys specific for age to play with, in a cheerful and stimulating environment as well as provision of tender loving care and encouraging physical activity as soon as the child is well enough to (WHO 2013).

Conclusively; Children with SAM are at a greatly increased risk of death both from malnutrition and its complications hence need prompt assessment, identification and management. A multidisciplinary approach is necessary for all round care and parents need to be involved as much as possible in the care of their children as well as undertaking nutritional education to enhance their knowledge. Healthy feeding practices should be encouraged to promote health and combat morbidity and mortality.

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PERFORATED PEPTIC ULCER

PRESENTING AFTER AN ACUTE SEVERE ILLNESS



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ABSTRACT

Perforated peptic ulcer is a common complication of peptic ulcer disease especially in the elderly. Majority of the patients present with history of dyspepsia 74.1%, board like rigidity 77.6% with free gas under the diaphragm. In this case, a 52 year old male from= Kasubi, Kampala presented with altered level of consciousness that had developed on a background of severe right sided abdominal pain and abdominal guarding. Chest radiograph revealed no free gas under the diaphragm. In this case, the patient improved greatly on conservative treatment but later deteriorated after 7 days of marked improvement on the ward. Laparotomy done following the deterioration revealed a perforated duodenal ulcer that was repaired with primary suturing and an omental patching over the perforation.

BACKGROUND

According to a study done by Steven F. Fowler, 86% of the patients operated due to perforation required an emergent laparotomy of which

71% were above 65 years of age. According to Elfatih et al, 74.1% of patients had history of dyspepsia for 3 months, 77.6% presented with board like rigidity, 90% had free gas under the diaphragm.

Peptic ulcer disease is characterized by defects in the gastric or duodenal mucosa that extend through the muscularis mucosa. An infectious etiology is found in 95% of duodenal ulcers and 70-100% of gastric ulcers. (stephanie Miehlike)

The causes of peptic ulceration; *Helicobacter pylori* (*H.pylori*) infection, NSAIDs and pathological hypersecretory states all cause an imbalance in the mucosal protective mechanisms and aggressive factors of gastric acid-pepsin secretion leading to ulceration. Mucosal protection is conferred by prostaglandin E, mucus epithelial renewal, cellular restitution, tight intercellular junctions and adequate mucosal blood flow.

H.pylori, a gram negative spirochete has been linked to gastritis which is a precursor to ulceration. The

pathogen colonizes the mucosa causing inflammation and disruption of the mucous barrier with use of its outstanding virulence factors. Its ability to hydrolyze urea to ammonia to create an alkali micro-environment allowing it to survive. It also expresses catalase activity, vacuolating cytotoxin (vac A) and lipopolysaccharide. The organism incites an inflammatory response initially in the antrum of the stomach with resultant increased levels of gastrin and pepsinogen. Duodenal exposure to this excess acidity results in duodenal metaplasia. Much as normal duodenal mucosa is resistant to *H. pylori* infection, metaplastic mucosa is easily infected by the pathogen inducing duodenitis and enhancing susceptibility to gastric acid injury.

Although initial ulceration occurs in the stomach, duodenal ulcers are more common than gastric ulcers. Most duodenal ulcers occur in the first part of the duodenum and are anterior. Chronic ulcers penetrate the mucosa into the muscular coat with resultant fibrosis that may result in stenosis, however the commonest complication is perforation. Perforation occurs in approximately 2 to 10% of peptic ulcers and usually involves the anterior wall of the duodenum (60%), although it may also occur in antral region in 20% cases. (Ellabam, 2011) Gastric ulcers are associated more with malignant transformation in contrast to duodenal ulcers.

CASE PRESENTATION:

B.J, a 52-year-old male driver from Kasubi, Kampala admitted through the A&E unit with 8 hours history of altered level of consciousness. Collateral history was obtained from his next of kin. (Wife)

The altered level of consciousness developed on a background of severe abdominal pain that had a gradual onset from the right abdominal flank and progressing to involve the entire abdomen for about one

week. The pain was initially sharp and worse during day time but later progressed into intermittent dull pain exacerbated by deep breaths, non-radiating to any part of the trunk and was associated with non-projectile vomiting, constipation, fever spikes with rigors and weight loss over 2 weeks prior to admission. He had taken alcohol 4 days prior to this admission but no other substances of abuse. There was no history of trauma prior to the onset of these symptoms.

There had been no complaints of headaches, fits, sensation of auras, visual disturbances and abnormal limb movements. He however had difficulty in breathing and palpitations, but no other remarkable features in the other systems reviewed. He reported getting a prescription for peptic ulcer disease a month prior to admission that comprised of P.O omeprazole, metronidazole and amoxicillin; however, he had an unremarkable surgical history. He had history of alcohol consumption for 20 years but no smoking or use of any recreational drugs.

On physical examination, he was sick looking, lethargic but arousable with a GCS of 14/15 (E-4, M-6, V-4) febrile (38.9°C) and dehydrated with a blood pressure of 114/60 mmHg (taken after receiving 1L of Normal saline) and a rapid and weak pulse rate of 100bpm. The respiratory rate was 30 breaths per minute but with a clear chest on auscultation. Significantly, on abdominal examination he had mild abdominal distension and severe guarding with percussion tenderness. The percussion note was hyper-resonant with no bowel sounds on auscultation.

An abdominal ultrasound scan revealed dilated bowel loops and thickened gallbladder wall. The haemogram revealed a neutrophilia of 86% with the WBC count of 8.04 near the upper limit of 9.0. Liver function tests revealed a raised direct bilirubin 24.1µmol/L with normal

albumin and transferases. The renal function tests were deranged with a 3 fold increase in creatinine, urea and a reduction in Chloride but with normal sodium and potassium. The erect chest and abdominal X-ray revealed dilated bowel loops but no air under the diaphragm.

In view of the abdominal ultrasound scan findings, the provisional diagnosis made was acute cholecystitis with possible peritonitis. He improved within 12 hours on conservative management with intravenous broad spectrum antibiotics (ceftriaxone and metronidazole), Nil per Os, parenteral nutrition support with IV dextrose 50%, IV maintenance fluids, analgesics and a Ryle's tube inserted to decompress the abdomen for 3 days. The fluid balance status was closely monitored using a fluid balance chart updated every 24 hours. Four days into admission, the NG tube was removed and oral intake advised with marked improvement in his general condition.

However; 7 days after admission, he developed severe abdominal pain and projectile non-bilious vomiting of feeds. A repeat abdominal ultrasound scan revealed pneumoperitoneum and a diagnosis of perforated abdominal viscus was made. A decision to do an emergency exploratory laparotomy was made and to which he consented. On laparotomy, dense adhesions were found with two paracolic pus pockets that were drained of 1L of pus. On inspection of the gut, an elliptical perforation of 1cm with regular edges was seen on the anterior wall of the duodenum oozing gastric contents. An excision biopsy of the perforated ulcer was obtained and defect closed using vicry 3/0; omentum patched over the defect after primary closure. His peritoneum was lavaged with 2L of warm normal saline and abdomen closed but skin was left open. Delayed primary closure was done 2 days postoperatively. He was started on antibiotics, analgesics, parenteral

nutritional support with Dextrose 50%, IV fluids Normal saline and the serum electrolytes assessed. 3 days post-operative, he started oral sips followed by light meals and he was encouraged to continue ambulating while on the ward. The patient was discharged on the seventh postoperative day after removal of the non-absorbable stitches, in good general condition and he was given an appointment date two weeks after discharge for follow up.

DISCUSSION

B.J presented with altered level of consciousness, which is divergent from the easily recognizable classic presentation of peptic ulcer disease. He presented with an acute severe illness that developed on the background of chronic peptic ulcer disease with right upper quadrant pain. Despite the significant medical history such as prior treatment for peptic ulcer disease, there was a confounding element to the clinical presentation of B.J. It is therefore possible that the initial acute onset of the right sided abdominal pain was due to acute cholecystitis rather than a suspected perforation of a peptic ulcer.

There are other life style factors implicated in predisposing to gastritis are alcohol consumption and caffeine intake, however, evidence is inconclusive. (Williams .N.S, 2011) Classically, the indicative history of peptic ulcer disease comprises of severe epigastric pain with burning sensation after meals. Foods and antacids relieve the pain in duodenal ulcers but with minimal relief in gastric ulcers. BJ however had no history of NSAID use and cigarette smoking.

In a perforated PUD, the presentation is of sudden onset of severe with sharp abdominal pain. Most patients describe generalised abdominal pain and a few with severe epigastric pain. Patients typically assume a fetal position as even slight movement tremendously worsens the pain. In

this case, our patient presented with right upper quadrant pain, which is more predictive of acute cholecystitis.

On examination, the patient is shocked with a tachycardia, pyrexia and in deterioration general condition. Abdominal examination discloses generalised tenderness, guarding and rigidity. In addition, tachycardia, hypotension, tachypnea and anuria all features of shock were present this case.

Initial erect chest X- ray done did not reveal free gas under the diaphragm. An erect plain chest radiograph reveals free gas under the diaphragm in an excess of 50% of cases (Williams et al, 2013). A CT scan is more accurate in detecting the perforation. In addition, there was a leukocytosis and deranged renal function.

Following initial resuscitation, there was improvement in his general condition. The abdominal signs improved. According to literature, adequate analgesia makes clinical signs more obvious and fear that intra abdominal catastrophe signs will be masked by the analgesic is not reason to withhold analgesia. It is therefore good reason to say that the clinical improvement in this case, was not necessarily due to the analgesia but the resolution of the perforation. There is a possibility that the perforation was sealed by the inflammatory process and adhesion within the abdominal cavity. The above reasons are possible explanations for the steady improvement on conservative treatment; however, B.J most likely had no perforation on presentation as evidenced by the preliminary abdominal scan that showed no free fluid and his x-rays were normal. It is therefore possible that the prolonged period of nil per os associated with the stress of an acute severe illness as such as acute cholecystitis caused an exacerbation of his PUD and led to perforation while on the ward.

According to current literature, the

principle treatment for a perforated peptic ulcer is surgery. If the diagnosis is certain, laparotomy is done through an upper midline incision. The principles outlined in patient preparation;

- Pass a nasogastric tube and aspirate the stomach.
- Much fluid will be lost into the peritoneal cavity, so correct at least ½ of the fluid loss before you operate.
- Correct dehydration or hypotension by infusing 1 -3 L of Ringer's lactate rapidly. If >12 hrs have elapsed since the perforation, infuse even more. Operate soon, but not before proper resuscitation. Unless there has been bleeding (rare), do not transfuse blood.
- Pre-medicate with IV morphine.

Initial management given in this case comprised of the all the above principles except that analgesia was achieved with IM tramadol with improvement. On laparotomy, a midline incision was used to gain access to the duodenal cap. Most importantly, thorough peritoneal toilet is done to remove all debris contaminating and irritating the peritoneal cavity. The perforation was closed with intercorporeal suturing and an omental patch sutured onto the defect.

The other school of thought is to seal the perforation with an omental patch if the perforation is difficult to close primarily. In this case, both options were applied, an omental patch was sutured onto the closed defect because the apposition was not satisfactory. Should the perforation be massive such that simple closure is impossible, then Billroth II gastrectomy or a subtotal gastrectomy with Roux en Y reconstruction may be considered. Most importantly, Excision or biopsy of the ulcer is very important, as 4–5% of benign appearing ulcers are

actually malignant ulcers.

According to prior literature, postoperative care involved nursing the patient sitting up straight in bed to ease breathing and allow the exudate to gravitate downwards. In our case, we left an abdominal drain to drain any exudates therefore positioning was not paramount. Continuation with nasogastric suction and IV fluids while monitoring the fluid balance and replacing the gastric aspirate with IV saline. Monitoring of urine output in 24 hours was emphasized.

Chest physiotherapy is vital if the patient is asthmatic, a smoker, immune-compromised, elderly, or if there is widespread soiling in the abdomen that may hinder chest movements.

Literature recommends postoperative antibiotics for *Helicobacter pylori* since >80% of perforated ulcer patients usually have it. H2-blocker or proton-pump inhibitor immediately (dilute crushed tablets

with water and introduce this via the nasogastric tube, and then clamp it for 1hr) and continue oral treatment for 6wks. In this case, he was maintained on triple therapy with omeprazole, metronidazole and

clarithromycin.

From this case, diagnosis at admission was acute cholecystitis for which conservative management was instituted. However the patient later developed perforated ulcer that was probably exacerbated by the stress of the acute cholecystitis and nil per os. It is therefore evident that B.J had several comorbidities that predisposed him to perforation of the peptic ulcer.

CONCLUSION.

Patients with acute abdominal pain offer diagnostic challenges to the physicians due to a wide spectrum of differential diagnoses. The symptoms being relatively non-specific for a particular diagnosis in acute abdominal conditions and further compounding with atypical features poses serious diagnostic challenges. In this case report, the patient developed acute cholecystitis on a background of chronic peptic ulcer disease. The management instituted for the acute cholecystitis together with the stress probably complicated the peptic ulcer disease with resultant perforation. It is therefore of paramount significance to note that patients with severe illnesses are at risk of developing

stress ulcers which is further exacerbated in those with underlying peptic ulcers and therefore the need to give patients with severe illness a PPI to prevent this.

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The Heartstrings Project

RUN FOR THE HEARTS



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INTRODUCTION

Makerere University Medical Students Association (MUMSA) is a students' organization which brings together all students offering a Bachelor's degree in Medicine and Surgery at the College of Health Sciences, Makerere University. The Rotaract Club of Mulago is a nonprofit organization that is interested in service above self and giving back to community. Its members are also students of the College of Health Sciences.

As students, we often see the plight of patients stricken by disease. We are taught to be holistic doctors and health care providers who think beyond the disease and regard the patient as a person, not a case. Unfortunately, not all the patients who are diagnosed with Congenital Heart Disease are able to access correction. This could be due to lack of sufficient funds and knowledge about the condition. It is with this background that MUMSA and the Rotaract Club of Mulago joined hands to create this project.⁵

Problem statement

Media reports indicate that of the 1.5 million children born every year in Uganda, about 15,000 have heart defects at birth (congenital heart abnormalities). Of those, about 8,000 children require corrective surgeries.

Objective

The project was aimed at fundraising money for closed pediatric heart surgery at the Uganda Heart Institute.

The project was also meant to raise awareness about congenital anomalies, their impact on the society, how they come about, and how they can be corrected. In addition, this awareness was meant to empower people with knowledge on how best they can support the heart institute in giving these patients the much needed care.

Project Concept

There was one main fundraising activity; 5km charity run dubbed "run for the hearts"

Date; Saturday 15th November 2015

The run was flagged off by the chief guest at 8:00am from the Dean's gardens at the College of Health Sciences, passed via Kubiri to the Makerere University main campus then, via the main road, returned to Mulago. Runners convened at the Dean's gardens for refreshments



Patient History

The beneficiary was Alenzu Ashina, a one and a half-year-old female. She hails from Arua district, Arivi constituency and Pajuru parish, her mother tongue being Lugbara. Alenzu Ashina is the daughter of Madam Wangi Roselyn, a 27-year-old woman who is married and stays in Kamwokya.

Medical history

Alenzu Ashina was admitted three times, and the day of the surgery was the fourth time of admission.

Right from birth, Ashina had problems with appetite. Initially, the parents thought it was asthma at seven months. Ashina was then referred to the Mulago Hospital Assessment Center, where an X-ray was done and it was found out that Ashina's heart was enlarged.

An echocardiogram was done after two weeks, and she was then diagnosed with a Patent Ductus Arteriosus measuring 6.9mm in length.

The mother, Madam Wangi Roselyn said she couldn't believe this; she had

at the end. There was police supervision and standby first aiders to give help to any casualties during the run.

Chief runner; Principal of the College of Health Sciences, Prof Ibgingira Charles

The money was raised from run ticket sales as well as generous contributions from;

- Dr. Den Mugasha
- The students and teachers of Aga Khan High School
- Makerere University College of Health Sciences
- MUMSA
- The Rotaract Club of Mulago

After money to the tune of two million Ugandan shillings was collected, a beneficiary patient was identified by

Uganda Heart Institute.

Criteria of choosing beneficiary

The Uganda Heart Institute chose the beneficiary using the following criteria:

- The patient was an emergency patient whose condition needed immediate attention and fixation, i.e. wide patent ductus arteriosus measuring 6.9mm with patient's condition getting worse day by day.
- The patient's caretakers couldn't afford the large sums of money required to fix the complication.
- The patient was in line with our target patients, i.e. those with patent ductus arteriosus.
- The patient was a child of one and a half years old, as per the terms of our project.

been hearing about this, and all she did was pray for she had no hopes of getting money.

On the May 31st, 2016, she was singled out, as her daughter's condition was getting worse, and selected to be the beneficiary.

Treatment

Surgery was done, and this involved a Patent Ductus Arteriosus device closure by catheterization. The team was led by Dr. Mwambu Tom.

Patent Ductus Arteriosus

Patent ductus arteriosus is a condition in which there is communication between the descending aorta and the pulmonary artery that results from failure of normal physiologic closure of the fetal ductus and is one of the most common congenital heart defects.

Patient presentation of PDA varies widely. Although frequently diagnosed in infants, the discovery of this condition may be delayed until childhood or even adulthood. In isolated patent ductus arteriosus (PDA), signs and symptoms are consistent with left to right shunting. The shunt volume is determined by the size of the open communication and the pulmonary vascular resistance (PVR)

PDA may also coexist with other heart defects.

The defect being anatomical, treatment is mainly by surgical intervention as in Alenzu Ashina's case where a device catheterization procedure was carried out. The procedure doesn't need the chest open as the coil is passed through the catheter hence closed heart surgery.

Cause

A PDA is sometimes idiopathic i.e. of unknown cause. Known risk factors include:

- Preterm birth
- Congenital rubella syndrome
- Chromosomal abnormalities such as Down Syndrome
- Genetic conditions such as Loeys-Dietz syndrome

Handover Ceremony

All the proceeds from the activities done with assistance from the aforementioned sponsors were handed over to Uganda Heart Institute on April 1st, 2016 in the presence of the Executive Director of Uganda Heart Institute Dr. Omagino John, Dr. Mwambu Tom, and other cardiothoracic surgeons.

Committee members present included Kimuda Sarah, the Social Welfare Secretary of MUMSA; Atuhaire Rogers, the Finance Secretary of MUMSA; Menyo Innocent, the President of the Rotaract Club of Mulago; Ankomisanyi Dos Santos, the President-elect of the Rotaract Club of Mulago; and other members of the mentioned associations were present.

Conclusion

The HeartStrings project was a great success after a successful surgery. The project was made a success through combined efforts; not only was it helpful to Alenzu Ashina, but it also created awareness about cardiovascular disease and risk factors.

Recommendations

There are many congenital heart defects in children whose parents can't afford the expensive procedures. However, through partnerships like those manifested during the HeartStrings project, we can create a big mark in the life of these children.

It's on this note that we call upon all charity organizations and individuals with the heart of giving to keep this up and make this a joint project to cater for at least a heart surgery every year for the good will of patients and sustainability of the project, to create a larger impact on our community.

Acknowledgements

We wish to extend our gratitude to the following people, institutions, and bodies that made this project a great success, without whom it would be only a rumor if not a failure.

First and foremost, we thank the Uganda Heart Institute for accepting to execute

this great project, for their expertise was the core of the project. Special thanks go to Dr. Mwambu Tom for leading the team that carried out the surgery.

Utmost appreciation goes to Dr. Den Mugasha for the contribution towards the project.

Our sincere thanks also go to the students of Aga Khan high school, college of health sciences for the invaluable time and contributions towards the project.

Utmost thanks go to Prof. Charles Ibingira for his active participation and contribution towards the project.

We also extend our gratitude to members of the Rotary Club of Kampala, Rotaract Club of Kampala City, and the Rotaract Club of Makerere University for all support rendered to the project.

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IMPROVING MENSTRUAL HYGIENE AMONG ADOLESCENTS

IN FOUR SELECTED SCHOOLS IN AMOLATAR DISTRICT



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BACKGROUND

Menstrual hygiene management has remained an obstacle to many menstruating girls and women in low income countries with no proper menstrual hygienic practices which are associated with school drop outs and urinary tract infections. Most girls who are poor typically use pieces of material, folded and placed into underwear (Verdemato, 2005).

Uganda has a significant number of adolescents living in rural areas under the bondage of poverty with inability to maintain proper menstrual hygiene.

A baseline survey done with seventy five questionnaires with 13 questions each under two sub themes; knowledge and hygienic practices revealed the following;

PROBLEM STATEMENT

Two thirds of the world's uneducated children are girls, and two thirds of the world's illiterate adults are women (Save the children, 2014). Improper menstrual hygiene increases absenteeism in adolescents which creates a knowledge gap in class thus poor academic performance and later school drop outs. Usually early school drop outs predispose to early risky sexual practices which increase cases of sexually transmitted diseases and early pregnancies. Early

pregnancies are associated with several birth complications including uterine ruptures, fistulas and miscarriages. In Uganda, the median age of first sexual intercourse among female adolescents (15-19 years) is 17.1 years (StellaNeema, 2004). Inadequate knowledge about adolescent menstrual life changes and poverty have contributed to a significant number of early pregnancies, school dropouts, and new HIV infection in Amolatar District.

JUSTIFICATION

Menstrual hygiene practices developed in adolescence are most likely to persist in life. It is recommended that interventions to change behaviour should include improving menstrual hygiene as a strategy to prevent UTIs and improve reproductive health (Gard et al, 2001).

OBJECTIVES

1. To increase knowledge among adolescent girls on proper menstrual sanitation and hygiene
2. To promote use of low cost reusable sanitary pads-Afripads.
3. To establish sanitation clubs in three schools in Amolatar

METHODS

The project was carried out in four selected schools in Amolatar district; Amai primary school, Aputi primary school, Aputi Secondary School and Amolatar secondary School.

The target population was school going adolescents aged 10-18 years in selected schools.

Six major presentations were conducted on normal menstruation, menstrual cycle abnormalities, common teenage related STIs and UTIs, good menstrual hygiene practices, management of menstrual pain and teenage pregnancy.

Sampling technique

We used a convenient sampling technique. Model schools were chosen basing majorly on the ease of transportation from our site of attachment--Amai Hospital--to them.

Project duration

The project was carried out in 5 weeks.

Inclusion and Exclusion criteria

We considered girls in Upper Primary school (Primary 5, 6 and 7) and all in secondary school. We extended to include all girls in lower primary school who were 12 years and above.

Materials and equipment

We used a projector to demonstrate the slide presentations to students. Other materials for illustration included cotton panties and Afripads.

Personnel

The team was made of six medical students with each handling a specific component of menstrual hygiene.

Tools

Manila charts, markers, training catalogues from Reproductive Health Uganda, Straight Talk newspapers, clean white cotton wool, threads, needles and

sponges, laptops, key informant guides and questionnaires

Strategies and activities

We executed the project in sequence of phases;

1. Planning and getting approval from local authorities
2. Training of personnel
3. Baseline Survey
4. Generation of Materials
5. Sensitization
6. Distribution of Afripads.
7. Evaluation

Each girl, above 12 years, who attended the sensitization sessions received a pack of four Afripads.

RESULTS.

The average age of girls sampled was 15 years and all have heard about menstruation before. Their source of information was mainly their mothers (78% of the girls) and least from other relatives (0.2% of the girls).

Most girls (96%) thought menstrual bleeding is normal and most still (79%) reported using sanitary pads for menstrual hygiene management. Some 18% reported using clothes, another 1.5% toilet papers and the remaining 1.5% used leaves.

The problems faced with the different methods of menstrual hygiene management included: discomfort (33%), dirtiness (20%) and lack of privacy (16%).

Most girls reported disposing their used sanitary materials in latrines (96%), in bushes (2%) and in rubbish pits (2%). During menstruation, most girls reported bathing once (57%), 35% said they bathed twice and only 8% bathed more than twice.

Four sanitary clubs were established in some of the schools where they were missing. In schools with existing sanitary clubs, strengthening was done through

sensitization.

Myths and questions that came to our attention at baseline survey were all addressed during sensitization.

Several of the myths proved to be hindrances to proper menstrual hygiene management, for example;

- Girls who dispose of sanitary pads in incinerators become barren
- Girls who display used sanitary pads for all to see become excessively fertile
- Sexual contact is the only way to alleviate menstrual cramps
- Absence of menstrual cramps points to barrenness in the future.

It was observed that only one school had an incinerator and some students were not using it due to the above explained myths. The details are in table 1 below;

Table 1: Sanitary facilities and items present in the schools visited.

Requirement Present(percentage number of schools)
Absent(percentage number of schools)

Pad bins	0%	100%
Incinerators	20%	80%
Clean water	40%	60%
Changing rooms	0%	100%

1060 Afripad packs were distributed.

LESSONS LEARNT.

- I. Lack of knowledge among mothers, friends, teachers, and other relatives about proper menstrual hygiene leads to misinforming adolescents about the ways of handling menstruation.
- II. The type of material used is determined by the socio-economic status of the parents.
- III. Most girls use pit latrines because they lack incinerators since only one

school, Aputi Secondary School, had an incinerator. The other girls did not use incinerators because of the myths surrounding pad disposal.

- IV. The students need regular sensitizations on menstrual hygiene.
- V. Some of the students were missing school due to lack of sanitary pads and the Afripads we gave them will help a great deal, but only for a short while.
- VI. Menstrual management is more than just provision of facilities and materials. There are other attendant challenges like insufficient knowledge on pain management and demystification of myths among others. Overcoming them would involve working with mothers as well.

RECOMMENDATIONS.

As a direct result of our project, we submit the following recommendations:

1. Girl child education and projects that support girls to stay in schools should be encouraged. This is because it is rewarding to the country and the future generations to come.

2. It's crucial that menstrual hygiene management is prioritized in the national agenda and made a national priority.
3. Alternative and reusable low cost sanitary pads should be locally produced and made available by involving women cooperatives and providing training in their production and distribution.
4. UPE program should provide Afripads or other Reusable Menstrual Pads (RUMPs) to the girls every year rather than only three packs of Commercially Disposable Sanitary Pads (CDSPs) since they are not enough
5. Boys and men should be included in menstrual hygiene sensitisation
6. Incinerators should be provided in all schools to burn the CDSPs
7. Changing rooms should be constructed in all schools for the girls to change their pads as required
8. Mothers should be included in sensitisation programs since they are a fountain of information for the girls

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ABSTRACT

The TOTO project was carried out in Amai village, Apuuti sub-county, Amolatar district, which is located in the Northern Uganda. It was aimed at bringing the women of the village together to help solve their health problems. The idea was based on the three delays: delay in the decision to seek medical care, delay in reaching the healthcare, and delay in attaining healthcare once the health centre is reached.

The group aimed to minimize the first two delays by holding meetings to discuss the importance of antenatal care and of delivering in a health centre. The group also aimed at devising innovative ways for the mothers to generate income to pay for any transport costs and purchase needs for delivery in health centres, such as the 'mama kits.' The group would also work as a savings association so as to help out a mother in need especially where maternal and child health is concerned.

The project was carried out over a period of four weeks during the Makerere University College of Health Sciences program, Community Based Education

and Research Service (COBERS) and was a genuine success. Funding was catered for using a grant given by the World Health Organization, Uganda in coordination with the Students' Professionalism and Ethics Club (SPEC) of Makerere University.

INTRODUCTION

The third sustainable development goal seeks to ensure healthy lives and promote well-being for all ages. Previously, the fourth and fifth millennium development goals sought to reduce child mortality and improve maternal health respectively by the year 2015. Interventions were established by several countries to ensure that this goal is achieved. However, an important question still remains: "How much did we achieve thus far?"

To answer this question, one needs to understand the steps taken by Uganda as a country to curb this threat to development because our future depends on our children, whose well-being is determined by their mothers. Particularly important is the antenatal care which is the foundation on which

the country depends to achieve milestones towards maternal and child health.

Different stake-holders have been involved in the success of this program which led to a modifiable four visit model that can be tailored depending on the mother's condition. Key players include the mothers, their partners and health-workers, elders in the community, and friends who have had birth experience.

Many challenges have been faced in the process of antenatal care. For the mothers, who are the direct beneficiaries of this program, long distances and husbands not accompanying them for antenatal care have been major hurdles as well as lack of items essential for delivery. This has been a major challenge for mothers and their families, especially in rural areas like Amai. In order for this program to be achieved, the community needs to own it in order to devise means for its success.

Our proposal was that twenty-five women who have had the experience of childbirth be trained as focal persons in this area. They would be called TOTO which, in the local language, means mother or a motherly person. In this case we would select groups of people in the village of Amai in Kioga sub-county. This would act as a model village for the rest of the sub-county.

The 25 TOTOs would be trained in all the aspects of antenatal care (ANC) and then certified by the hospital. Each of the TOTOs would work together with the village health team members then have periodic meetings with 10 pregnant women who would be identified by the community leaders. The TOTO would register all the mothers in her team and, at each meeting, mothers would have to pay a reasonable fee to the TOTO who would then discuss the importance of ANC.

With the money paid, the TOTO would buy all the items necessary for the delivery. The money would be collected in a central pool and items bought for each mother in turn depending on the stage of her pregnancy. A mother who gave birth through this group would also be trained to be a TOTO, and through

this, the whole village and sub-county would be covered, and the community would own the initiative which would spread throughout.

We believe that through this, mothers will be better prepared for deliveries and any complications which may arise, and this will reduce maternal and child mortality. There will also be a sense of responsibility for the pregnant in the community among the women and, later on, among the men too.

OBJECTIVES

1. To seek permission for the project from the District Health Officer, the Clinical director of Amai Community Hospital and the LC1 in order to go to homes and talk to mothers within the first week of COBERS.
2. To recruit health workers to mobilise mothers in the community for the project, including the head of mothers (women's leader) in Amai within the first week of COBERS.
3. To pin up posters and a banner concerning TOTO project to advertise and inform the public about it within the first three days of COBERS.
4. To visit homes in conjunction with the village health teams to recruit mothers for the project in the second week of COBERS.
5. To hold meetings involving new mothers, mothers-to-be and experienced mothers and stimulate them to share experiences, guided by a health worker in the third week of COBERS.
6. To equip mothers to carry on meeting and assisting each other even after we leave. This should be done in the fourth and final week of COBERS.
7. Present the results of the project to the necessary stakeholders within 4 months.

METHODOLOGY

The project targeted all pregnant

women and mothers with 2 or more children and was implemented over the period of four weeks. The methods and tools used were Focus group discussions (FGDs) with health workers: Nurses and midwives and Village Health Team guiding the discussions. The LC 1 chairperson and the women's leaders in the area were consulted. Official permission was sought from the District Health Officer.

We held discussions with the District health officer, LC1 and Clinical administrator of Amai community hospital to get a go-ahead for the project.

We then pinned up posters at strategic sites to inform the general public about TOTO project. This was followed by recruiting members of the Amai community hospital staff like nurses and midwives to take part in the venture.

During household visits, we asked how many children the women had or if they are pregnant and then proceeded to tell them about the project.

We held meetings at Amai community hospital at convenient times and invited the leaders of the women in Amai village to attend and encourage women in the above criteria to attend to share experiences and ask questions of the medical personnel present. The meetings took the form of focus group discussions and question-and-answer sessions where the women consulted the health workers on issues of maternal and child health. During these meetings, especially as they drew to a close, projects were discussed on how to raise income for mothers in the community and how to support each other to reduce mother and child mortality.

RESULTS

First meeting

The first meeting was more of a trial run. The publicity was good, and women turned up in large numbers from Amai A, Amai B, and the neighbouring villages. Fifty mothers turned up for the meeting and were divided into three groups. Each group was asked to select a chairperson and a secretary and discuss their expectations for the project and meeting, the challenges they face as

mothers and ideas to make the project worth-while.

The most pressing problems faced by the women in Amai during and after pregnancy are:

- Lack of mama kits
- Lack of drugs
- Lack of support from partners
- Lack of transport to the health facility
- Long distance from their homes to the health facility
- Rude midwives and nurses

The mothers expected us to solve all of these problems for them.

However, we advised them to think of solutions to these problems themselves and how they can help each other. We advised them to think about who they wanted to be their leaders and for those who wanted positions of leadership to think of campaign strategies for the next meeting. Soft drinks were provided during the sessions, however, we discovered that the women came expecting to be given money for attending and were advised to give them something in the next meeting. Books and pens were provided to all who wanted them but unfortunately only a few were literate. Field allowance of 5,000/= only was also given to each of the six facilitators.

Second meeting

The second meeting was held a week after the first and 40 mothers turned up, this time mainly from Amai A and B.

We separated the mothers into two groups and asked them to discuss their expectations for the meeting. We also asked them to discuss problems they face and possible solutions. Additionally, each group was required to present a skit on the aforementioned subject matter. This part of the meeting was successful and well-received. A total of six committee members were elected into office with the following posts:

- Chairperson
- Secretary

- Treasurer
- Mobilisers (2)
- Chief whip

The second part of the meeting involved open campaigns and elections for the TOTO committee. This also went well with much fanfare and excitement. The committee was successfully chosen. The following was the way forward decided upon by the women in this meeting:

- The members of TOTO are to hold meetings led by the committee every Wednesday morning at Amai community hospital
- Each meeting, the mothers are required to bring 1,000/= only which will be deposited in a safety deposit box for one year
- After one year, the box will be opened and decisions will be made on how to invest the money to better the members of TOTO

The mothers requested for the following from us:

- A uniform for the members, preferably pink T-shirts
- A metallic box with a padlock for keeping their money
- Seeds to carry out agriculture
- A means of transport, for example bicycles
- Mama kits
- Mosquito nets
- Follow-up phone calls and visits
- A bull for ploughing
- Home visits

However, we reiterated that we would only be with them for a short time and had limited funding. Of the things they asked for, we were only able to give 40,000/= for the making of the safety deposit box and 20 T-shirts were distributed to the committee and outstanding members of the group. We promised to help them as much as we can if and when we secure more funding but in the meantime, we advised them to cooperate and help meet each other's needs.

After this meeting, we gave out a small allowance of 1,000/= only to each of the 40 mothers for refreshments. Field allowance of 5,000/= only was also given to each of the seven facilitators, including the LC1 who oversaw the elections.

The committee scheduled a third meeting and held it on Wednesday without us, as it was considered their first step independent of our interference.

In the follow-up session, we called the leader, Sister Molly, and found out that the meetings are still being held as planned.

DISCUSSION/ EVALUATION

Maternal and child mortality in Amai and in Uganda generally is still a major issue, and in our view, no intervention is too great to help tackle this. We need to pull out all the stops.

The TOTO project, in particular, served to show what the women themselves could do to help solve this problem and it was an eye-opening experience. Not only do the women recognize the challenge, they are also willing to work, given the support and encouragement they need, to meet the challenge head-on.

We were humbled to be chosen and entrusted with such a task and are truly grateful for the results which were seen.

We think more projects like ours should mushroom all-over the country because no step is too small on the road to less maternal and child deaths.

CONCLUSIONS

In a nutshell, the TOTO project was a success, by virtue of fact that the meetings are ongoing, even without our on-site supervision. Right now, we look forward to being available remotely for consultation and encouragement.

RECOMMENDATIONS

We hereby recommend further follow-up on our part as regards the TOTO

project.

For other projects, we recommend more funding and direction for the students who are to carry out a similar project.

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Editorial

DEPRESSION

Seek Help



Sauya Kauma.
MBChB III

The National Institutes of Health list the signs and symptoms of depression as follows;

- Persistent sadness, anxiety or "empty" mood
- Feelings of hopelessness, pessimism
- Feelings of guilt, worthlessness, helplessness
- Loss of interest or pleasure in hobbies and activities
- Decreased energy, fatigue
- Difficulty concentrating, remembering, making decisions
- Difficulty sleeping, early morning awakening or oversleeping
- Appetite and/or unwanted weight changes
- Thoughts of death or suicide; suicide attempts
- Restlessness, irritability
- Persistent physical symptoms, such as muscle pain or headaches

For diagnosis to be made, one ought to have experienced some--but not necessarily all--of the above for more than two weeks with interference to normal function. Depression is a chronic state of low mood and aversion to certain activities. Other mood disorders such as major depressive disorder and dysthymia that feature depressed mood are also generally referred to as depression.

CONTINUED ON PAGE 53

POLLUTION CONTROL A STRATEGY NOT TO FORGET!



BUSINGE OTTO

The writer is a student of Bachelors of Environmental health science at ZMakerere University, School of Public health

A modern industrial society inevitably must release by-products and waste materials into its surrounding environment in quantities ranging from small to substantial. From an absolute or purist viewpoint, any release of material foreign to the local environment, within that environment, could be defined as pollution. People sometimes become very alarmed about pollution and frequently campaigns may be launched by purists who, without any basis in fact, refuse to be satisfied with any amount of release of waste products from an industrial operation.

As Uganda modernizes and shifts from a low-income to a middle-income country, we must accept the fact that there will be some pollution from an absolute point of view associated with modern industrial activity and even modern everyday living.

What is needed is a practical and realistic pollution control strategy that creates reasonable strategies to prevent damage to health or property, while at the same time, not unreasonably burdening industry with red tape, restrictions and extra cost.

In my own perspective, the public has a role to play in this. There should be a sense of concern and awareness about what and how pollution can be harmful to health and measures to limit or clean up any unavoidable pollution. That person practising agriculture should have the knowledge and skill of how to use those materials which can result into soil pollution. The public media too have a role to play in the provision of information basing on facts; there shouldn't be any guilt in reporting the emotional statements of the alarmists. It should also be a role of the health workers at any given time to educate

the masses about pollution

GOVERNMENT RESPONSIBILITY

The main functions of the government as regards to pollution with respect to industrial operations could be in form of setting acceptable levels of pollution within the environment or requirements to clean up unavoidable pollution, but with clear prescription of the regulations to the different industrial sectors. When that is accomplished, there should be a system and standard procedures of monitoring and evaluating these activities such that the targeted levels are not exceeded.

Pollution is properly a matter of concern to government at all levels since this is where the public interest is taken care of and it is only through government that a co-ordinated sensible control system can be achieved. In a personal view, the role of government should pay attention to particular areas where there's leadership and improvement.

Important Considerations

A practical set of national standards for control of air, water and soil pollution should be adopted, in line with international/regional standards. Efforts should be made to deal with known and existing sources of pollution, especially when they involve immediate risks to public health. It's also important to note that the environmental standards at times differ with the type of activity they control

Attempts to regulate the polluters' level of discharge into the environment (emission standards) should also consider the maintenance of the naturalness of the land

Consistency

Regulations must be established and administered consistently in order to be seen as legitimate and fair. It is inconsistent to require a new industry to comply with certain anti-pollution measures when other older established installations are exempt or ignored by virtue of predating the current regulation.

Inspection

Monitoring and inspection of industrial installations must be scientifically sound, impartial, and must take into account all possible sources of pollutants in the area. Inspection and monitoring must be done by competent people with a sound knowledge of the measurements and analyses they are taking.

Industry responsibility

The industrial community must accept pollution control as a mandatory part of doing business and co-operate and assist government in setting acceptable standards and operating in such a way as to be within these standards. Technological study and development should be pursued vigorously by industry to find ways to dispose of industrial wastes than literally putting them in the nearest part of the sky, water or land.

As we move towards middle-income status, Uganda needs to consider a strong, but practical pollution control strategy built on cooperation with industry to ensure the sustainability of our country's economy. This is the only way to ensure that any economic gains do not harm the environment that is necessary for these economic gains to be sustained and grow.

The Evolution of Emergency Medicine at Makerere University



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Emergencies occur everywhere, and each day they consume resources regardless of whether there are systems capable of achieving good outcomes.

Olive Kobusingye

Evolution:

The gradual development of something, especially from a simple to a more complex form.

The evolution of emergency medicine in Uganda is underway. This remarkable process has been forced into motion due to a series of extrinsic and intrinsic factors that have serendipitously come together at such a time as this.

In March 2007, the World Health Assembly adopted Resolution 60.22, which urged member states to prioritize emergency care services and to strengthen national trauma and emergency care systems [1].

Quick facts:

- **1.24 million People die each year as a result of road traffic crashes [2].**
- **Fewer than half of hospitals in sub-Saharan Africa, and as little as 19%, have the capacity to deliver 24-hour emergency care [3].**

Emergency Medicine

The specialty of Emergency Medicine is in its infancy in Africa: the first University to offer the training was in South Africa as recently as January, 2004. To date, 7 countries are offering the training

including Egypt, Sudan, Ethiopia, Ghana, Libya, Rwanda and Tanzania. Kenya recognized the specialty in January, 2017.

Uganda is the 8th country in Africa to offer post-graduate training in Emergency Medicine, which is currently being offered at one institution; Nkozi University through Nsambya Hospital. The Emergency Physician specialty is yet to be recognized in Uganda.

Emergency Unit

An Emergency Unit (Accidents & Emergency Unit/Casualty Unit/Emergency Room) is the functional area within a hospital designated for the provision of Emergency Medicine services. Currently, only a few hospitals in Uganda have established Emergency Units.

Emergency Medical Services

In 2015, Uganda National Ambulance Service was established by the Ministry of Health to provide dedicated Pre-hospital care.

The Future of Emergency Medicine Training

Undergraduate Programs

Currently, most hospitals are run by interns and Medical officers, with fewer specialists. It is therefore essential that training in Emergency Medicine

is acquired during the undergraduate years. This necessitated the incorporation of Emergency Medicine teaching into the undergraduate training program at Makerere University College of Health Sciences to ensure that every graduate has the competency to deal with common emergencies.

Generic Advanced Life Support courses will be incorporated into undergraduate teaching, tailored to the year of study such that students cover the content of Basic Life Support, Advanced Cardiac Life Support, Paediatric Advanced Life Support and Advanced Trauma Life Support together with Emergency and Critical care Nursing in the BSN program.

Postgraduate Programs

Three year M.Med Emergency Medicine course is to start at Makerere with many other universities to follow.

The evolution is in progress.

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MEDICAL TRANSLATION: A NEGLECTED YET VITAL IN UGANDAN MEDICINE FIELD OFTEN



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Medical translation is the translation of technical, regulatory, clinical or marketing documentation, software or training curriculum for the pharmaceutical, medical device or healthcare fields.

Most countries around the world require that literature and labeling associated with medical devices or pharmaceuticals sold, be translated into the national language(s). In addition, documents necessary to conduct clinical trials often require translation in order for local clinicians, patients and regulatory representatives to be able to read and comprehend them. Regulatory approval submissions typically have to be translated as well. (EU Medical and IVD Device Labeling)

Medical translation, though an almost neglected field in the developing world, is a very vital element in effectively conveying health information to the target populations and ensuring that

patients adhere to their treatment. Translation of health information available online should be done more widely as it's a means of availing knowledge to poorer people at a lower cost. The power of translation can best be attested to by the fact that all world religions emphasize that their holy books be translated into the local languages of all nationalities. This is because they all believe that their message is meant to be received by all.



Sure we would love to have someone join us to translate medical content on Wikipedia from English to Luganda

Dr. James Heilman

Feb 21, 2017

Borrowing a leaf from them, medicine being a field that is committed to saving humanity with no segregation, it is of utmost and foremost importance to avail the basic health information in all written world languages, especially those of the developing countries.

Through translating various health literature into Luganda, for example, which is the most read local language in Uganda, it means availing this valuable life-saving information to the local population, the elite and the non-elite as well. It must be emphasized here that developing countries like, Uganda, are still facing a challenge in illiteracy. On the ground level, the majority of the population is able to read Luganda, a local language, even if they aren't formally educated in it.

"Sure we would love to have someone

join us to translate medical content on Wikipedia from English to Luganda." (Dr. James Heilman, Feb 21, 2017).

Wolof speakers in Senegal, read Wolof and have lots of texts in their language due to translation of many manuals though not mainly about conventional medicine or health. Another contemporary example is the Urdu language that is used in Indo-Pak. A lot of health and medical information has been translated into Urdu language

which has improved, to some extent, the awareness amongst masses on various health conditions including diabetes.

Aside from linguistic skills, it requires specific training and subject matter knowledge in order to translate medical content. This is because of the highly technical, sensitive and regulated nature of medical texts.

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DEPRESSION

Seek Help



CONTINUED FROM PAGE 49

At worst, depression leads to suicide. Studies indicate that amongst young people (24 to 34 year olds), depression is the leading cause of suicide. In recent years, many of the suicide cases that have come to public notice with young men and women jumping off tall buildings and plazas in Kampala have all, in a way, been a result of depression. Many of these people, like an unidentified young man who jumped off Mutaasa Kafeero plaza in 2016, complained of financial problems. Others were jilted lovers. While some whose reasons cannot be ascertained must've been depressed over one thing or another.

In universities around the country, several incidents where purportedly depressed students have jumped off high floors of buildings have been documented over the years. One such student was a young Francis Kigeni who jumped off the fifth floor of his hostel in Makerere in 2011. He left a suicide note indicating a long fought battle with depression. He felt like he had "no one to listen". Another student of Makerere University, Emmanuel Kagyina who jumped to his death from Mary Stuart, a girls' residential hall, also left a note generally expressing depressive disorder.

The change from a relatively controlled environment of high school and home to university where one is expected to make life changing decisions with minimal guidance can be overwhelming for some students. Some struggle with the various socio-cultural pressures.

And others simply cannot deal with a combined overload of a big academic burden together with everything else.

It helps to know that depression can manifest as major depression/clinical depression (discrete episodes, different from a person's usual feeling and functioning), persistent depressive disorder (chronic, low grade depression that can get better or worse with time) or psychotic depression (most severe manifestation, with delusions and hallucinations). Some people have seasonal affective disorder, being more prone to depression in different seasons of the year. A few women have depression prior to their menstrual periods—a type referred to as premenstrual dysphoric disorder. Depression can also occur with anxiety, eating disorders or substance abuse, or with diabetes and thyroid hormone imbalance. A few studies have associated depression and other forms of psychosis with having several sexual partners especially in men.

Recognizing and acknowledging that one is depressed is the first step in overcoming any mental disorder. Overcoming societal implications is perhaps the second. In many communities in Uganda, people with any kind of mental illness; those brave enough to admit themselves to Butabika Psychiatric Hospital, others who are taken there by force and the ones who seek help elsewhere, are all collectively called mad, balalu. With "madness" comes isolation and stigmatization. And with stigmatization comes exacerbation

of these illnesses with the potential to progress to suicide.

Depression is reversible. See a counsellor or a doctor. Talk to someone. For severe cases, anti-depressants are prescribed in addition to psychotherapy and in mild cases, psychotherapy alone and behavioral changes like exercise are recommended. One is advised to be out doors and interact with others who make him or her happy. They should engage in hobbies and activities they like to distract from inappropriate thoughts or feelings and break down large assignments into small portions. Getting enough sleep and avoiding all night studying is also advised.

Being a student, it is imperative to break the stigma around mental health and depression and to give a listening ear to those who show signs and symptoms. Laughing it off and bullying the victims only aggravates the problems. Pretending it's not real or calling it a form of witchcraft does not make it any less dangerous. In the past six months alone, three of my friends have expressed what they thought might have depression, or something thereby. Such tales shouldn't make one judgmental. The burden of life itself is more than overwhelming for young adults. Pay attention to others, listen and help. Let there be no shame in seeking help for yourself if you need it. Let leaders advocate for counselling units in all faculties so that looking for help is not in itself a tedious undertaking.

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