



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy



Haematological and Lymphoproliferative Comorbidities in Hepatitis B and C: A Literature Review

Intravitreal Bevacizumab: A Cause for Concern in Patients with Proliferative Diabetic Retinopathy Undergoing Pars Plana Vitrectomy

Perinatal Outcomes of Expectant Management of Severe Preeclampsia at MTRH, Eldoret, Kenya

How We Made Breaking Bad News Skills Training Workshop Relevant to Twenty-First Century Residents at Moi University School of Medicine

Doctors Academy Workshop on Key Skills for Urology Trainees



ISSN 2052-1715

Introduction

The World Journal of Medical Education and Research (WJMER) (ISSN 2052-1715) is an online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, the aim of the journal is to promote academia and research amongst members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from around the world. The principal objective of this journal is to encourage the aforementioned, from developing countries in particular, to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings. We envisage an incessant stream of information flowing along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our editions. We are honoured to welcome you to WJMER.

Editorial Board

Editor-in-Chief

Professor Stuart Enoch, PhD, MBBS, MRCSEd, PGCert (Med Sci), MRCS (Eng)

Editor

Ms. Karen Au-Yeung, BSc, MBCh (Hons), MRCS

Associate Editor

Miss Rebecca Williams, BA (Hons), MA (Dist.)

Advisory Board

Dr. Mohammed Hankir, BSc, MSc, PhD

Mr. Rajive Jose, MBBS, MS (Gen Surg), MCh (Plast Surg), DNB (Gen Surg), FRCSEd, Dip Hand Surgery (BSSH), FRCS (Plast Surg)

Dr. Suzanne Kumar, MBCh (Hons), MRCP

Mr. Sri Thrumurthy, MBChB (Hons), MRCS

Dr. Jamil David, BDS, MSc, PhD

Dr. Bina Raju, BDS, MSc, PhD

Mr. Vaikunthan Rajaratnam, MBBS (Mal), AM (Mal), FRCS (Ed), FRCS (Glasg), FICS (USA), MBA, Dip Hand Surgery (Eur), PG Cert MedEd (Dundee), FHEA(UK)

Dr. Shiby Stephens, MBBS, MPhil, FHEA

ALL RIGHTS RESERVED

Volume 18, Issue 1, 2018, World Journal of Medical Education and Research (WJMER). An Official Publication of the Education and Research Division of Doctors Academy Group of Educational Establishments.

Electronic version
published at
Print version printed
and published at

Doctors Academy UK, 189 Whitchurch Road,
Cardiff, CF14 3JR, South Glamorgan, United Kingdom
Abbey Bookbinding and Print Co.,
Unit 3, Gabalfa Workshops, Clos
Menter, Cardiff CF14 3AY
978-93-80573-06-9.
Doctors Academy, DA House, Judges Paradise, Kaimanam,
Trivandrum, 695018, Kerala, India
Sreekanth S.S
Lakshmi Sreekanth
wjmer@doctorsacademy.org.uk

ISBN
Designing and Setting

Cover page design and graphics
Type Setting
Contact

Copyright: This journal is copyrighted to the Doctors Academy Group of Educational Establishments. Users are not allowed to modify, edit or amend the contents of this journal. No part of this journal should be copied or reproduced, electronically or in hard version, or be used for electronic presentation or publication without prior explicit written permission of the editorial and executive board of WJMER. You may contact us at: wjmer@doctorsacademy.org.uk

WELCOME

We are delighted to bring you the eighteenth edition of the World Journal of Medical Education and Research (WJMER). This edition assembles a variety of intellectually-stimulating articles and offers the reader an insight into the innovative research that is being conducted throughout the world.

The opening article by Varahabhatla et al. explores the association of hepatitis C with haematological diseases and lymphoproliferative disorders in children. It discusses measures which could help to improve the management of such infections.

Khalil and Alakeely use the case of a 53-year-old female in order to examine the role of intravitreal bevacizumab in patients with proliferative diabetic retinopathy undergoing pars plana vitrectomy.

In the following article, Jumba et al. consider the perinatal outcomes of severe preeclampsia amongst a cohort of women at Moi Teaching and Referral Hospital, Kenya. The authors highlight the need for further investigation in this field due to the high mortality and morbidity rates associated with preeclampsia in this country.

Realising the importance of breaking bad news to patients in a sensitive manner, Chumba et al. conduct a study during a training workshop that was intended to help junior doctors improve their skills in this communicative task. The authors conclude that the "flipped classroom" approach proves beneficial in enabling medical professionals to enhance their competence in this field.

The final article by Gan et al. evaluates the Doctors Academy's Key Skills for Urology Trainees course. This course, which is primarily aimed at junior surgical trainees, offers delegates the opportunity to practice and enhance their urological skills on animal tissue and dry models. The authors of this article assess the effectiveness of this course conducted in both 2016 and 2017 through the feedback that was collected from the attendees.

We sincerely hope that you find each article in this edition informative, interesting, and enjoyable to read.

Ms Karen Au-Yeung
Editor

Ms Rebecca Williams
Associate Editor

Professor Stuart Enoch
Editor-in-Chief

Table of Contents

Introduction	i
Welcome	ii
Table of Contents	1
Haematological and Lymphoproliferative Comorbidities in Hepatitis B and C: A Literature Review <i>Varahabhatla V, Daria S, Uchasova E, Vedula U</i>	2-5
Intravitreal Bevacizumab: A Cause for Concern in Patients with Proliferative Diabetic Retinopathy Undergoing Pars Plana Vitrectomy <i>Khalil M, Alakeely AG</i>	6-8
Perinatal Outcomes of Expectant Management of Severe Preeclampsia at MTRH, Eldoret, Kenya <i>Jumba B, Nyongesa P, Tonui P, Odunga J</i>	9-19
How We Made Breaking Bad News Skills Training Workshop Relevant to Twenty-First Century Residents at Moi University School of Medicine <i>Chumba D, Ayiro L, Chang'ach JK, Marete I</i>	20-38
Doctors Academy Workshop on Key Skills for Urology Trainees <i>Lia Gan JJ, Wei Gan JJ, Hsien Gan JJ, Kuah CY, Ojha H, Ganta S, Enoch S</i>	39-46



Haematological and Lymphoproliferative Comorbidities in Hepatitis B and C: A Literature Review

Varahabhatla V*, Daria S*, Uchasova E*, Vedula U**

Institution

*Zaporizhia State Medical University, Mayakovskoho Ave, 26, Zaporizhzhia, Ukraine, 69000

**Konaseema Inst. of Medical Sciences Research Foundation, NH-216, Chaitanya Health City, East Godavari District, Andhra Pradesh 533201, India

Abstract

This review describes the association of viral hepatitis C with haematological diseases and lymphoproliferative disorders in children. Emphasis is placed on discussing their mechanism of development, and a few management strategies are described. This article explains the need for proper screening in children with HCV and HBV infections to improve their treatment outcome and quality of life for a better prognosis.

Key Words

Hepatitis; Pediatrics; Infections; Haematology; Disorders

Corresponding Author:

Mr Vamsi Varahabhatla; E-mail: vamsivarahabhatla@gmail.com

**WJMER, Vol 18: Issue 1,
2018**

Introduction

Over the last two decades, in developed countries there is a progressively decreased rate of viral HBV and HCV infections due to the heavy screening of the patients and their identification. However, this identification process was not installed in all developing and underdeveloped countries of the world. Making this an urgent concern, the risk of population more affected are children under the age of five years around the globe. With the alarms ringing, proper measures of screening, counselling and treatment are necessary to those mothers identified with a HCV or HBV infection. It is a known fact that pediatric infections are not only post-transfusional or post-delivery but could also be marked as nosocomial in developing countries. Possible precautions like disposal of needles, invasive procedures and sterile materials should be taken to prevent the fore mentioned risk. HBV and HCV infections are mentioned as silent infections, due to the fact that they are rarely found and require special tests to identify them in the pediatric populations who are highly predisposed to them¹. From the recent statistics, it is stated that viral hepatitis C affected nearly 3.2 million people alone in the United States and 3% of general population in the world². These oncohematological pathologies are often detected in children with viral hepatitis, as a result of multiple invasive manipulations and blood transfusions, and make further treatment of the underlying disease more difficult.

The aim of our study was to review the recent literature on oncohematological pathologies in children with viral hepatitis B and C.

Methods and Materials

We reviewed recent articles from pubmed central, google scholar and uptodate, using the key terms pediatrics, viral hepatitis, hematopathology, hematocology, hepatitis B virus and hepatitis C virus.

Results

The mortality caused by viral hepatitis in 2015 was due to chronic liver disease (cirrhosis) and primary liver cancer (hepatocellular carcinoma)³. Most infections in children are clinically silent⁴. The risk of attaining HBV infection was greatly reduced by hygiene standards, verifying blood products and prophylactic vaccination⁵. Despite these actions, the infections of HBV are very high⁶. HBV is a partially double-stranded DNA virus which replicates with the help of reverse transcription and is characterized by its thin host range and replication in hepatocytes. HBV's DNA is covalently closed circular DNA⁷. The life cycle of the virus is not relevant, but HBV genomes are reported to integrate into the hepatocellular genome⁸. Many studies support the prognostic value of HBV-DNA levels in the estimation of HCC risk and disease prognosis⁹.

The detection of HCV-encoded polymerase is not easy and with high replication rates results in a high mutation rate. Both HBV and HCV are transmitted parenterally, it can also be transmitted by intravenous drug abuse or invasive sexual practices. They can be transmitted vertically in some cases. Like HBV, HCV is not much persistent in children. HCV infection is symptomatic in 85% cases and symptoms like fatigue, vomiting and signs of liver damage are seen. Chronic form is slow progressive disease which is characterized by obstinate hepatic inflammation resulting in liver fibrosis and liver cirrhosis. HCV is a single-stranded, positive-sense RNA virus.

From the literature it is known that with addition to hepatic involvement, viral hepatitis can also lead to the extra hepatic involvement causing haematological manifestations, ranging from benign malignancies to lymphoproliferative disorders^{10,11}. Several benign haematological diseases are explained like thrombocytopenia, autoimmune haemolytic anemia, aplastic anemia, red cell aplasia, neutropenia and sideroblastic anemia were identified^{12,13}.

Thrombocytopenia serves as the major problem for patients with HCV infection. Rajan et al, in a study it was described that out of 250 patients, 30% of the patients reported a chronic thrombocytopenic purpura who were HCV positive¹⁴. Chiao et al mentioned that, the risk of thrombocytopenia is prevalent in both patient groups who were on treatment and untreated HCV patients equally¹⁵. The number of HCV infection cases reported with thrombocytopenia were more than any other hepatic involvement, and no specific genotype of the virus was identified related to this manifestation^{16,17}. Few studies suggest that immune mechanisms are responsible for the reduced thrombocytes count. The reduced thrombocyte count was also related advanced liver disease due to fibrosis and hepatocyte damage^{18,19,20,21}. A proper treatment regime for the HCV patients associated with thrombocytopenia has to be established. Steroids and antiviral therapy with interferon alpha are mostly preferred but with their improper indications could cause reactivation of the viral rRNA or increase in the viral load, becoming a threat to the patients life. McHutchinson et al in their study described the use and safety of Eltrombopag in patients with HCV associated with reduced platelet count²² Whereas, Afdhal et al, in their randomised study on 292 patients, proposed Eltrombopag, reducing the need for platelet infusions for the patients undergoing invasive procedures²³. So, dosage and the time of drug administration play a key role in further improvement keeping in mind the careful selection of the patients.

Hepatitis C is also associated with bone marrow abnormalities and coagulopathies. It is hypothesised that the bone marrow abnormalities in HCV patients could be possibly due to autoimmune destruction, hyper active spleen, antiviral treatment load and decreased thrombocytic count²⁴. In patients with a sudden pancytopenia, a bone marrow biopsy for the detection of HCV RNA is suggested. In a study by Azam et al on 30 patients, 16 out of them contained traces of HCV RNA in their bone marrow samples. They visualised the inflammatory changes, hypo or hyper cellularity, high viral load, immune complexes in the marrow samples in the above mentioned 16 cases, which led them to theorise the possibility of viral replication and altered marrow micro environment, which is the cause of haematological manifestations²⁵. Whereas, Lisman et al described in their study that the coagulopathies could be possibly due to thrombocytopenia, prolonged prothrombin index, reduced clotting factors and increased Von Willebrand factor and actovegin caused from endothelial dysfunction which are well understood²⁶.

Discussions

HCV infected patients can also be associated to extra hepatic comorbidities like lymphoproliferative disorders, with an increased prevalence in women with more than 50 years, as suggested by several epidemiological studies^{27,28}. Several studies described the association of HCV with non-Hodgkins lymphoma, B cell lymphoma, myeloid malignancies, Waldenstrom's macroglobulinemia, chronic lymphocytic leukaemia and chronic myeloid leukaemia. Chronic antigenic stimulation of the immune system has been one of the proposed theories to relate HCV infections with lymphoproliferative diseases^{29,30,31} Machida et al suggested the theory of HCV infection enhancing the DNA damage causing gene mutations and disrupting the natural apoptotic processes of the infected lymphocytes³². However, taking into consideration the data by Mazzaro et al, not all HCV infections are associated with lymphocyte abnormalities, indicating the involvement of various environmental and genetic factors influencing the B-cell disorders related to viral hepatitis³³. As there is high evidence of association of non-Hodgkins lymphoma with HCV, every patient with lymphoproliferative diseases must be screened for viral hepatitis. With the high risk for development of hepatotoxicity, there is a necessity for close monitoring of the viral load and hepatic function.

Conclusions

Thus, broad access to therapeutic intervention before late-stage liver disease has developed as well as surveillance even after successful therapy is

required to reduce the death toll from viral hepatitis and its haematological comorbidities. In addition, a prophylactic vaccine is urgently needed to reduce new infections and to prevent reinfection after antiviral therapy³⁴. Subsequent management implications are needed to treat the above mentioned viral hepatitis associated haematological disorders. Pediatric infectologists play an important role in screening and putting a confirmatory diagnosis in these fore mentioned comorbid diseases³⁵.

Further studies describing better pathophysiology and mechanisms of their associations and target therapies are in high demand to improve the treatment outcome and quality of life in children with viral hepatitis B and C associated with haematological and lymphoproliferative comorbidities. It should be pointed out that modern literature also indicates both the frequency of haematological disorders in HCV and HBV and the high probability of infecting these children with oncohematological pathology. Therefore, it is necessary to monitor the haematological status of children with chronic hepatitis, and monitor hepatitis markers in patients with oncohematological pathology.

References

1. Visoná K1, Baez F, Taylor L, et al. Impact of hepatitis B and hepatitis C virus infections in a hematology-oncology unit at a children's hospital in Nicaragua, 1997 to 1999. *Clin Diagn Lab Immunol*. 2002 May;9(3):622-6.
2. Armstrong GL, Wasley A, Simard EP, McQuillan GM, Kuhnert WL, Alter MJ. The prevalence of hepatitis C virus infection in the United States, 1999 through 2002. *Ann Intern Med*. 2006;144:705-14. [PubMed] [Ref list]
3. Ringehan M, Jane A, McKeating, Ulrike P et al. Viral hepatitis and liver cancer. *Biol Sci*. 2017 Oct 19; 372(1732): 20160274. Published online 2017 Sep 11. doi: 10.1098/rstb.2016.0274 Correction in: *Philos Trans R Soc Lond B Biol Sci*. 2018 Jan 5; 373(1737): 20170339. PMID: PMC5597741
4. Guidotti LG, Inverso D, Sironi L et al, Immunosurveillance of the liver by intravascular effector CD8(+) T cells. *Immunity*. 2015 Apr 23; 42(4):486-500.
5. Trépo C, Chan HL, Lok A. Hepatitis B virus infection. *Lancet*. 2014 Dec 6; 384(9959):2053-63.
6. Lucifora J, Protzer U et al. Attacking hepatitis B virus cccDNA--The holy grail to hepatitis B cure. *J Hepatol*. 2016 Apr; 64(1 Suppl):S41-S48.
7. Seeger C, Mason WS et al. Molecular biology of hepatitis B virus infection. *Virology*. 2015 May; 531(2):479-486.
8. Chen CJ, Yang HI et al. Natural history of chronic hepatitis B REVEALed. *J Gastroenterol Hepatol*. 2011 Apr; 26(4):628-38.
9. Hedegaard DL, Tully DC, Rowe IA et al. High resolution sequencing of hepatitis C virus reveals limited intra-hepatic compartmentalization in end-stage liver disease. *J Hepatol*. 2017 Jan; 66(1):28-38.
10. Galossi A, Guarisco R, Bellis L, Puoti C. Extrahepatic manifestations of chronic HCV infection. *J Gastrointest Liver Dis*. 2007;16:65-73. [PubMed]
11. Himoto T, Masaki T. Extrahepatic manifestations and autoantibodies in patients with hepatitis C virus infection. *Clin Dev Immunol*. 2012. 2012 871401. [PMC free article] [PubMed]
12. Ramos-Casals M, García-Carrasco M, López-Medrano F, Trejo O, Forns X, López-Guillermo A, et al. Severe autoimmune cytopenias in treatment-naive hepatitis C virus infection: Clinical description of 35 cases. *Medicine (Baltimore)* 2003;82:87-96.[PubMed]
13. Davidovitz Y, Halpern Z, Wardi J, Ballin A, Meytes D. Pure red cell aplasia responsive to interferon-alpha in a patient with hepatitis C virus infection. *Acta Haematol*. 1998;100:213-5. [PubMed]
14. Rajan SK, Espina BM, Liebman HA. Hepatitis C virus-related thrombocytopenia: Clinical and laboratory characteristics compared with chronic immune thrombocytopenic purpura. *Br J Haematol*. 2005;129:818-24.
15. Chiao EY, Engels EA, Kramer JR, Pietz K, Henderson L, Giordano TP, et al. Risk of immune thrombocytopenic purpura and autoimmune hemolytic anemia among 120 908 US veterans with hepatitis C virus infection. *Arch Intern Med*. 2009;169:357-63. [PubMed]
16. de Almeida AJ, Campos-de-Magalhães M, de Melo Marçal OP, Brandão-Mello CE, Okawa MY, de Oliveira RV, et al. Hepatitis C virus-associated thrombocytopenia: A controlled prospective, virological study. *Ann Hematol*. 2004;83:434-40. [PubMed]
17. Nagamine T, Ohtuka T, Takehara K, Arai T, Takagi H, Mori M. Thrombocytopenia associated with hepatitis C viral infection. *J Hepatol*. 1996;24:135-40.
18. Nagamine T, Ohtuka T, Takehara K, Arai T, Takagi H, Mori M. Thrombocytopenia associated with hepatitis C viral infection. *J Hepatol*. 1996;24:135-40. [PubMed]
19. Liebman HA. Viral-associated immune thrombocytopenic purpura. *Hematology Am Soc Hematol Educ Program*. 2008;1:212-8. [PubMed]
20. Wang CS, Yao WJ, Wang ST, Chang TT, Chou P. Strong association of hepatitis C virus (HCV)

- infection and thrombocytopenia: Implications from a survey of a community with hyperendemic HCV infection. *Clin Infect Dis.* 2004;39:790–6. [PubMed]
21. Aref S, Sleem T, El Menshawy N, Ebrahiem L, Abdella D, Fouda M, et al. Antiplatelet antibodies contribute to thrombocytopenia associated with chronic hepatitis C virus infection. *Hematology.* 2009;14:277–81. [PubMed]
 22. McHutchison JG, Dusheiko G, Shiffman ML, Rodriguez-Torres M, Sigal S, Bourliere M, et al. Eltrombopag for thrombocytopenia in patients with cirrhosis associated with hepatitis C. *N Engl J Med.* 2007;357:2227–36. [PubMed]
 23. Afdhal NH, Giannini EG, Tayyab G, Mohsin A, Lee JW, Andriulli A, et al. Eltrombopag before procedures in patients with cirrhosis and thrombocytopenia. *N Engl J Med.* 2012;367:716–24. [PubMed]
 24. Klco JM, Geng B, Brunt EM, Hassan A, Nguyen TD, Kreisel FH, et al. Bone marrow biopsy in patients with hepatitis C virus infection: Spectrum of findings and diagnostic utility. *Am J Hematol.* 2010;85:106–10.
 25. Abou El Azm AR, El-Bate H, Abo-Ali L, Mansour N, Ghoraba H, Salem ML. Correlation of viral load with bone marrow and hematological changes in pale patients with chronic hepatitis C virus. *Arch Virol.* 2012;157:1579–86. [PubMed] [Ref list]
 26. Lisman T, Porte RJ. Rebalanced hemostasis in patients with liver disease: Evidence and clinical consequences. *Blood.* 2010;116:878–85. [PubMed] [Ref list]
 27. Arcaini L, Merli M, Passamonti F, Bruno R, Brusamolino E, Sacchi P, et al. Impact of treatment-related liver toxicity on the outcome of HCV-positive non-Hodgkin's lymphomas. *Am J Hematol.* 2010;85:46–50. [PubMed] [Ref list]
 28. Vladareanu AM, Ciufu C, Neagu AM, Onisai M, Bumbea H, Vintilescu AM, et al. The impact of hepatitis viruses on chronic lymphoproliferative disorders - Preliminary results. *J Med Life.* 2010;3:320–9. [PubMed] [Ref list]
 29. De Re V, De Vita S, Marzotto A, Rupolo M, Gloghini A, Pivetta B, et al. Sequence analysis of the immunoglobulin antigen receptor of hepatitis C virus-associated non-Hodgkin lymphomas suggests that the malignant cells are derived from the rheumatoid factor-producing cells that occur mainly in type II cryoglobulinemia. *Blood.* 2000;96:3578–84. [PubMed]
 30. Ivanovski M, Silvestri F, Pozzato G, Anand S, Mazzaro C, Burrone OR, et al. Somatic hypermutation, clonal diversity, and preferential expression of the VH 51p1/VL kv325 immunoglobulin gene combination in hepatitis C virus-associated immunocytomas. *Blood.* 1998;91:2433–42. [PubMed]
 31. Marasca R, Vaccari P, Luppi M, Zucchini P, Castelli I, Barozzi P, et al. Immunoglobulin gene mutations and frequent use of VH1-69 and VH4-34 segments in hepatitis C virus-positive and hepatitis C virus-negative nodal marginal zone B-cell lymphoma. *Am J Pathol.* 2001;159:253–61. [PMC free article] [PubMed]
 32. Machida K, Cheng KT, Sung VM, Lee KJ, Levine AM, Lai MM. Hepatitis C virus infection activates the immunologic (type II) isoform of nitric oxide synthase and thereby enhances DNA damage and mutations of cellular genes. *J Virol.* 2004;78:8835–43. [PubMed] [Ref list]
 33. Mazzaro C, Tirelli U, Pozzato G. Hepatitis C virus and non-Hodgkin's lymphoma 10 years later. *Dig Liver Dis.* 2005;37:219–26. [PubMed] [Ref list]
 34. Ennishi D, Maeda Y, Niitsu N, Kojima M, Izutsu K, Takizawa J, et al. Hepatic toxicity and prognosis in hepatitis C virus-infected patients with diffuse large B-cell lymphoma treated with rituximab-containing chemotherapy regimens: A Japanese multicenter analysis. *Blood.* 2010;116:5119–25. [PubMed] [Ref list]
 35. Shiksha Kedia,* Vijaya Raj Bhatt,1,* Sandeep Kumar Rajan,1. Benign and malignant haematological manifestations of chronic hepatitis C virus. *Int J Prev Med.* 2014 Dec; 5 (Suppl 3): S179–S192.



Intravitreal Bevacizumab: A Cause for Concern in Patients with Proliferative Diabetic Retinopathy Undergoing Pars Plana Vitrectomy

Khalil M*, Alakeely AG**

Institution

*Ninewells Hospital and Medical School, Dundee, Angus, United Kingdom

**King Khaled Eye Specialist Hospital, Umm Al Hamam Al Gharbi, Riyadh, Saudi Arabia

WJMER, Vol 18: Issue 1, 2018

Abstract

Aim: To report: 1. Development of no light perception (NLP) in the left eye (OS) one day post pars-plana vitrectomy (PPV) with pre-operative intravitreal bevacizumab. 2. Progression from extra-foveal tractional retinal detachment (RD) to combined fovea threatening rhegmatogenous and tractional RD in the contralateral untreated right eye (OD) five days post-surgery.

Observations: A 53-year-old female with 20-year history of insulin dependent diabetes presented with a gradual drop of vision over a four-month period. A diagnosis of tractional RD threatening the fovea was made OS, and extra-foveal tractional RD OD. Pre-operative best corrected visual acuity (BCVA) was 4/200 OS and 20/50 OD. The patient was treated with 25-gauge PPV, gas tamponade and pre-operative intravitreal bevacizumab OS. Day 1 post-op, BCVA was NLP OS. Day 5 post-op, BCVA was hand-motion OD with a diagnosis of combined rhegmatogenous and tractional RD threatening the fovea.

Conclusions: The reasons for development of NLP on day one post-PPV in the treated eye are inconclusive. We propose that progression to fovea threatening combined rhegmatogenous and tractional RD in the untreated eye is due to the systemic absorption of the pre-operative intravitreal bevacizumab to the treated eye leading to increased fibrous contracture, causing retinal breaks.

Key Words

Intravitreal Bevacizumab; Proliferative Diabetic Retinopathy; Combined Rhegmatogenous and Tractional Retinal Detachment; No Light Perception

Corresponding Author:

Dr Mostafa Khalil; E-mail: mostafa.khalil@nhs.net

Introduction

Pars plana vitrectomy (PPV) is known to improve anatomic features as well as functional visual acuity.¹ In the majority of cases, visual improvement is seen. However, there remain to be intraoperative (intra-op) and postoperative (post-op) complications that may hinder visual outcome.² Intra-op complications include retinal breaks and choroidal haemorrhage. Post-op complications include recurrent vitreous haemorrhage and retinal detachment (tractional, rhegmatogenous or combined).³ In terms of best corrected visual acuity (BCVA): one study of 124 patients found that five of these patients developed light perception (LP) vision on the first post-operative day (pre-op BCVA were counting fingers (CF) – light perception (LP)). two of these five developed no light perception (NLP) by the second and fourth week post-operatively while LP for the other patients persisted during the first month post-op.⁴

Another study of 100 eyes requiring vitrectomy for

proliferative diabetic retinopathy (PDR) had eight individuals with a pre-operative diagnosis of macula detached tractional retinal detachment (RD). One of those individuals progressed to NLP vision at 12 months follow up. However, there was no data to show what their BCVA was on first day post-op.¹

The use of intravitreal anti vascular endothelial growth factor (Anti-VEGF) drugs such as bevacizumab (avastin) is indicated no more than one week pre-vitrectomy due to vitreous haemorrhage. It has been shown to reduce post-op vitreous haemorrhage.⁵ Some studies however, have linked it to the development of tractional RD in patients with PDR.^{6,7,8} Intraoperative avastin has also been reported to cause progression to tractional RD involving the macula in the untreated eye.⁷

We report an eye developing NLP on day one post PPV pre-treated with avastin, followed by the contralateral eye developing combined tractional and rhegmatogenous RD after five days.

Case Report

A 53-year-old female with a past medical history of uncontrolled type 2 diabetes on insulin replacement therapy, hypertension and past ocular history of two sessions of bilateral pan-retinal photocoagulation (PRP) for PDR presented to King Khaled Eye Specialist Hospital with gradual worsening of vision over a four-month period. Examination revealed a BCVA of 20/50 in the right eye (OD) and 4/200 in the left eye (OS). Intraocular pressure (IOP) was 16 bilaterally. Both eyes had nuclear sclerotic (NS) cataract, and neither had iris neovascularization (NVI). Fundal examination OD showed extra-foveal tractional RD, posterior hyaloid proliferation, inferior vitreous haemorrhage and old retinal laser scars with a normal optic nerve head. Fundal examination OS showed tractional RD involving the fovea, old retinal scar and a healthy optic nerve head. Fluorescein angiography (FA) OS showed a variable degree of macular ischaemia and good optic nerve perfusion.

The right eye was treated with PRP. The left eye was treated with intravitreal avastin followed by a 25-gauge PPV with membrane segmentation and delamination, panretinal endolaser photocoagulation (EL), fluid air exchange and 20% sulfur hexafluoride (SF₆) gas tamponade three days later. A guarded prognosis was discussed with the patient. Days 1-4 post-PPV: The patient was not in pain. OD BCVA was 20/50 and fundal examination was unchanged. OS BCVA was NLP, IOP was 30, the cornea was clear, the lens remained mild NS and retina was flat under 90% gas with a healthy appearing disc. Day 5 post-PPV: OS remained unchanged. OD BCVA was hand motion with a new combined rhegmatogenous and tractional RD involving the fovea. The right eye was then treated with PPV with membrane segmentation and delamination, EL, fluid air exchange and silicone oil tamponade.

Visual acuity OD improved to 20/300 on the subsequent visits and continues to show progress. Visual acuity OS improved to 2/300 after resolution of 40% of the gas bubble and has complete anatomical success. Removal of silicon oil was performed on the right eye and the vision remained stable.

Discussion

No light perception following pars plana vitrectomy is uncommon. As discussed above, one out of 100 patients in one study (1%) and two out of 124 patients (1.6%) in another developed NLP.^{1,4} We have, however, not found any patients developing NLP on day one post-op such as this patient we described. Many significant risk factors have been identified. Common in both mentioned studies is post-op vitreous haemorrhage and NVI.^{1,4}

Pre-operative NVI and post-op macular ischaemia are others.⁴ It is important to note that on the contrary, post-op rise in IOP and pre-op TRD and PRP therapy are not significant risks.^{1,4} With this in mind, after thorough examination and analysis of our patient, we could not adequately explain why they developed NLP one day post-PPV.

The use of Anti-VEGF medications such as avastin has been linked to tractional or combined rhegmatogenous and tractional RD shortly after vitrectomy due to inducing more fibrous contracture leading to breaks.⁹ The risk of RD is increased with a longer time interval between injection and vitrectomy in patients with uncontrolled diabetes, VH and PDR resistant to PRP.⁶

A few pharmacokinetic studies have identified a potential contralateral effect of avastin.^{10,11} Avastin was injected unilaterally through an intravitreal route in eyes of rabbits; levels were measured in the vitreous and serum and were found to be raised to a lesser extent in the contralateral eye. This suggests systemic absorption and distribution.¹⁰ In patients with wet age related macular degeneration, serum pharmacokinetics and plasma free VEGF were evaluated and showed after the first week of injection, plasma levels of avastin were raised above its half inhibitory concentration (IC₅₀) and led to a significant reduction in plasma free VEGF, further demonstrating systemic exposure.¹¹ A study by Matsuyama et al, on patients with PDR who received unilateral intravitreal avastin showed that at day 7, the level of VEGF in the contralateral eye was also significantly reduced. Thus we need to be observant of the fellow eye when injecting avastin.¹²

Therapeutic response of intravitreal injection of avastin (1.25mg/0.05ml) on the contralateral eye has been reported in the treatment of PDR and macular oedema. This also suggests adverse effects should also be anticipated in the contralateral eye.^{13,14,15}

To summarise, avastin has been linked to development of rhegmatogenous and tractional RD.⁹ It has also been linked to cause progression of tractional RD involving the macula in the contralateral eye⁷, and has been shown by various studies to affect the contralateral eye.^{10,11,12,13,14,15}

With this in mind, we hypothesise that, in our patient, the development of contralateral combined rhegmatogenous and tractional RD five days post-PPV is due to the avastin given three days pre-PPV. We cannot absolutely rule out the possibility that the progression to combined rhegmatogenous and tractional RD involving the fovea in the right eye is a coincidental event

resulting from natural disease pathology. We, however, deem this unlikely given that it occurred five days post-PPV and eight days post-injection of avastin in the contralateral eye. To the best of our knowledge, this is the first reported case of developing NLP one day post-PPV and the first reported case of progression of the contralateral eye to combined rhegmatogenous and tractional RD involving the fovea.

References

1. Mason JO, Colagross CT, Haleman T, Fuller JJ, White MF, Feist RM, Emond TL, McGwin G. Visual outcome and risk factors for light perception and no light perception vision after vitrectomy for diabetic retinopathy. *American journal of ophthalmology*. 2005 Aug 31;140(2):231-e1.
2. Schachat AP, Oyakawa RT, Michels RG, Rice TA. Complications of vitreous surgery for diabetic retinopathy: II. Postoperative complications. *Ophthalmology*. 1983 May 1;90(5):522-30.
3. Virata SR, Kylstra JA. Postoperative complications following vitrectomy for proliferative diabetic retinopathy with sew-on and noncontact wide-angle viewing lenses. *Ophthalmic Surgery, Lasers and Imaging Retina*. 2001 May 1;32(3):193-7.
4. Akbari S, Hira A, Bhagat N. Risk Factors for Poor Vision of Light Perception or No Light Perception, in Diabetics Undergoing Vitrectomy. *Investigative Ophthalmology & Visual Science*. 2007 May 10;48(13):2248-.
5. Osaadon P, Fagan XJ, Lifshitz T, Levy J. A review of anti-VEGF agents for proliferative diabetic retinopathy. *Eye*. 2014 May 1;28(5):510-20.
6. Yeh PT, Yang CM, Lin YC, Chen MS, Yang CH. Bevacizumab pretreatment in vitrectomy with silicone oil for severe diabetic retinopathy. *Retina*. 2009 Jun 1;29(6):768-74.
7. Zlotcavitch L, Flynn Jr HW, Avery RL, Rachitskaya A. Progression to macula-off tractional retinal detachment after a contralateral intraoperative intravitreal bevacizumab injection for proliferative diabetic retinopathy. *Clinical ophthalmology (Auckland, NZ)*. 2015;9:69.
8. Arevalo JF, Maia M, Flynn HW, Saravia M, Avery RL, Wu L, Farah ME, Pieramici DJ, Berrocal MH, Sanchez JG. Tractional retinal detachment following intravitreal bevacizumab (Avastin) in patients with severe proliferative diabetic retinopathy. *British Journal of Ophthalmology*. 2008 Feb 1;92(2):213-6.
9. Hsu YJ, Hsieh YT, Yeh PT, Huang JY, Yang CM. Combined tractional and rhegmatogenous retinal detachment in proliferative diabetic retinopathy in the anti-VEGF era. *Journal of ophthalmology*. 2014;2014.
10. Bakri SJ, Snyder MR, Reid JM, Pulido JS, Singh RJ. Pharmacokinetics of intravitreal bevacizumab (Avastin). *Ophthalmology*. 2007 May 31;114(5):855-9.
11. Avery RL. What is the evidence for systemic effects of intravitreal anti-VEGF agents, and should we be concerned?. *British Journal of Ophthalmology*. 2013 Dec 10;bjophthalmol-2013.
12. Matsuyama K, Ogata N, Matsuoka M, Wada M, Nishimura T, Takahashi K. Effects of intravitreally injected bevacizumab on vascular endothelial growth factor in fellow eyes. *Journal of Ocular Pharmacology and Therapeutics*. 2011 Aug 1;27(4):379-83.
13. Avery RL, Pearlman J, Pieramici DJ, Rabena MD, Castellarin AA, Ma'an AN, Giust MJ, Wendel R, Patel A. Intravitreal bevacizumab (Avastin) in the treatment of proliferative diabetic retinopathy. *Ophthalmology*. 2006 Oct 31;113(10):1695-705.
14. Bakbak B, Ozturk BT, Gonul S, Yilmaz M, Gedik S. Comparison of the effect of unilateral intravitreal bevacizumab and ranibizumab injection on diabetic macular edema of the fellow eye. *Journal of Ocular Pharmacology and Therapeutics*. 2013 Oct 1;29(8):728-32.
15. Hanhart J, Tiosano L, Averbukh E, Banin E, Hemo I, Chowers I. Fellow eye effect of unilateral intravitreal bevacizumab injection in eyes with diabetic macular edema. *Eye*. 2014 Jun 1;28(6):646-53.



Perinatal Outcomes of Expectant Management of Severe Preeclampsia at MTRH, Eldoret, Kenya

Jumba B, Nyongesa P, Tonui P, Odunga J

Institution

Moi University, Usain Gishu County, Academic Highway, Eldoret, Kenya

WJMER, Vol 18: Issue 1, 2018

Abstract

Background: Early severe preeclampsia accounts for 25% of all cases of preeclampsia and is the leading cause of maternal and perinatal morbidity and mortality. The definitive treatment for preeclampsia is delivery. Yet, an early preterm delivery increases the risk for adverse neonatal outcomes.

Objective: To investigate the perinatal outcomes of severe preeclampsia among women managed conservatively at the Moi Teaching and Referral Hospital in Eldoret, Kenya (MTRH).

Methods: This prospective study was conducted in MTRH. A total of 72 women from 28 to 34 weeks gestation with severe preeclampsia were followed up till seven days post-delivery with outcomes evaluated. Expectant management was given whenever there was no indication for immediate delivery as per the hospital severe preeclampsia treatment protocol. The perinatal outcome was recorded and statistical analysis done. Relevant data was collected using structured questionnaires and analyzed using SPSS version 22. Descriptive data was presented using tables and graphs. Inferential statistics were presented using odd ratios and tabulated showing their P values ($p < 0.05$).

Outcomes of interest included pregnancy prolongation, intrauterine fetal death, Apgar score at five minutes, newborn unit admission, and newborn status on day seven.

Results: The mean age was 27.9 \pm 6.6 years (range 16-43 years). The median pregnancy prolongation was up to seven days. There were 24 (33.3%) perinatal deaths. Apgar score < 7 occurred in eight (11.1%). More than half of newborns. Thirty seven (51.4%) were admitted to the newborn unit. More than two-thirds of babies 48 (66.7%) were alive on day seven.

Conclusion: Following conservative management there was a median pregnancy prolongation of up to a week. There were 59 (81.9%) live births. Forty-four (47.2%) women stayed longer than a week before delivery and their newborns had a better five minute Apgar score, were less likely to be admitted to the newborn unit and were more likely to survive for at least a week post-delivery compared to those who stayed a week and less before delivery. However this was not statistically significant.

Recommendations: More studies are recommended in the area of early severe preeclampsia since the disease contributes to high mortality and morbidity in our setup. Pediatric follow-up of newborns to document long term effect, if any, after expectant management of early severe PET.

Key Words

Preeclampsia; Perinatal; Paediatrics

Corresponding Author:

Mr Ben Jumba; E-mail: julochoben@gmail.com

Background

Every tenth pregnancy is affected by hypertension, one of the most common complications and leading causes of maternal death worldwide¹. Hypertensive disorders in pregnancy include preexisting chronic hypertension, pregnancy-induced hypertension and pre-eclampsia (PE). Preeclampsia is a multisystem pregnancy disorder characterized by de novo hypertension ($>140/90$ mmHg) and proteinuria at ≥ 20 weeks gestational age (i.e. the second half of pregnancy) in a previously normotensive woman^{2,3}.

It is characterized by marked vascular, metabolic and inflammatory changes leading to generalized endothelial dysfunction and end-organ damage⁴. In some cases, it manifests symptoms including intrauterine growth restriction, or reduced amniotic fluid volume¹.

Preeclampsia remains a potentially life-threatening disease for both the mother and baby⁵. The World Health Organization (WHO) estimate that about 1.4 million women (about 5-10%) are affected by

the preeclampsia each year, resulting in an annual mortality of 65,000 women worldwide^{6, 7} but may be higher in resource-limited settings or areas of the world which reflects inequities in access to health services. Although extensive research efforts have been aimed at unraveling its pathogenesis, the etiology of preeclampsia remains to be elucidated. Most likely, preeclampsia is a result of interplay between maternal constitution, placental factors and inappropriate adaptive changes to pregnancy predominantly involving the cardiovascular and inflammatory system⁴.

There is wide variation in the cases of preeclampsia between the developed and developing countries. WHO estimates the incidence of preeclampsia to be seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%). The incidence of preeclampsia in the developed countries of North America and Europe is similar and estimated to be about five to seven cases per 10,000 deliveries⁸. On the other hand, incidence of eclampsia in developing nations such as in Africa varies widely, ranging from one case per 100 pregnancies to one case per 1700 pregnancies⁹. The incidence is high in developing countries due to malnutrition, hypoproteinemia, and poor obstetric facilities. Severe forms of preeclampsia are more common, ranging from a low of 1.8% of all deliveries to as high as 18% in parts of Africa. Rates from African countries such as South Africa, Egypt, Tanzania, Nigeria, Kenya and Ethiopia vary from 1.8% to 7.1%. Typically, preeclampsia is classified by its severity into mild and severe types based on the woman's blood pressure and proteinuria. Distinguishing between mild and severe preeclampsia is important because the management strategies are very different. Preeclampsia is classified as mild preeclampsia when the systolic blood pressure of >140 mmHg or a diastolic blood pressure >90 mmHg in combination with 300 mg of protein collected in urine over 24 hours. Severe preeclampsia (SPE) is a more serious problem and is diagnosed if there are more severe elevations of blood pressure or evidence of other end-organ dysfunction. Diagnosis of severe preeclampsia requires the basic features of mild preeclampsia as well as some indication of additional problems with either the mother or the baby. According to ACOG Committee on Practice Bulletins - Obstetrics, (2002), one of the following findings is also necessary for a diagnosis of severe preeclampsia: signs of central nervous system problems (severe headache, blurry vision, altered mental status); signs of liver problems (nausea and/or vomiting with abdominal pain; elevated transaminases); at least twice the production of some liver enzymes on blood test; very high blood pressure (>160 systolic or 110 diastolic); thrombocytopenia; >500 mg of

protein in a 24-hour urine sample; very low urine output (<500 ml in 24 hours); signs of respiratory problems (pulmonary edema, bluish tint to the skin); decreased glomerular filtration rate which may progress to Oliguria and acute renal failure and severe fetal growth restriction. Severe preeclampsia causes multisystem deterioration that may be gradual or fulminant. Obstetric complications include IUGR, abruption, and fetal and maternal demise.

In clinical practice, there is lack of uniformity in preeclampsia diagnosis due to late manifestation of symptoms¹⁰. A clinical diagnosis of preeclampsia can be made when hypertension arises after twenty weeks gestation with the addition of one or more of the following: when blood pressure equal to or exceeding 160 mm Hg systolic or 110 mm Hg diastolic on at least two occasions six hours apart; proteinuria of 5 grams or more in a 24-hour urine specimen or 3+ or greater on two random urine specimen collected at least four hours apart. Furthermore, any of the following signs and symptoms may lead to diagnosing preeclampsia: Oliguria less than 500 mls/24 hours, cerebral or visual disturbances, pulmonary edema, epigastric or right upper quadrant pain, impaired liver function, thrombocytopenia and fetal growth restriction.

The risk factors for preeclampsia can be divided into comorbid conditions, maternal demographics, and obstetric history. Women with diabetes, chronic hypertension, autoimmune diseases, antiphospholipid antibody syndrome, chronic renal insufficiency, Angiotensinogen-converting enzyme DD (ACE-DD) polymorphism, protein C deficiency, or protein S deficiency are among those at highest risk for preeclampsia¹¹. Nevertheless, demographic factors such as obesity, and extremes of maternal age and obstetric characteristics such as nulliparity, multifetal gestation, prior history of preeclampsia, and hydatidiform mole also increase risk. Effective management of preeclampsia is important as it will significantly contribute toward achievement of the millennium development goals four and five, as well as number three of the 2015-2030 Sustainable Development Goals which aims at ensuring healthy lives and promote wellbeing for all at all ages. Target 3.1 aimed at reducing global maternal mortality ratio to less than 70 per 100,000 live births while target 3.2 focuses on ending preventable deaths of newborns and under-fives.

Since preeclampsia is progressive disease, there is no medical treatment. As yet, management has been largely based on expert opinion with few prospective and retrospective studies that have addressed expectant management remote from term. Traditional management of preeclampsia has

included pre-term delivery aimed at preventing potential end-organ effects. However, this is usually associated with increased perinatal morbidity, mortality and prolonged hospitalization in the neonatal intensive care unit because of prematurity and therefore not in the best interest of the fetus. On the contrary, attempts to prolong pregnancy with expectant management may result in fetal death or asphyxia damage in utero and increased maternal morbidity¹². Yet expectant management of preeclampsia remote from term has been shown to be beneficial to fetus and safe to the mother at the same time (Vigil-De Gracia et al., 2003; Haddad and Sibai, 2009). This highlights the importance of balancing the risks between maternal and perinatal outcomes.

In Kenya, management of severe forms of preeclampsia at Moi Teaching and Referral Hospital (MTRH) level involves admission of the patient, control and prevention of seizure by giving magnesium sulphate and lowering the blood pressure in order to prevent maternal cerebral hemorrhage by using antihypertensive and expedite delivery based on a decision that takes into account disease severity and fetal maturity. There is however, lack of information on the outcome of such management regimen on preeclampsia. Therefore, this study assessed the maternal and perinatal outcomes of preeclampsia among women managed conservatively remote from term at MTRH maternity unit, Eldoret - Kenya.

Variables	Frequency	Percent
Age		
<21 yrs	6	8.3
21-24 yrs	14	19.4
24.1-28 yrs	20	27.8
28.1-32 yrs	18	25
>32 yrs	14	19.5
Levels of education		
None	2	2.8
Primary	18	25
Secondary	20	27.8
College	32	44.4
Occupation		
Employed	17	23.6
Unemployed	40	55.6
Self employed	15	20.8
Marital status		
Divorced	1	1.4
Married	58	80.6
Single	13	18.1
Residency		
Urban	9	12.5
Rural	63	87.5

Table 1: Socio-demographic characteristics of 72 severe preeclampsia patients admitted and managed at the obstetric ward of Moi Teaching and Referral Hospital

Variables	Number	Percent
Preeclampsia history		
Yes	17	23.6
No	29	40.3
Not applicable	26	36.1
On preeclampsia treatment at admission		
Yes	21	29.2
No	51	70.8
Maternal weight (kg) [#]	76.6 ± 16.0	
Height (m) [#]	1.59 ± 0.06	
Body mass index (BMI)		
<25 kg/m ²	16	22.2
25-30 kg/m ²	30	41.7
31-35 kg/m ²	10	13.9
≥35 kg/m ²	16	22.2
Body mass index category (BMI)		
Normal	24	33.3
Overweight	18	25
Obese	13	18.1
Severely obese	17	23.6
Maternal baseline systolic blood pressure		
<130 mm Hg, n (%)	3	4.2
130-140 mm Hg	1	1.4
≥140 mm Hg	68	94.4
Dipstick proteinuria		
Not done	1	1.4
+	21	29.2
++	50	69.4
HIV		
Not tested	3	4.2
Positive	5	6.9
Negative	64	88.9
VDRL		
Unknown	3	4.2
Positive	1	1.4
Negative	68	94.4
Maternal blood groups		
AB	6	8.3
O	32	44.4
A	19	26.4
B	15	20.8

Table 2: Maternal characteristics of 72 severe preeclampsia patients admitted and managed at the obstetric ward of Moi Teaching and Referral Hospital

Variables	At admission		At discharge	
	Counts	Percent	Counts	Percent
Urine test*				
Not done	1	1.4	27	37.5
Nil	0	0	31	43.1
+	21	29.2	10	13.9
++	50	69.4	3	4.2
+++	-	-	1	1.4
Hb levels (mm Hg) [#]	12.4 ± 2.4		11.8 ± 2.2	
White blood cell counts [#]	9.5 ± 3.7		8.2 ± 2.5	
Platelet counts [#]	222.2 ± 78.4		248.2 ± 86.1	
Liver function[#]				
ALB	27.8 ± 6.7		32.1 ± 7.1	
AST	28.0 ± 14.5		28.9 ± 1.2	
ACT	14.7 ± 4.2		23.8 ± 8.7	
ALT	14.7 ± 3.2		42.4 ± 6.7	
Electrolyte counts[#]				
K ⁺				
Na ⁺				
Urea counts [#]	5.59 ± 0.43		4.92 ± 0.21	
Creatinine counts	71.9 ± 23.2		78.2 ± 21.1	

Table 3: Variation in the blood parameters in mothers during gestation before and after management of the preeclampsia at the obstetric ward of Moi Teaching and Referral Hospital

Problem Statement

Approximately 2–7% of pregnancies are complicated by preeclampsia, depending on population and diagnostic criteria. Among these, severe preeclampsia (SPE) is diagnosed in only 0.6% to 1.2%. Thus preeclampsia in both mild and severe form is an important health concern in developing countries where the incidence and rates of adverse outcomes are high against a background of limited medical facilities and resources which put a strain on an already struggling health system. Preeclampsia is associated with increased maternal mortality and morbidity, e.g. pulmonary edema, eclampsia, renal or liver failure and stroke. Moreover, studies suggest an increased risk of cardiovascular disease later in life for women having had pre-eclampsia. Neonatal complications associated with pre-eclampsia include preterm delivery, intrauterine growth restriction, low birth weight and perinatal death. In addition, low birth weight and growth restriction during fetal life are major risk factors for subsequent cardiovascular disease, according to the fetal origins of adult disease hypothesis. In established severe diseases there is volume contraction, reduce cardiac output, enhance vascular reactivity, and increase vascular

permeability and platelet consumption. Medical treatment of severe hypertension in pregnancy is required.

Several studies have focused on expectant management of severe pre-eclampsia syndrome before 28 weeks. For instance, Bombrys (2008) found eight such studies that included nearly 200 women with severe pre-eclampsia with an onset at less than 26 completed weeks. Maternal complications were common. Owing to there being no neonatal survivors in women presenting before 23 weeks, the Task Force of the American College of Obstetricians and Gynecologists (2013b) recommended pregnancy termination. The decision is less clear for women with slightly more advanced pregnancies. For example, at 23 weeks gestation, the perinatal survival rate was 18%, but long term perinatal morbidity is yet unknown.

Methods

The study was a prospective hospital based study. It involved a follow up of women diagnosed with severe preeclampsia and managed expectantly from between 28 and 34 weeks. The perinatal outcomes were then observed over time until its logical

Variables	Frequency	Percent
Gravida		
Nulligravida	32	44.4
Primigravida	15	20.8
Multigravida	25	34.8
Parity		
Nulliparous (0)	33	45.8
Primiparous (1)	15	20.8
Multiparous (2)	9	12.5
Grand multiparous (≥ 3)	15	20.9
Duration of pregnancy (days)		
1	17	23.6
1.1-5	17	23.6
5.1-10	20	27.8
10.1-20	14	19.4
> 20	4	5.6
Gestational age at admission		
< 30 weeks	12	16.7
30-32 weeks	23	31.9
≥32 weeks	37	51.4
Gestational age at delivery		
28 weeks < date of delivery < 32 weeks	19	26.4
Date of delivery ≥ 32 weeks	53	73.6
Mode of delivery		
Vaginal	43	59.7
Caesarean	29	40.3
Onset of labour		
Spontaneous	12	16.7
Induced	43	59.7
Caesarean	17	23.6
Trimester at first ANC visit		
No prior ANC visit	4	5.6
First trimester	40	55.6
Second trimester	19	26.4
Third trimester	9	12.5

Table 4: Pregnancy characteristics of 72 severe preeclamptic patients admitted and managed at the obstetric ward of Moi Teaching and Referral Hospital

Variables	Frequency	Percent
Birth weight		
<2500 g (LBW)	67	93.1
>2500 g (NBW)	5	6.9
Fetal mortality		
Dead	11	15.3
Alive	61	84.7
Preterm birth		
Date of delivery 28 to <32 weeks	16	22.2
Date of delivery \geq 32 weeks	56	77.8
5 min Apgar score		
0	13	18.1
1-6	8	11.1
7-10	51	70.8
Neonate condition at birth		
Alive	59	81.9
Still birth	13	18.1
Fetal presentation at delivery		
Cephalic	63	87.5
Breech	9	12.5
Neonate admission to special care		
Yes	37	51.4
No	35	48.6

Table 5: Neonatal outcomes of women admitted and managed at the obstetric ward of Moi Teaching and Referral Hospital after conservative management of the preeclampsia

conclusion. This prospective study was carried out in MTRH in the period between November 2015 to April 2016. Information was to be obtained for variables such as age, parity and weeks of gestation, the presence of symptoms like headache, epigastric pain, blurring of vision, urine output and fetal movement were recorded. The study used a quantitative approach with the goal of creating a better understanding of perinatal outcomes of severe preeclampsia among women managed conservatively at MTRH.

Study Population

The study population was all expectant mothers with a confirmed diagnosis of severe hypertension in pregnancy who met the inclusion criteria. The accessible populations were those available in MTRH Eldoret during the time of study. The hospital recorded daily average of 30 deliveries and approximately 15% of all these had preeclampsia.

All women who gave birth within the study period were considered as source population. Women with preeclampsia were identified from all admissions and deliveries. In order to avoid incomplete information, effort was made to gather

as much information as possible from different sources (operation notes, operation record books, nurses' reports and others). A phone call was made to those discharged home before day seven to determine and record newborn status. A record abstraction tool was prepared and data on demographic information, management of cases and outcome was collected into this tool.

Data Collection

Data was collected by means of descriptive survey using questionnaires, semi-structured interviews, observation and document examination (triangulation approach). Triangulation approach was chosen because it offered the use of different research techniques giving many advantages. A Phone call was made to those discharged home before day seven after delivery to determine newborn status.

Questionnaires were used to assess perinatal outcomes of severe Preeclampsia among women managed conservatively remote from term at MTRH's maternity unit.

A checklist was used to collect the information on the availability of supplies. Supplies included equipments, drugs and guidelines. Equipments in the checklist included BP machine, stethoscopes, uristix, catheters, and patellar hammer. Drugs in the checklist will include methyldopa, nifedipine, oxytocin, magnesium sulphate, diazepam, Hydralazine, calcium Gluconate and misoprostol. The checklist also inquired about availability of guidelines. Records were obtained from the health management information system and registry books designed to keep the records about the patients for the total number of antenatal attendees, deliveries and number of the patients with pre-eclampsia.

Inclusion and exclusion criteria

Inclusion criteria: Informed written consent, a confirmed diagnosis of severe preeclampsia, gestational age of 28 weeks to 33 weeks and six days, reassuring fetal testing, No severe intrauterine growth restriction, No suspected placental abruption, well controlled blood pressures, No multi organ dysfunction.

Exclusion criteria: Persistent severe symptoms, multi organ dysfunction, severe intrauterine growth restriction, suspected placental abruption, none reassuring fetal testing, Thrombocytopenia, HELLP syndrome. The exclusion criteria may have led to bias but the hospital protocol and concern for patient safety prevailed in this decision.

Data management and analysis

The data to collected for the purpose of the study was adopted and coded for completeness and accuracy. Statistical Package for Social Sciences (SPSS) version 22 Software and Microsoft Excel were used for all the data analysis and interpretation. The incidence of confirmed preeclampsia was deduced by dividing the number of preeclampsia cases who met the standard clinical definition for preeclampsia and presented in the inclusion criteria and who delivered within the study period divided by the total number of the cases who gave birth within the study period. The data was analyzed statistically using descriptive analysis techniques encompassing frequency distribution, percentages, mean, median and standard deviation.

Frequency and means for age, hospital stay, birth weight, different laboratory investigations for the different stages of preeclampsia were analyzed. The mode of delivery, indications for caesarean section and complication for each diagnostic (severity) group were also analyzed. Risk Ratio and P-value of confidence interval were analyzed to compare across groups of variables (age, parity, address, status, antenatal care, uric acid level).

It also looked into whether the severity of the disease contributed to the high caesarean section rate, or to low vaginal birth rate. Relations between neonatal birth weight or gestational age or caesarean section or the severe preeclampsia to neonatal ICU admission was also analyzed in order to look into the general management and possible financial implications. Inferential statistics were employed to examine the relationships between independent and dependent variables. Correlation coefficient analysis was conducted to determine the relationship between independent variable, and dependent variable.

Ethical considerations

Approval was sought from IREC before the study commenced. Permission to conduct the study was obtained from the management of Moi Teaching and Referral Hospital. All participants were notified about the purpose of the study and requested without any coercion, force or pressure to give a written informed consent before participating. Respect of privacy and confidentiality of the participants was maintained by storing data in key- locked cabinets and use of password coded databases There was no direct financial benefit or compensation for participating in the study. Sound clinical judgment was involved in all stages and aspects of this research.

Results

Social demographic characteristics and preeclampsia There were a total of 7,763 deliveries during the five months study period. During the study, 21.5 of the patients were noted to have maternal complications. Of the 644 patients with preeclampsia, there were 572 patients who had mild preeclampsia (prevalence of 7.4%) while the remaining 72 had severe preeclampsia (incidence of 0.92%) and therefore the later group met the inclusion criteria for the study and were treated at MTRH. The socio-demographic characteristics of the severe preeclampsia patients admitted and managed at the obstetric ward of MTRH are shown

in Table 4.1. The mean age (\pm SD) of the patients was 27.9 ± 6.6 years (range, 16 – 43 years). In terms of age distribution, majority of the women were aged 24 to 28 years followed by 28 to 32 years and below 21 years were few in the sample. Majority of the women had college level of education (44.4%) followed those with secondary education (27.8%) and primary (25%), while those without educations were few (2.8%). In terms of employment history, 55.6% of the women were unemployed followed by those who were employed (23.6%) and those self-employed were the least at 20.8%. Majority of the respondents were married (80%) while the

Relationship between length of stay before delivery and perinatal outcome.

Length of stay in days	New Born Status At Birth		% of Total
	ALIVE	DEAD	
1 -7	30 (76.9%)	9(23.1%)	53.4
8-14	18(85.7%)	3(14.3)	28.8
≥ 15	12(92.3%)	1(7.7%)	17.8

Table 6: Length of stay before delivery and newborn status at birth

Length of stay in days	New Born Status on Day 7		% of Total
	ALIVE	DEAD	
1-7	22(73.3%)	8(26.7%)	50
8-14	17(94.4%)	1(5.6%)	30
≥ 15	9(92.3%)	3(25%)	20

Table 7: Length of stay in days and newborn status on day 7

Duration of stay before delivery in days	5 minute APGAR Score		% of Total
	APGAR < 7	APGAR ≥ 7	
1-7	16(53.3%)	14(46.7%)	50
8-14	8(44.4%)	10(55.6%)	30
≥ 15	8(66.7%)	4(33.3%)	20

Table 8: Duration of stay before delivery and five minute Apgar score

Duration of stay before delivery in days	New born unit admission	% of Total
1-7	20(66.7%)	50
8-14	10(55.6%)	30
≥ 15	7(58.3%)	20

Table 8: Duration of stay before delivery and Newborn Unit admission

remaining. In terms of areas where the respondents came from, majority of the respondents were from the rural areas (87.5%) while the remaining 12.5% were from the urban areas.

Discussion

Severe preeclampsia is a complex disease with a chronologically unpredictable and progressively deteriorating course. Traditional management has included expedited delivery as the ultimate cure for Severe Preeclampsia, aimed at preventing potential end-organ effects. Serious maternal complications of severe preeclampsia include seizures (eclampsia), placental abruption, disseminated intravascular coagulation, renal failure, hepatic hematoma or rupture, pulmonary edema, acute respiratory distress syndrome, retinal detachment, myocardial infarction, pancreatitis, stroke, and death. Fetal complications include intrauterine growth restriction, hypoxia-acidosis, oligohydramnios, long-term neurologic morbidity, and fetal demise. The current standard of care, therefore, includes prompt delivery of patients with severe preeclampsia if the disease develops at or after 34 weeks gestational age or earlier in case of worsening maternal or fetal status.

To the best of our knowledge, this was the first study of maternal and perinatal outcomes among severe preeclampsia patients undergoing management at the MTRH. There are three main findings from this study that are related to women with severe preeclampsia. First, patients with severe preeclampsia were more likely to extend their pregnancy by up to seven days (one week) on conservative management. Second, in terms of neonatal outcomes, Low birth Weight, Very Low Birth Weight and Extremely Low Birth Weight babies were found more often in the severe preeclampsia group, which may be a result of the fetal indications that were refractory to control of maternal hypertension. This finding was consistent with the occurrence of preterm delivery.

A simple and effective method of screening for preeclampsia is to have blood pressure monitoring and proteinuria checked by dipstick in all pregnant women at every antenatal visit. However, information gleaned from patients' antenatal cards show that among all women who developed preeclampsia, only 45.2% had a documented BP and only 24.7% had a documented urine dipstick result, despite a high antenatal attendance rate of 96%.

Failure to screen for such basic but important parameters may reflect the local clinics' lack of access to basic equipment such as sphygmomanometers and urine dipsticks. A study by Urassa et al demonstrated this to be the case in some parts of rural Tanzania¹³. Our study's findings

of preeclampsia associated morbidities and their outcomes concur with the findings of several different studies from other parts of the world. Vaginal delivery was the leading mode of delivery at almost 60%, which is comparable to other studies. The presence of preeclampsia alone was not an indication for caesarean delivery, but the decision to perform a caesarean delivery was based on multiple factors which included fetal gestational age, non-reassuring fetal status, the stage of labour and cervical Bishop score.

The perinatal mortality rate in this study was 20.7%, which is almost equivalent to the 21.4% reported in Benin. However, our rate was low compared to 40% at MNH. The higher rate of perinatal deaths in this study and other similar studies and could be explained by the three delays model as explained. Another contributing factor is the limitation in resources for managing extremely preterm infants. This study revealed that the major morbidities contributing to early neonatal deaths were severe birth asphyxia and prematurity. Other studies have reported similar findings. A significant number of low birth weight neonates might have been the result of the high number of preterm deliveries among the preeclamptic patients. Similar findings have been reported in the literature that links the incidence of low birth weight infants with preterm deliveries in preeclamptic patients¹⁴.

Conclusion

This study has demonstrated that the incidence of preeclampsia at MTRH was 1.37% and that the proper management of preeclampsia at our hospital faces similar challenges as those at other hospitals in the developing world. Preeclampsia which was found to cause significant maternal morbidity also contributed significantly to high rates of perinatal morbidity and mortality. The most common contributors of perinatal death were birth asphyxia and prematurity. Patient compliance was not shown to contribute significantly to the delayed management of preeclampsia as demonstrated by the high rates of antenatal clinic attendance. However, many of these women were not screened for preeclampsia during ANC visits and consequently presented late to our hospital, frequently with complications.

Recommendations

While factors such as limited resources and infrastructure are not within the control of the health care practitioner, attention to basic details is possible at antenatal clinics. Early intervention initiated by detection of abnormal values in basic tests such as blood pressure monitoring and urine dipsticks can often change the course of a patient's disease management. Our best chance for reducing maternal and perinatal morbidity and mortality due

to preeclampsia may lie with the promotion of improvements in the quality of basic care provided by our antenatal clinics.

References

1. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *The lancet*. 2006;367(9516):1066-74.
2. Lie RT, Rasmussen S, Brunborg H, Gjessing HK, Lie-Nielsen E, Irgens LM. Fetal and maternal contributions to risk of pre-eclampsia: population based study. *Bmj*. 1998;316(7141):1343.
3. Chaiworapongsa T, Chaemsaihong P, Yeo L, Romero R. Pre-eclampsia part 1: current understanding of its pathophysiology. *Nature Reviews Nephrology*. 2014;10(8):466.
4. Kalk J, Huisjes A, de Groot C, Beek Ev, van Pampus M, Spaanderman M, et al. Recurrence rate of pre-eclampsia in women with thrombophilia influenced by low-molecular-weight heparin treatment? 2004.
5. Sibai B, Dekker G, Kupferminc M. Pre-eclampsia. *The Lancet*. 2005;365(9461):785-99.
6. Hauth JC, Ewell MG, Levine RJ, Esterlitz JR, Sibai B, Curet LB, et al. Pregnancy outcomes in healthy nulliparas who developed hypertension. *Obstetrics & Gynecology*. 2000;95(1):24-8.
7. Roberts J, Cooper DW. Pathogenesis and genetics of pre-eclampsia. *The Lancet*. 2001;357(9249):53-6.
8. Ronsmans C, Graham WJ, group LMSSs. Maternal mortality: who, when, where, and why. *The lancet*. 2006;368(9542):1189-200.
9. Osungbade KO, Ige OK. Public health perspectives of preeclampsia in developing countries: implication for health system strengthening. *Journal of pregnancy*. 2011;2011.
10. Ramos JGL, Sass N, Costa SHM. Preeclampsia. *Revista Brasileira de Ginecologia e Obstetricia*. 2017;39(9):496-512.
11. Sanders CL, Lucas MJ. Renal disease in pregnancy. *Obstetrics and gynecology clinics of North America*. 2001;28(3):593-600.
12. Sibai BM, Barton JR. Expectant management of severe preeclampsia remote from term: patient selection, treatment, and delivery indications. *American journal of obstetrics and gynecology*. 2007;196(6):514. e1-. e9.
13. Urassa DP, Carlstedt A, Nyström L, Massawe SN, Lindmark G. Eclampsia in Dar es Salaam, Tanzania—incidence, outcome, and the role of antenatal care. *Acta obstetrica et gynecologica Scandinavica*. 2006;85(5):571-8.
14. Backes CH, Markham K, Moorehead P, Cordero L, Nankervis CA, Giannone PJ. Maternal Preeclampsia and Neonatal Outcomes. *Journal of Pregnancy*. 2011;2011:214365.



How We Made Breaking Bad News Skills Training Workshop Relevant to Twenty-First Century Residents at Moi University School of Medicine

Chumba D, Ayiro L, Chang'ach JK, Marete I

Institution

Moi University, Usain Gishu County, Academic Highway, Eldoret, Kenya

WJMER, Vol 18: Issue 1, 2018

Abstract

Introduction: Breaking bad news to patients is one of the most common, and often difficult, responsibilities in the practice of medicine, particularly in cancer related diagnosis. Breaking bad news in an abrupt and insensitive manner may not only be devastating for both the patient and his or her family but is also associated with poor treatment outcomes and doctor burnout. This task is commonly done by residents who are on training. The complexity of the current resident work environment, including the impact of making money or finances in third world countries, is underappreciated. A study to establish the effectiveness of a training intervention to assist residents in breaking bad news hit a big snag when the training workshop, which was held on a weekend, received approximately 10 attendees. 40 attendees were expected.

Methods: A quantitative research approach, a quasi-experimental group design was utilized. A purposeful sample of 80 physicians who are residents were selected for the study on a first-come-first-served basis. They were then randomly grouped into two groups: test group and control group. Test group was trained and compared with the control group. Perceived competence in performing breaking bad news tasks by residents was measured using two learning domains: cognitive and affective. These evaluated self-efficacy, empathy and physician's beliefs before and after the training. To achieve this, we designed a flipped classroom program and, two weeks later, a workshop for the test group was held. Cronbach's alpha, median and interquartile range (IQR) was calculated in SPSS version 22. P-value less than or equal to 0.05 was taken as statistically significant. Ethical approval was obtained from the Institutional Review and Ethics Committee (IREC) of Moi University and Moi Teaching and Referral Hospital.

Results: A post-workshop survey of residents' self-efficacy score in breaking bad news tasks, empathy scores using JSPE and physician belief scores were assessed. The post-workshop survey revealed that the residents' self-efficacy scores improved significantly when compared with the control group. However, empathy scores and physician belief scores did not change significantly. Resident responses also exposed some challenges in communication skills training in real-life clinical settings for them. There was an apparent less humanistic approach to patients by residents suggesting biomedical curriculum based on the philosophy of science and less or limited in the 'humanistic' one based on the art of medicine.

Conclusions: Innovative flipped classroom format in combination with workshop sessions allows easy incorporation of breaking bad news skills training for residents in a postgraduate training program.

Key Words

Breaking Bad News; Self-Efficacy; Physician Belief; Physician Empathy

Corresponding Author:

Mr David K Chumba; E-mail: dchumba@yahoo.com

Introduction

The World Health Organization defines health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity¹. Health is perceived by the patient and ill health is as a result of genetic, environmental and other factors. Dunn has explained that illness is an experience that exists when there is disturbances or

failure of psychosocial development leading to changes that traverse all dimensions of the human being namely; biological, physical, mental and psychosocial. It is not uncommon to see individuals facing life-threatening illnesses in hospitals such as MTRH. These individuals might be either seeking help or diagnosis. While dealing with such patients by healthcare personnel, breaking bad news is

inevitable in order to effectively plan for their treatments. Clinicians, acknowledge that patients have a right to information regarding their life threatening illness.

The needs of patients regarding their illness and the difficulties in communicating the same have been an area of interest in research. Breaking bad news well is an essential skill for all doctors as it is something they will do hundreds, if not thousands, of times in their professional careers. Breaking bad news is a skill, just like physical examination and taking a good history. However, it can only be effectively done when both the cognitive and affective domain are combined. Empirical research show that patients want to be informed about their life threatening illness^{2,3}. Historically, however, it has been given scant attention in medical training^{4,5}. Poor communication, particularly with cancer patients, has been shown to be associated with worse clinical and psychosocial outcomes, including worse pain control, worse adherence to treatment, and confusion over prognosis and dissatisfaction at not being involved in decision making⁶.

Breaking bad news tasks is not one set of skills to be used in a specific situation. It is a blended mix of personal attributes, practical skills, communication skills and behaviours that combine the breaking of bad information to patients with a more bearable and clear manner so that patients may make informed choices⁷. For the clinician, communication difficulties lead to worse job satisfaction and higher stress levels, as well as being associated with a high proportion of errors and complaints. Studies suggest that a number of factors, aside from deficient knowledge, can affect a doctor's ability to impart bad news sensitively, including burnout and fatigue, personal difficulties, behavioral beliefs and subjective attitudes, such as a personal fear of death⁸. Most clinicians have not received formal training in breaking bad news except that given during their undergraduate training to support this frequent and difficult task. Some of the problems related to cancer are not solvable, but an ability to share the patient's feelings has been shown to help⁹. Studies show that key communication skills elements in breaking bad news have been identified^{2,3}. This communication can only exist if the physician can comprehend the patient's cognitive and affective states¹⁰. Building on previous research, empathy is the critical attribute required to precipitate a therapeutic mutual understanding between physician and patient. In a specific medical context, Hojat, in the above study, defines empathy as a non-judgmental understanding of a patient's feelings and experiences as an individual being. Effective breaking of bad news cannot take place without empathy. However, it appears that health

professionals in cancer care often demonstrate a lack the skills that would facilitate patients' disclosure of the psychosocial aspects of their illness¹¹⁻¹³. Research indicates, however, that these skills can be taught learned using conventional and experimental methods^{14,15}.

Clinicians are confronted with this difficult task early in their careers and studies show that they do not feel sufficiently prepared for these tasks. This informed the choice of residents in this study^{16,17}. This physician-patient interaction has become important to the point that American Academy for Physician and Patient interaction held a conference on the 7th April 2002 in Fetzer Institute Kalamazoo Michigan¹⁸, referred to as Kalamazoo I, where emphasis was on the importance of physician patient interactions. This was followed by another conference, Kalamazoo II, where there was an emphasis on physicians' interpersonal skills, empathy and attending skills. There are a few established recommendations for the delivery of bad news in the United States. SPIKES protocol, which will be used in this study, is based more on expert opinion but less on empirical evidence. No recommendations for delivery of bad news are available in Kenya, though training in communication skills is an important part of the curriculum.

Problem Statement

Research in this field has been warranted by the following reasons. Firstly this important task is commonly done by residents who are the first to see patients in their training curriculum. Secondly, the perceived competence by residents in breaking bad news will inform the outcome of communication skills given in undergraduate medical curriculum and the effectiveness of a training intervention specifically in breaking bad news will be assessed. Thirdly, the identification of constraining factors and educational needs will inform the planning and teaching of communication skills for both undergraduate and postgraduate students in Moi University School of Medicine. The training intervention component is hoped to inform a theoretical framework for teaching and evaluation of the course of communication skills, which includes breaking bad news.

In 2008, approximately 72% of cancer deaths occurred in low and middle-income countries. In high, upper and low middle income countries, cancer deaths exceed all infectious deaths combined. Low-income countries, while continuing to contend with a heavy burden of infectious diseases, are struggling to deal with an ever-increasing burden of cancer. WHO further says challenges facing developing countries in cancer control are poverty, limited government funds for

health care expenditure in general, let alone for cancer care, a general paucity of trained health care professionals and even less trained in cancer care¹⁹. Trained health care professionals in the delivery of cancer care migrate to other countries in search of improved professional and financial rewards or opt to practice in the for-profit sector, leaving the poor with even less access to cancer care. This means that all medical personnel, including registrars, are expected to participate in the provision of care in cancer patients.

The technological progress has allowed patients in all walks of life to access information either directly or indirectly which the doctor would have otherwise concealed, leading to awareness by patients that the doctor may be hiding some information from them. In this age of information, doctors cannot afford to 'bury their heads in the sand' in issues relating to physician patient communication as this will not only lead to litigation and cases but increased stress in medical practice.

While the expertise of specialized doctors in various disciplines indicate that trainers and curriculum developers are providing the appropriate knowledge, the critical question is whether the training of doctors in the breaking of bad news adequately equips them with the necessary skills to perform these tasks. We ask if they are provided with the skills pertaining to the emotional and psychosocial aspects of breaking bad news, as well as other factors that play a role resulting in the observed difficulties in this area of communication.

The choice of teaching and learning methods in communication skills training depends on the program goals and objectives²⁰. Determining the rationale for the particular method in training is important and reflects the above mentioned goals and objectives. Practical considerations, such as cost, time constraints, and available resources for teaching will impact the choice of training method. The commonly used methods of training include didactic, video demonstrations with discussion, role-play, and feedback.

Didactic Methods

The didactic methods of teaching communication skills in the medical field include lectures, group presentations, and reading assignments. Research indicates that, although these methods are important in helping participants to gain knowledge, they tend not to inspire behavioral changes among participants²¹. Kurtz and colleagues²² described this method as facilitator-centered rather than learner-centered. When this method is employed, the learners are considered to be passive. However, assigned readings and professional discussions can

promote thinking, stimulate learners' interest, and assist in developing a conceptual framework. This indicates that the didactic method is a basic, but important, and cost-effective approach for participants to gain knowledge and understanding of communication issues.

Video Demonstrations

Video demonstrations are considered to be a direct and cost-effective training method²³. This approach was found to be a helpful tool for training instructors to use to demonstrate appropriate communication skills and, in some cases, inappropriate behaviors during the clinical encounter^{24, 25}. Followed by the discussion of video reviews, this approach can help learners to become aware of areas of communication that need further improvement. Video demonstrations can also provide participants with examples of the type of language that is appropriate for facilitating the discussion of the patient's psychological and emotional problems. Kurtz and colleagues²² suggested that video demonstrations could be used in large groups, thus making this approach cost-effective. However, the small group format appears to provide more opportunities for participants to generate fruitful group discussions about their experiences during the training^{25, 26}. A video demonstration can be a valuable source of information about physician-patient communication for training students and more seasoned clinicians. It also can be a simple and time-effective form of delivering information to professionals in need of strengthening their communication abilities.

Role-Play

Role-play is considered one of the most important parts of effective communication skills training and is widely used by many scholars and clinicians^{23, 25, 27}. This method includes role-playing with colleagues and interviews with standardized (simulated) or actual patients. Role-play approach with peers or colleagues is found to be an effective tool for young clinicians. For example, medical students who participated in a communication skills training²⁸ had positive views about the use of role-play as a method of practicing their skills. The students' feedback also included the importance of practicing their skills in a safe environment. Furthermore, videotaping the role-play sessions in this study followed by viewing the tapes enabled the students to identify the areas in which they needed improvement. However, there are disadvantages to peer role-play, which can be considered as a limitation during training²⁰. Participants are not actors and they may find it difficult to role-play without being self-conscious, especially if they already have a relationship with other participants. Additionally, many physicians may perceive role-play

to be an artificial approach to learning specific skills. The use of real patients in practicing physician-patient interactions is a common tool in communication skills training²⁹. Researchers suggest that role-play with real patients exposes the learners to real-life clinical situations. However, there is a downside to this approach. Patients are sometimes so supportive of learners that they find it difficult to give accurate feedback. Additionally, ethical issues in involving patients in video-taping training sessions should be taken into consideration, in accordance with professional and organization guidelines.

The use of simulated patients (actors) is mentioned in many communication skills training studies^{20, 25, 30}. Simulated patients are realistic patient substitutes and shown to be an effective learning approach. Usually simulated patients are well trained in recognizing specific skills and giving an accurate feedback. However, this method is found to be costly and time-consuming due to lengthy training needed by the actors²⁰.

Flipped Classroom

The 'flipped-classroom' (FL) concept is being used in all areas of education including higher education. This teaching technique targets the higher levels of Bloom's Taxonomy.

Flipped-classroom can be particularly attractive to today's student learners, often referred to as "Millennials," or the "Net Generation" because the ability to access contents anywhere satisfies their preferences for immediate, portable access to information. This was the most suitable for residents who cannot obtain adequate time for any form of training. In addition, the "Net Generation" tends to comprise of experiential learners who prefer to be "doing" an activity rather than sitting through a lecture. They also desire to learn and work in environments where students are allowed to help each other. The flipped classroom model allows for increased classroom interaction that can include peer-to-peer activities. A successful flipped-classroom model requires planning and accountability. A flipped-class can help to avoid 'content creep' and promote student application of learned activities. Homework assignments need to be linked to some kind of assessment to increase chances of students completing the assignments schedules³¹. The didactic educational format has limited opportunities for participants to practice and apply the concepts being taught³². The so-called 'flipped classroom' allows learners to master new knowledge outside the classroom, while the classroom time is dedicated to interactive strategies

for reinforcing learning³³.

Previous studies have already compared flipped classroom with traditional method showing better knowledge outcomes in histology³⁴, physiology³⁵, dermatology³⁶, ophthalmology³⁷, EKG content³⁸, and surgery³⁹. Students' satisfactions also seem to be better using the flipped classroom approach⁴⁰⁻⁴³. More recently Granero *et al* 2018⁴⁴ found, quote 'Comparing the two strategies, 'the Flipped Classroom' was associated with better gains in knowledge and attitude, but not in the students' skill, when compared with the traditional method. Likewise, students exposed to the FL intervention felt better prepared and more knowledgeable about caring for older patients'. The FL was evaluated more positively by students, who considered it more dynamic⁴⁴.

Assessment of Communication Skills

Communication Skills Task Force, consisting of Patient-Doctor course leaders, Harvard Medical School experts involved nationally in the area of communication skills, and several clinical site faculties, held a series of meetings over several years to discuss core competencies and a framework for teaching and assessing communication skills during undergraduate medical education. A core group adopted a set of seven communication competencies based on the Bayer-Fetzer Kalamazoo Consensus Statement⁴⁵. This has been done in North American medical schools, However, a report from the AAMC published in 1999 found that, while medical schools use a variety of teaching and assessment methods, the majority (70%) did not use uniform frameworks for assessment throughout the curriculum (Association of American Medical Colleges, 1999). There are no studies found documenting reports in the African setup. However, a communication skills course is usually given early in the medical curriculum and not reinforced anywhere during the six years of the training medical curriculum.

The experts in the Bayer-Fetzer Kalamazoo came with a seven item assessment tool with sub-competencies that would be used to standardize the training and assessment in communication skills. This form the basis the self-efficacy scale used to collect data in the present study.

The table below tabulates the items that have been agreed as the basic competencies in communication skills training.

Essential Elements.

1. Builds a relationship
 - a. Greets and show interest in the patient as a person
 - b. Uses words that show care and concern throughout the interview
 - c. Uses tone, pace, eye contact and posture that shows care and concern
 - d. Responds explicitly to patient statements about ideas, feelings and values
2. Opens the discussion
 - a. Allows the patient to complete opening statement without interruption
 - b. Asks 'is there anything else' to elicit full set of concerns
 - c. Explains and or negotiates an agenda for the visit
3. Gathers information
 - a. Begins with a narrative using open ended questions (..'tell me about')
 - b. Clarifies details as necessary using yes or no questions
 - c. Summarizes and give patient opportunity to correct information
 - d. Transitions effectively to additional questions
4. Understands patient perspective
 - a. Asks about life events, circumstances, other people that affect health
 - b. Elicits patient belief, concerns and expectations about illness and treatment
5. Shares information
 - a. Assesses patients understanding of the problem and desire for more information
 - b. Explains using words that easy for the patient to understand
 - c. Asks if patient has questions
6. Reaches agreement
 - a. Includes patient in choices and decisions to the extent she/he desires
 - b. Checks for mutual understanding of diagnostic and/or treatment plans
 - c. Asks about patient's ability to follow diagnostic and/or treatment plans
 - d. Identifies additional resources as appropriate
7. Provides closure
 - a. Asks if the patient has questions, concerns, or other issues
 - b. Summarizes
 - c. Clarifies follow-up or contact arrangements
 - d. Acknowledges patient and closes interview

Notes: Ratings used: 1=poor; 2=fair; 3=good; 4=very good; 5=excellent.

A major portion of this study will look at performance of BBN tasks and this section will look at the concept of measuring performance using self-efficacy.

Table 1: The Communication Checklist, Bayer-Fetzer Group on Physician–Patient Communication in Medical Education, May 2001. Adapted from Essential Elements.

Self-Efficacy Theory

Bandura in 1977⁴⁶ defined self-efficacy as the belief in ones capacity to organize and carry out action to produce an outcome and is a core aspect in socio-cognitive theory. Individuals express their judgment based on the belief that they can perform a behavior or skill. This theory is task-specific self-confidence which is crucial to imitating behavior necessary to perform competently. Perceptions of self-efficacy are dynamic and are developed in response to information from four sources;

1. Performance accomplishments (actual performance)
2. Vicarious observation (seeing another person perform a behavior)
3. Verbal persuasion
4. Emotional arousal. Lacshinger 1996⁴⁷ suggest that performance is thought to exert the

greatest influence on self-efficacy expectations. Therefore, so if a doctor perceives to herself highly in breaking bad news tasks, it is likely that he or she can actually performe well in breaking bad news tasks.

The use of self-efficacy to measure performance has been documented by several studies⁴⁸ reported that self-efficacy was related to academic achievement in nursing theory course. Meta-analysis of 114 studies by Stajkovic and Luthans⁴⁹ reported 28% gain in performance attributed to enhanced self-efficacy when they looked at work place relationship of self-efficacy and workplace performance. Similar studies by Morits *et al.*⁵⁰ correlated self-efficacy and sport performance.

The positive correlation between self-efficacy and

performance is relevant in this study as regards to breaking bad news tasks performance by doctors. This theory will inform the study by asserting that measures of self-efficacy would be significant determinant in ascertaining actual performance in breaking bad news tasks.

Self-Efficacy Scale

The self-efficacy rating scale²⁵ has been used in communication skills training in oncology as an instrument to measure physicians' self-efficacy beliefs related to their cancer-specific care skills^{23,25}. In relation to communication in oncology, there is evidence that self-efficacy is a significant factor in physician-patient interaction patterns should be taken into account in training programs for health care providers²⁷. The use of a self-efficacy scale for the proposed study was chosen due to the fact that the SPIKES protocol, which will be utilized in this study, applies a self-efficacy instrument to assess physicians' confidence in delivering bad news. The authors of the SPIKES protocol²⁵ suggested that, based on their research over the last eight years, a self-efficacy scale consistently showed improvement in physicians' scores after skills training. The 23-item, 5-point Likert scale self-efficacy instrument addresses the confidence of the training participants in their ability to successfully manage skills that relate to delivering unfavorable news to cancer patients. A total score is obtained by adding the scores of all items; higher scores demonstrate higher self-efficacy in communicating unpleasant news skills. This author recognizes that a possible increase in physicians' self-confidence scores will not necessarily represent acquisition of skills in delivering bad news or improved interpersonal communication in clinical practice. However, the literature on delivering unpleasant news and communicating in cancer care suggests that a higher self-efficacy assessment scores can be associated with health care providers' behavior change^{51,52}.

Methods:

The study was done in MTRH in Eldoret Uasin Gishu County. Eldoret town is located about 300km North West of Nairobi on the Trans-African Highway and 65km north of the Equator. Currently it is the fifth largest city in Kenya. Considered as farm town, Eldoret hosts a range of tertiary and middle level colleges and universities, including MTRH, MUSOM, and KMTC Eldoret Campus.

MTRH is both a teaching and referral hospital whose core services include specialized clinical services (MTRH, 2018). It is an appropriate place for the study for several reasons: it is the second largest referral hospital in Kenya after KNH; and it carries doctors of various backgrounds, which will be representative sample for the study.

The training workshop was held at the new PDN building where senators usually sit during senate sessions. This room has a comfortable sitting arrangement that is suitable for both large and small group activities. Food and drinks were provided by the researcher; ten o'clock tea, lunch, and 4 o'clock tea. The workshop was scheduled on Saturday 10th June 2017, to allow the residents time as they were on a weekend. Presenter: Director Mental Health and Rehabilitation Services in MTRH

Research Population

Research population can be defined as universe of units from which a sample is to be selected, consisting of all the variables the investigator wishes to measure⁵³. These were residents doing their residency programs in MUSOM. There are about 30 residents in eight departments offering postgraduate training. Hence a total population of 240.

Sample and Sampling Techniques

A sample is the segment selected for investigation from a population according to Gurmu, and sampling is the process of selecting a subset of individuals within a population to be involved in data collection for the study⁵³. Data from this group can then be used to make statistical or qualitative inferences to make predictions about the whole population. Element in the population having similar features to the underlying population, sampled and used to make certain observations⁵⁴.

Purposive or Judgmental Sample: Purposive sampling is an acceptable kind of sampling for special situations. It uses the judgment of an expert in selecting cases or it selects cases with a specific purpose in mind. One principle for sample sizes is the smaller the population, the bigger the sampling ratio has to be for an accurate sample. Larger populations permit smaller sampling ratios for equally good samples. This is because, as the population size grows, the returns in accuracy for sample size shrink. For small populations (under 1,000), a researcher needs a large sampling ratio (about 30%).

To achieve the objectives of this study, a purposeful sample of 80 physicians (30% of the population) who are residents and provide treatment for patients with various disease in their specialties. The researcher with a trained research assistant talked to the in charges of residents from all the eight departments who have postgraduate students. Resident doctors through their class reps were first told about the research and the importance of having skills to break bad news to patients and the training that was to come up later on "breaking bad news to patients". All who were interested signed up and were given coded questionnaires on a first-

come-first-served. The department, mobile telephone number and e mail address were taken at the time recruitment. These were written on a separate piece of paper that was destroyed after the training. The researcher and his assistant then collected the questionnaires. The participants were then randomly assigned into two groups: treatment and control group. The date for the training was set. The control group were to be trained after the data has been collected from the treatment group.

Flipped classroom approach was used, where the physicians were given training materials two weeks before, followed by a workshop on delivering bad news to patients diagnosed with cancer. This allowed the reduction of the time required by the resident in the workshop. Those who felt comfortable just filled the questionnaires and left. The researcher developed a detailed, standardized manual for the training that allowed the instructor to follow clear directions during the workshop and also use the manual for future trainings. Study data were collected and coded by the research assistant who was not be a part of physician-instructor group or physician-participant group. Lunch and certificate for the training was provided.

Training Procedures

The control group was treated as a "postponed-intervention control group" and will be provided with identical training after the study is completed⁵⁵. The purpose of using a postponed-therapy control group approach is twofold. First, it will create an interest in the upcoming training in control group participants, and secondly, it is ethically appropriate to provide the control group with training that is important for and needed by their profession.

Training materials were photocopied for each participant and put in a file. A note pad and pen were packaged in a A3 envelope and distributed to the experimental group. Two weeks after, the experimental group was invited for a workshop which was held on 10th June 2017 in PDN building. Participants filled the instruments within two weeks after the training; the instruments included demographic questionnaire, Self-Efficacy scale, JSPE and PBS and constraining factors instruments were given to each resident-participant to complete, which took approximately 30 minutes.

The data from the training was collected by the research assistant. This researcher provided an educational session for the research assistant, which helped the assistant to collect and store the gathered information by utilizing ethical and humanistic approaches in this study. More specifically, participants' names or other identifying information was not attached to any of the

information gathered in this project. All the information participants provided was identified by a coded number. All information was stored in locked cabinets in the research assistant's office. The only document that contained the participant's name was a consent form that was separated from the rest of the materials. The data collected was used for statistical analyses and no individuals were identifiable from the pooled data. The information obtained from this research may be used in future research and published. However, participants' right to privacy was retained. All data was presented in group format and no individuals will be identifiable from the data.

Demographical data was collected, including the participants' gender, specialty, and years of experience. This data was used to investigate whether there is a statistically significant relationship between participants' demographical data and their mean scores on self-efficacy, empathy, and psychosocial belief instruments. Additionally, demographics collected in this study assisted the researcher in comparison process with other similar studies.

Description of the Training Program

The research utilized the existing SPIKES protocol, which is a part of a communication skills program entitled ONCOTALK, developed by a multidisciplinary panel of experts, including physicians, psychologists, and specialists in communication in medical settings⁵⁶. The Oncotalk program was initially created for medical oncology clinicians and funded by the National Cancer Institute. The authors of this program tailored the content of communication skills training for cancer care setting. However, the program can be adapted to other settings as well. The Oncotalk communication skills training is now available in the book 'The Oncotalk Model' (Arnold, 2010). The overall goal of the project is to help clinicians who are involved in treatment and care of patients with cancer to improve their communication skills. The program utilized the following educational principles: (a) didactic methods of teaching alone are not effective; (b) adult learning approaches were implemented; (c) trainings should include skills practice; (d) learners' attitudes and emotions should be addressed; (e) the most effective learning environment is established when knowledge, skills, and attitudes are included; and (f) reinforcement is critical for the learning process. The trainings included large-group overview presentation, communications skills practice sessions, practice sessions with patients, and reflective group discussions. The goal of the SPIKES protocol is to assist the physician in fulfilling four objectives while delivering unpleasant news to the patient: (a)

eliciting information from the patient, (b) communicating the information related to the patient's condition, (c) supporting the patient, and (d) involving the patient and his or her family in the decision making process. According to Baile and colleagues these goals can be achieved by following six steps, each of which requires utilization of specific interaction skills and can be summarized using the SPIKES mnemonic⁷.

S = SETUP. Set up the situation so it has a good chance of going smoothly. Before you go into the room, have a plan in your mind. Sit down, make eye contact, and get reasonably close to the patient. Anticipate that the patient will be upset and have some tissues ready.

P = PERCEPTION. Find out the patient's perception of the medical situation. What has he or she been told about the disease? What does he or she know about the purpose of the unfavourable test results you are about to discuss?

I = INVITATION. Find out how much information the patient wants.

K = KNOWLEDGE. Use language that matches the patient's level of education. Be direct. Avoid using medical jargon as it might confuse the patient.

E = EMPATHIZE. Use empathic statements to respond to the patient's emotions. This will assist in patient recovery and dampen the psychological isolation that a patient can experience when he or she hears bad news.

S = SUMMARIZE AND STRATEGIZE. Summarize the clinical information and make a plan for the next step⁷.

Inclusion Criteria:

Participants in this study were eligible if they are residents specializing in a postgraduate course with at least two years after undergraduate degree and of experience treating patients in a busy hospital.

Data Collection Tools

i. **Self-Efficacy scale:** The 21-item 5-point Likert scale self-efficacy instrument ranging from "strongly disagree"¹ to "strongly agree"⁵ addresses the confidence of the training participants in their ability to successfully manage skills that relate to delivering bad news to cancer patients. This instrument was developed by Baile as an assessment of SPIKES training with oncologists. A total score is obtained by adding the scores of all items; higher scores will indicate higher self-efficacy in communicating unpleasant news skills. Statistical properties of the Self-Efficacy scale are not provided by the developers of this instrument; however, the authors of the SPIKES protocol indicated that, based on their research over the last eight years, a self-efficacy scale consistently showed improvement in physicians' scores after communication skills training.

ii. **The Physician Belief Scale (PBS)** was developed by Ashworth, Williamson, and Montano and designed to assess physicians' beliefs about the psychosocial characteristics of patient care⁵⁷. The PBS is a 32-item, self-report scale that determines a physician's position in terms of acceptance versus rejection of the psychosocial aspects of patient care. This instrument uses a 5-point Likert scale ranging from "strongly disagree"¹ to "strongly agree"⁵. Overall scores could range from 32, which represents maximum psychosocial orientation, to 160, which indicates minimum psychological orientation.

iii. **The Jefferson Scale of Physician Empathy (JSPE)** was developed by Hojat and measures physicians' empathy in the context of patient care¹⁰. The JSPE includes 20 items answered on a 7-point Likert scale. The internal consistency of the JSPE's reliability was obtained by calculating Cronbach's coefficient alpha and reported 0.89 for the sample of medical students and 0.87 for the sample of residents.

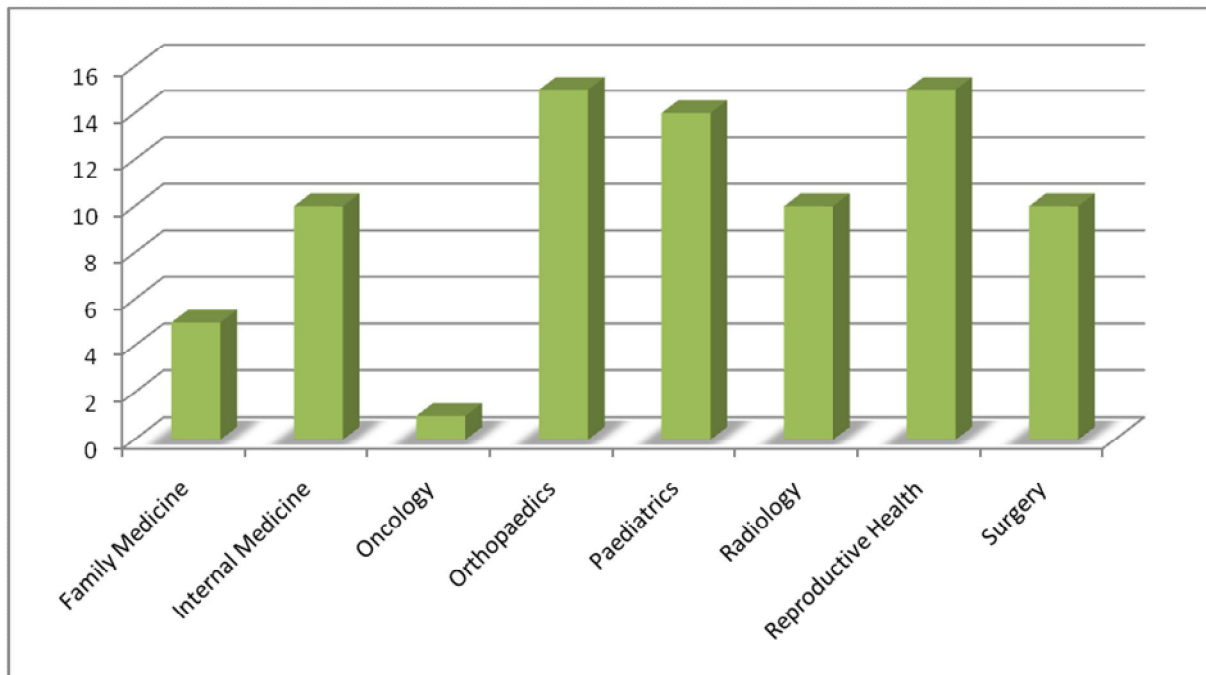


Figure 1: Distribution of residents by departments

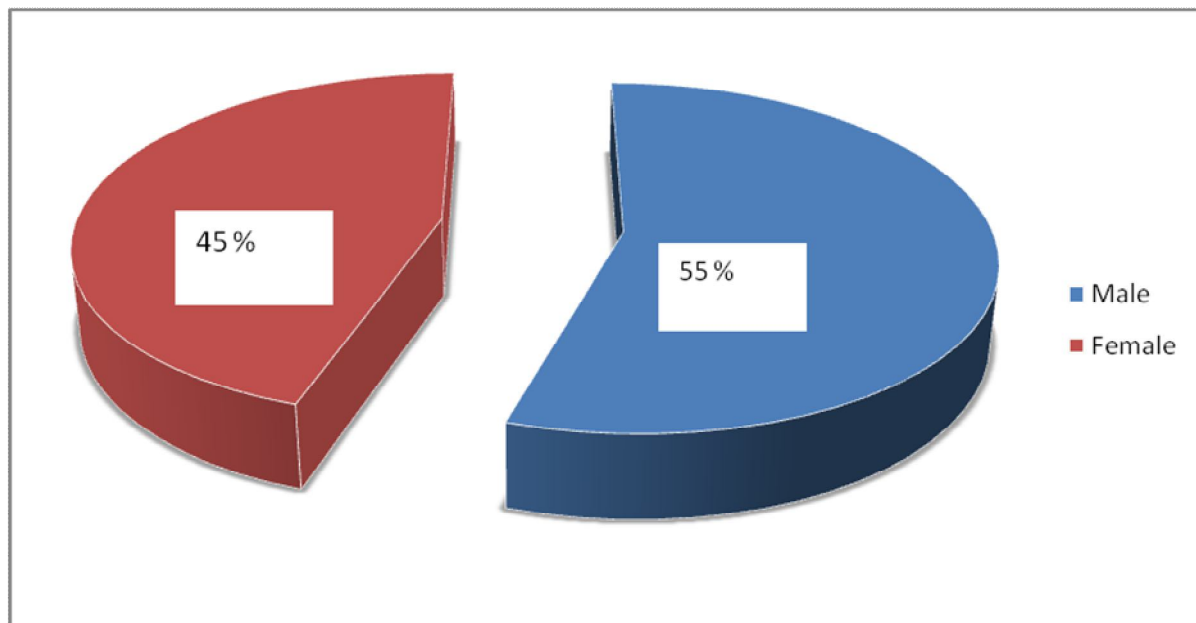


Figure 2: Gender distribution

A total of 80 coded questionnaires were sent to all departments with postgraduate students in the school of medicine to be filled on a first-come-first-served basis. A total of 80 were returned. Reproductive health students were 15 (18.8%), orthopaedics were 15 (18.8%), paediatrics were 14 (17.5%), radiology 10 (12.5%), Internal medicine 10 (12.5%), family medicine 5 (6.3%) and reproductive health oncology 1 (1.3%). There were more men than women male: 44 (55%) and female 36 (45%). All except one of the participants had worked

below five years after graduation.

Cronbach's alpha was 0.937, which indicates a high level of internal consistency for our scale with this specific sample. JSPE Cronbach's alpha was Cronbach's alpha is 0.375, which indicates a low level of internal consistency for our scale with this specific sample. Finally, PBS Cronbach's alpha was 0.595, which indicates a low level of internal consistency for our scale with this specific sample. There are different reports about the acceptable

values of alpha, ranging from 0.70 to 0.95. A low value of alpha could be due to a low number of questions, poor interrelatedness between items or heterogeneous constructs. For Researcher's cautions about abandoning an instrument based on this Cronbach's alpha scores unless they grounded in the 'tau equivalent model' which assumes that each test item measures the same latent trait on the same scale. Therefore, if multiple factors/traits underlie the items on a scale, as revealed by Factor

Analysis, this assumption is violated and alpha underestimates the reliability of the test.⁵⁸

Self-Efficacy of Residents in MUSOM/MTRH in Breaking Bad News tasks

Self-efficacy in breaking bad news tasks questionnaire was given to all residents before training. Test participants were given self-efficacy questionnaire again after training to be completed within two weeks after training.



Figure 3: Self-efficacy results

The figure above shows self-efficacy results of the residents. Surgical residents had the highest self-efficacy scores while radiology had the lowest overall scores. Oncology resident in reproductive health was only one and could not be used for comparison. The overall average score was 80.225. To find out if there was a difference in male and female residents scores on self-efficacy, paired t-tests were done and there were no statistically

significant differences between males and female. An independent samples t-test showed a **p** value of **0.566** at P value of 0.05. However, the females had a better self-efficacy score than the males.

To determine the effectiveness of the training, self-efficacy pre-test and post-test were compared in the table below

Group	N	pre-tests	Post-test	SD pre-test	SD post-test	T-test
A	40	90.95	92.24	17.95	18.41	0.715
B	40	88.78	92.80	17.39	18.16	0.061

Table 2: Pre and post-test results of tests and control groups

Table 2 above shows mean responses of the two groups; A and B. Group A had a better mean than B before training and after training the means for both groups were almost the same.

A (40), $p=0.715$ and group B (40), $p=0.061$. We conclude that skills training based on SPIKES protocol influences self-efficacy of residents significantly

Empathy Scores of Residents in MUSOM/MTRH in Breaking Bad News tasks

Do residents in MUSOM/MTRH who participate in delivering bad news skills training based on SPIKES protocol demonstrate statistically significant higher empathy scores than those who did not participate in the workshop? It had been hypothesized that there would be no statistically significant higher

empathy scores in residents who participate in skills training based on SPIKES protocol compared to those residents that did not.

The Jefferson scale of Physician Empathy (JSPE) questionnaire was used and residents in group A and B filled the questionnaire before the training and within two weeks after the training.

Figure 4 shows the empathy scores of residents from all departments. The table shows the department of surgery residents have the highest empathy scores while family medicine and internal medicine residents have the lowest scores.

A t-test was done to compare the pre-test and post-test empathy scores of test group and the control group.

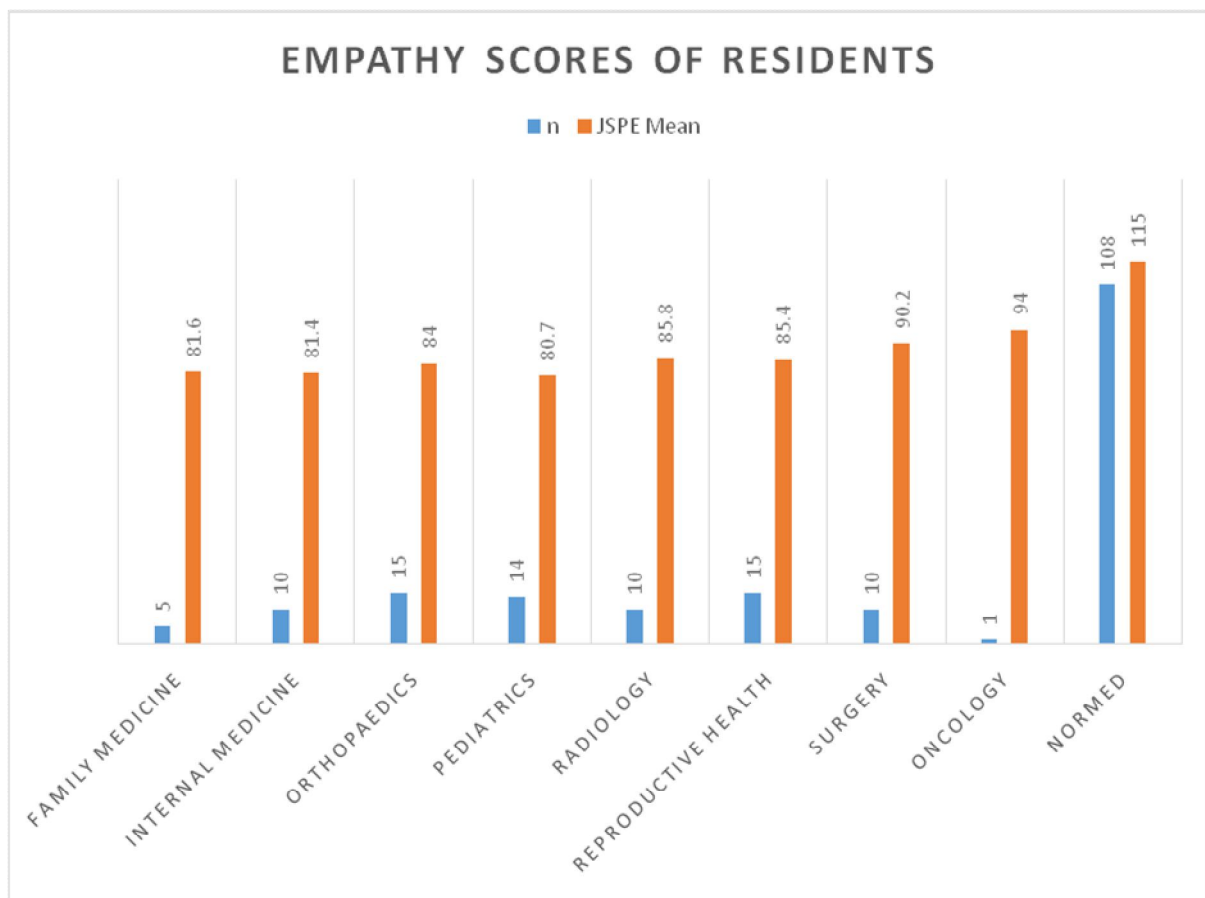


Figure 4: Empathy (JSPE) scores of residents by departments

Group	JSPE mean scores	SD
Group A	82.78	17.95
Group B	80.61	0.967

Table 3 above shows the JSPE scores of residents after training. The test group were trained while the control group were not trained. However the JSPE questionnaire was filled by the two groups within two weeks after training.

The results of statistical analysis of empathy score results of the trained and the untrained groups. The p value was **0.463** at p value of (P< 0.05) confirming that there is no statistically significant difference between the posttest JSPE scores of trained residents and those that were not, thereby accepting the null hypothesis. We concluded therefore that skills training based on SPIKES protocol does not significantly influence empathy scores in residents.

Physicians Belief Scores of Residents in MUSOM/ MTRH in Breaking Bad News tasks

Residents psychosocial orientation was assessed using physician's belief score and the two groups compared after the training.

Figure 5 shows that internal medicine and paediatrics have the best psychosocial orientation while orthopaedics, who have the highest score, have the worst psychosocial orientation among the residents (the higher the score the worse the psychosocial orientation of the resident).

To assess if training improves the psychosocial orientation of residents, post-tests PBS scores were compared for the control and the test group.

Table 4 shows the mean scores of the two groups after training. The test group B had a better psychosocial orientation than the control group. Inferential statistics using paired t-tests did not show a significant difference between the two groups p =0.386 (p =0.005), therefore accepting the hypothesis that there would be no statistically significant difference between the control group and the test group.

Is there statistically significant relationship between gender and department on the one hand and empathy scores, psychosocial orientation of residents and self-efficacy on the other hand in those residents who have been trained based on SPIKES protocol? To determine the relationship between gender and department of origin on the one hand and the self-efficacy, psychosocial orientation and physician's empathy on the other hand.

To answer this question, MANOVA was done on the results of self-efficacy, physician belief scale and physician's empathy, and the gender and department of origin.

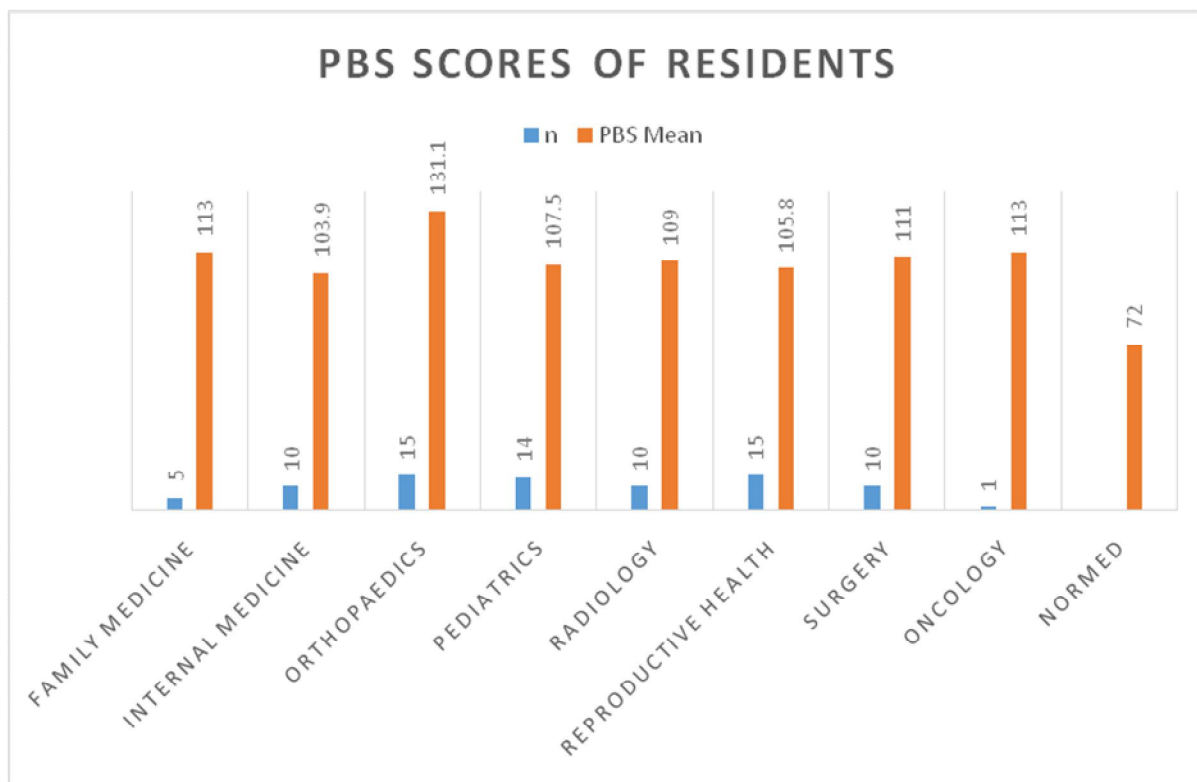


Figure 5: Scores of residents

	Gender	Mean	SD	N
SEQ results	Males	90.48	18.412	44
	Female	94.39	17.248	36
PBS	Male	121.02	32.147	44
	Female	109.83	21.211	36
JSPE	Male	81.77	20.790	44
	Female	87.56	18.162	36

Table 5: SEQ, JSPE and PBS based on gender

Table 5 shows the results of SEQ, JSPE and PBS for the whole group based on their gender. There is a general trend that females are better than males SEQ, JSPE and PBS.

There was no statistical significance between gender and Self-Efficacy, JSPE and Physician belief the p values was 0.078 at $p < 0.05$

Table 6 shows the residents department of origin and their self-efficacy, JSPE and PBS scores. Overall, orthopaedics department residents have the worst psychosocial orientation, internal medicine and family medicine have the highest self-efficacy scores and oncology is leading in JSPE scores.

There was a statistical significance between department and Self Efficacy, JSPE and Physician belief the p values was 0.050 at $p < 0.05$

Descriptive Statistics				
	Departments	Mean	Std. Deviation	N
Self-Efficacy	Family Medicine	96.40	12.402	5
	Internal Medicine	92.80	19.583	10
	Oncology	73.00	.	1
	Orthopaedics	85.27	15.791	15
	Paediatrics	90.79	18.647	14
	Radiology	82.00	15.958	10
	Reproductive Health	99.87	18.841	15
	Surgery	102.80	13.734	10
	Total	92.24	17.893	80
JSPE	Family Medicine	81.60	11.610	5
	Internal Medicine	81.40	11.088	10
	Oncology	94.00	.	1
	Orthopaedics	84.07	24.746	15
	Paediatrics	80.79	12.980	14
	Radiology	85.80	28.627	10
	Reproductive Health	85.47	20.493	15
	Surgery	90.20	21.984	10
	Total	84.38	19.743	80
Physician belief	Family Medicine	113.00	11.958	5
	Internal Medicine	103.90	24.826	10
	Oncology	113.00	.	1
	Orthopaedics	131.27	31.822	15
	Paediatrics	107.50	17.745	14
	Radiology	109.00	19.400	10
	Reproductive Health	105.87	23.892	15
	Surgery	111.00	17.938	10
	Total	115.99	28.164	80

Discussion

Resident’s Self-Efficacy in Breaking Bad News tasks

This study investigated self-efficacy of residents in breaking bad news tasks and whether residents who participate in a skill training workshop demonstrated statistically significant higher self-efficacy scores, compared to residents who did not participate in the workshop. It had been hypothesized that (HO1) there would be no

statistically significant difference in self-efficacy scores within residents, in their respective experimental and control groups, pre- and post-training. This hypothesis was rejected as there was a significant difference between the control and the test group. Self-efficacy scores of residents using self-efficacy scale average score 80.225 which was relatively higher than scores of other studies like the one of Hudley⁵⁹ in Uzbekistan a former Soviet Union Republic where the scores by oncologists were 59.32. These results indicate that residents are much more confident in breaking of bad news than

oncologists in Former Soviet Union. While no claims can be made for their actual performance in practice, their perceptions of competency would indicate that the extensive and compulsory undergraduate teaching on this subject has served to prepare them for this difficult task. Residents' self-efficacy skills scores, as measured by Self-Efficacy Scale, increased significantly from pre-test to post-test conditions. These findings align with results of numerous studies conducted by the Oncotalk Models team, the authors of the SPIKES protocol^{17, 60}. These studies by Oncotalk team were not controlled studies and the results should be interpreted with caution⁶¹. In the current study, pre-test/post-test randomised study design was utilized. Similar study by Hudley G. modelled above utilized the same design and the results showed improvement in self-efficacy.

The effectiveness of the communication training workshop for residents in this study was measured solely by utilizing self-rating questionnaires. Sensitivity for response bias of the residents' self-rating was recognized by this researcher. Therefore, the findings in this study were analysed and conclusions were made with caution. As Hulsman and colleagues⁵² and Fallowfield and Jenkins⁶² concluded, post-training improvements on self-reported questionnaires may not only be the result of a training effect, but may also be an indication of participants' desire to show that the offered training workshop was useful. These authors also suggested that improvements in scores by using self-report instruments may not provide evidence of effective transfer of learned skills into the clinical practice^{63,64}. The Oncotalk model developers recognized limitations of the utilization of self-report instruments and are making efforts to develop strategies to evaluate the effectiveness of the program by measuring patient outcomes⁶¹.

During the review of literature regarding physician-patient communication a number of studies utilizing a randomized controlled trial were limited and the findings were conflicting. A five-day workshop of 50 primary care physicians showed an absence of any training effect on participants⁶⁵. A 10-hour communication skills program for 69 primary care physicians, surgeons, and nurse practitioners conducted in Portland, Oregon showed statistically significant improvements in clinicians' self-efficacy skills, but did not show improvements in patient's satisfaction with physician's performance ratings²⁹. Another three-day communication skills training workshop for 61 UK clinical nurse specialists showed significant positive changes in nurses' communication skills competence⁶⁶.

Finally, the method of training residents in this study - 'flipped classroom' approach followed by a workshop - has not been used in other studies before. However, the participants were able to gain knowledge and confidence in verbal and non-verbal communication skills (cognitive component), rehearse new skills required through the role-play using real patients activities (behavioural component), and, finally, explore and discuss the feelings that the role-play evoked with peers and trainers during the workshop (affective component). Audio or videotaping of the role-play performances of participants for assessment purposes could have been a good way to judge performance. However this was not possible due to the high cost of resources and logistics required. As Hulsman and colleagues⁵² suggested, behavioural observations via audio or video taping with real or standardized patients would add many advantages to the study. In a study by Ley P.⁶⁷ doctors think they may have broken the news, the message may not have been received or, at least, retained by the patient, or the truth may be masked by euphemisms or language too technical for the patient to understand.

Residents' Empathy

In the literature reviewed⁶⁸, study - 'flipped classroom' approach followed by a workshop - has the importance of empathy skills for physicians was emphasized and it was suggested that an empathic goal for a clinician is to concentrate on caring and demonstrating politeness toward the patient. Banja⁶⁸ continued that the combination of medications and interventions with the use of an empathic physician-patient relationship can enhance the therapeutic potential for the patient.

The average empathy scores for the entire group sample (2N = 80) in present study were lower M=85.4, compared to the normative sample (M = 115)⁶⁹. These results might be an indication of lower "humanistic" skills in our residents. These findings should be interpreted carefully though due to the fact that the instrument was developed and normed in the USA which is different from the African population and culture. The post-test results on the empathy scale in this study showed that there was no significant difference between the experimental group and the control group.

Some studies that provide educational programs have reported improvement in empathy skills. Examples in literature include; a study of 130 medical students in Israel showed that a course in psychiatry increased their scores on Mehrabian and Epstein's Emotional Empath Scale⁷⁰, scores on Carkhuff's Empathic Understanding in Interpersonal Process Scale increased in 97 medical students at

the University of Missouri School of Medicine after attending empathy training⁷¹.

The findings in this study are similar to other studies where there are inconsistencies about how amenable empathy is to educational intervention among medical students and physicians. Some researchers believe that empathy is a personality state that can decline during medical education but can also be improved by targeted educational activities. Salvatore M. et al. concluded that the findings suggest that empathy is a relatively stable trait that is not easily amenable to change in residency training programs. The issue of whether targeted educational activities for the purpose of cultivating empathy can improve empathy scores awaits empirical scrutiny⁷².

Residents' Psychosocial Orientation

The results of this study showed that participants' attitudes toward a psychological approach to patients with cancer as measured by the Physician Belief Scale did not significantly improve after the training workshop. Both Pre-training and post training scores on the PBS suggested that residents were not confident about the importance of the psychosocial aspects in cancer. Studies done by McLennan and associates⁷³ and Jenkins and Fallowfield⁶² found that there was a significant improvement in physician's psychosocial orientation after a three day residential training⁶². In the present study residents were only accorded one day discussion workshop and two weeks self-directed learning and role playing using real patients. The duration of training and the method of training may have contributed to the observed findings in this study. In this study internal medicine and paediatrics had the best psychosocial orientation while orthopaedics had the worst psychosocial orientation among the residents. Studies by Ashworth *et al.*⁷⁴ found for their norming sample (N = 180), that psychiatry and internal medicine had higher psychosocial orientation the United States, similar to what we found except that our population did not have psychiatry residents. Orthopaedic surgery had the lowest psychosocial orientation towards patient psychosocial factors, similar to other studies where specialties were compared, this include that done by Hojat *et al.* where orthopaedics had the lowest empathy scores and by extension psychosocial orientation⁷⁵. This finding could be the contributing factor in choosing a speciality or acquired characteristics in the speciality.

Relationship between the Variables and Residents' Department and Residents' Gender

The fourth question in this study investigated whether there is a statistically significant relationship

between residents' gender, resident's department and residents' self-efficacy, interpersonal skills, empathy, and psychosocial belief scores. It was hypothesized that (HO₄) there would be no statistically significant relationship between participants' age and years of experience and their self-efficacy, interpersonal skills, empathy, and psychosocial belief scores at both pre-test and post-test. The results of correlation analysis for the entire sample (N = 80) in the present study showed no statistically significant relationship between participants' gender and self-efficacy and psychosocial beliefs measures at pre-test in the experimental group. There was no statistically significant mean differences in self-efficacy scores between genders for neither experimental nor for the control group at pre-test and post-test p value was 0.078 at p<0.05. There was statistically significant deference between residents department and variables of interest (self-efficacy, JSPE scores and PBS scores) p value of 0.05 at p<0.05. Further analysis shows that orthopaedics department residents have the lowest psychosocial orientation of who scored 131.27 (normed score is 72.1). Generally, the psychosocial orientation in this study was generally poor as the average score was 115.99 with normed score of 72.1. As alluded earlier, other studies seem to suggest that training intervention improves the psychosocial orientation of physicians^{59,62}. This may require further investigation to find out the cause of poor psychosocial orientation of residents in our study.

Recommendations and Conclusion

The overall findings of this study have general implications for research and clinical practice. The results indicated that the training workshop for residents was effective in improving residents' communication skills in breaking bad news. Though empathy and psychosocial aspects are important in cancer treatment, a one-day workshop may not be sufficient. Targeted training is required to adequately improve the important attributes involved in physician-patient interaction. Significant improvement was found for self-efficacy rating in relation to delivering bad news situations. It is therefore recommended that as an immediate remedial measure workshops like the one used in this can be used to equip residents with skills to do this frequent task during their training.

The lack of improvement in their psychosocial beliefs scale indicates that physicians do not support the importance of the psychosocial aspects in cancer care and they perhaps have remained in the traditional biomedical model in health care utilized in Kenya. It is recommended that empathy training specifically should be included in the curriculum.

This study also supports the effectiveness of the SPIKES protocol in a different cultural setting. Despite the distinct differences in academic structure, health care system, and culture between the USA and Kenya, it is evident that this program can be adapted with successful results. The findings in this study support results demonstrated in similar research which utilized SPIKES protocol conducted not only in the USA, but also in Portugal, Spain, and Italy⁷⁶. These guidelines could be adopted for use in breaking bad news training of both residents and undergraduate students.

Additionally, it was the first such training to utilize a 'flipped classroom approach' in training residents in breaking bad news skills, where training materials were given to one group to be used in their usual small group activities using real patients as role play and invited to a one-day workshop with peer discussions in the presence of a trainer and the researcher.

References

1. WHO. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. Official Records of the World Health Organization, no. 2, p. 100). 1948.
2. Engel G. The essence of the biopsychosocial model: from 17th to 20th century science. A challenge for biomedicine. 1990:13-8.
3. Nadelson CC. Ethics, empathy, and gender in health care. The American journal of psychiatry. 1993;150(9):1309-14.
4. Schildmann J, Cushing A, Doyal L, Vollmann J. Breaking bad news: experiences, views and difficulties of pre-registration house officers. Palliative medicine. 2005;19(2):93-8.
5. Mast MS, Kindlimann A, Langewitz W. Recipients' perspective on breaking bad news: how you put it really makes a difference. Patient education and counseling. 2005;58(3):244-51.
6. Hanratty B, Lowson E, Holmes L, Grande G, Jacoby A, Payne S, et al. Breaking bad news sensitively: what is important to patients in their last year of life? BMJ supportive & palliative care. 2012;2(1):24-8.
7. Baile WF, Buckman R, Lenzi R, Glober G, Beale EA, Kudelka AP. SPIKES—a six-step protocol for delivering bad news: application to the patient with cancer. The oncologist. 2000;5(4):302-11.
8. Brown R, Dunn S, Byrnes K, Morris R, Heinrich P, Shaw J. Doctors' stress responses and poor communication performance in simulated bad-news consultations. Academic Medicine. 2009;84(11):1595-602.
9. Maguire P, Pitceathly C. Key communication skills and how to acquire them. Bmj. 2002;325(7366):697-700.
10. Hojat M, Samuel S, Thompson T. Searching for the lost key under the light of biomedicine: A triangular biopsychosocial paradigm may cast additional light on medical education, research and patient care. Medicine & health care into the 21st century. 1995:310-25.
11. Silverman J, Kurtz S, Draper J. Teaching and learning communication skills in medicine: CRC press; 2016.
12. Takayama T, Yamazaki Y, Katsumata N. Relationship between outpatients' perceptions of physicians' communication styles and patients' anxiety levels in a Japanese oncology setting. Social science & medicine. 2001;53(10):1335-50.
13. Weeks JC, Cook EF, O'day SJ, Peterson LM, Wenger N, Reding D, et al. Relationship between cancer patients' predictions of prognosis and their treatment preferences. Jama. 1998;279(21):1709-14.
14. Spiro H. What is empathy and can it be taught? Annals of internal medicine. 1992;116(10):843-6.
15. Spiro HM, Curnen MGM, Peschel E, James DS. Empathy and the practice of medicine: beyond pills and the scalpel: Yale University Press; 1996.
16. CHRISTAKIS NA. Do clinical clerks suffer ethical erosion? Students' perceptions of their ethical environment and personal development. 1994.
17. Lu MC. Why it was hard for me to learn compassion as a third-year medical student. Cambridge Quarterly of Healthcare Ethics. 1995;4(4):454-8.
18. Duffy FD, Gordon GH, Whelan G, Cole-Kelly K, Frankel R. Assessing competence in communication and interpersonal skills: the Kalamazoo II report. Academic Medicine. 2004;79(6):495-507.
19. WHO. Cancer in Developing countries. The international network for Cancer treatment and Research. 2016.
20. Kurtz S, Silverman, J., & Draper, J. Teaching and learning communication skills in medicine. Abingdon OX UK: Radcliffe Publishing; 2005.
21. Razavi D, & Delvaux, N. Communication skills and psychological training in Oncology. uropean Journal of Cancer. 1997;33, 515-21.
22. Kurtz S, Silverman, J., & Draper, J. . Teaching and learning Communication Skills in Medicine. Abingdon, OX, UK: Radcliffe Publishing. 2005.
23. Liu JE. The development and evaluation of a communication skills training program for registered nurses in cancer care in Beijing, China. Dissertation, Abstracts International. 2005:54 (1).

24. Back AL, Arnold, R. M., Baile, W. F., Fryer-Edwards, K. A, Alexander, S. C., Barley, G. E. et al. Efficacy of communication Skills Training for Giving Bad News and Discussing Transition to Palliative Care. *Archives of Internal Medicine*. 2007;67, 453-60.
25. Baile WF, Lenzi, R. et al. SPIKES- A six step protocol for delivering bad news: application to the patient with cancer. *Oncologist*. 2000;5 (4), 302-11.
26. Ford S, & Hall, A. Communication behaviours of skilled and less skilled oncologists: a validation study of the medical interaction process system (MIPS). *Patient Education and counselling*. 2004;54, 275-82.
27. Maguire P. Improving communication with cancer patients. *European Journal of cancer*. 1999;35 (14) 2058-65.
28. Rees C, Sheard, C., & McPherson, A. Medical students' views and experiences of methods of teaching and learning communication skills. *Patient education counselling*. 2004;54 (1) 119-21.
29. Brown JB, Boles, M., Mullooly, J. P., & Levinson, W. Effect of clinician communication skills training on patient satisfaction. A randomized, controlled trial. *Annals of Internal Medicine*. 1999;13 (1), 822-9.
30. Roter DL, & Hall, J. A. Physicians' interviewing styles and medical information obtained from patients. *Journal of general internal medicine*. 1987;2, 325-9.
31. Oblinger DG. *Educating the Net Generation: Educause*; 2005.
32. Mehta NP, Hull, A. L., Young, J. P., & Stoller, J. K. Just imagine: New paradigms in medical education. *Academic Medical* 2013;88 (10) 1418-23.
33. McDonald K, & Smith, C. M. The Flipped classroom for professional development: part 1 benefits and strategies. *Journal of continuing Education Nursing*. 2013;44 (10) 437-8.
34. Cheng X, Kao, Lee, K., Chang, E. Y., & Young, X. 'Flipped classroom' approach: Stimulating positive learning attitudes and improving mastery of histology among medical students. *Anatomical Sciences Education*. 2017;10 (4), 317-27.
35. Tune JDS, M. & Basile, D. P. Flipped classroom model improves graduate student performance in cardiovascular, respiratory and renal physiology. *advances in physiology education*. 2001;37 (4) 316-20.
36. Fox J, Faber, D., Pkarsky, S., Zhang, C., Riley, R., Mechaber, A., Kirsner, R. S. Development of Flipped Medical School Dermatology Module. *Southern Medical Journal*. 2017;110 (5), 319-24.
37. Lin Y, Zhu, Y., Chen, C., Wang, W., Chen, T., Lu, L. Facing challenges in ophthalmology clerkship teaching: Is 'flipped classroom' the answer? *PlosOne*. 2017;12 (4)
38. Rui Z, Lian-rui, X., Rong-Zheng, Y., Jing, Z., Xuehong, W, & Chuan, Z. Friend or Foe? Flipped classroom for undergraduate electrocardiogram learning: a randomized controlled study. *BMC Medical Education*. 2017;17 (1) 53.
39. Domínguez LC, Vega, N. V., Espita, E. L., Sanabrai, A. E., Corso, C., Serna, A. M., & Osorio, C. Impact of 'flipped classroom' strategy in learning environment in Surgery: A Comparison with lectures. *Biomedica*. 2015;35 (4), 513-21.
40. Ramnanan CJ, Pound LD. Advances in medical education and practice: student perceptions of the flipped classroom. *Adv Med Educ Pract*. 2017;8:63-73.
41. Pierce R, Fox J. Podcasts and Active-Learning Exercises in a "Flipped Classroom" Model of a Renal Pharmacotherapy Module. *American Journal of Pharmaceutical Education*. 2012;76 (10):196.
42. Gilboy MB, Heinerichs S, Pazzaglia G. Enhancing student engagement using the flipped classroom. *Journal of nutrition education and behavior*. 2015;47(1):109-14.
43. Ramnanan CJ, & Pound, L. D. Advances in Medical Education and Practice: Student perceptions of Flipped Classroom. *Advances Medical Education Practice*. 2017;8, 63-73.
44. Granero LA, Ezequiel, O. D. S., Oliveira, I. N. D., Moreira-Almeida, A. & Luchetti, G. Using traditional and flipped classrooms to teach 'Geriatrics and Gerontology' Investigating the impact of active learning of medical students' competences. *Medical Teacher*. 2018:1-9.
45. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Academic Medicine*. 2001;76(4):390-3.
46. Bandura A. *Social learning theory*. Social learning theory. NJ: Prentice-Hall; 1977.
47. Laschinger HKS. Undergraduate Nursing Students health promotion counselling self-efficacy. *Journal of advanced nursing*. 1996;26, 36-41.
48. Chako SB, & Hub, A. Academic achievement among undergraduate nursing students: The development and test of causal model. *Journal of Nursing Education*. 1991;30, 267-73.
49. Stajkovic AD, & Luthans, F. Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*. 1998;124 (2) 240-61.
50. Moritz SEF, Fahrbach, K. R., & Mack, D. E. The relation of self-efficacy measures to sport performance: Meta-analytic review. *Research Quarterly for exercise and sport*. 2000;71 (3) 280-95.

51. Cegala DB, S. L. Physician communication Skills training: review of theoretical backgrounds, objectives and skills. *medical education*. 2002;36, 1004-16.
52. Hulsman R, Ros, W. G., Winnubst, A. M., & Bensing, J. M. Teaching clinically experienced physicians communication skills: A review of evaluation studies. *Medical Education*. 1999;33, 655-65.
53. Gurmu E. Quantitative research. Methodology workshop. Moi University : Organization of social sciences Research in East Africa (OSSREA). 2011.
54. Kothari CR. *Research methodology: Methods and techniques*: New Age International; 2004.
55. Campbell DT, Stanley JC. *Experimental and quasi-experimental designs for research*: Ravenio Books; 1963.
56. Back AL, Arnold RM, Baile WF, Fryer-Edwards KA, Alexander SC, Barley GE, et al. Efficacy of communication skills training for giving bad news and discussing transitions to palliative care. *Archives of internal medicine*. 2007;167 (5):453-60.
57. Ashworth CD, Williamson P, Montano D. A scale to measure physician beliefs about psychosocial aspects of patient care. *Social science & medicine*. 1984;19(11):1235-8.
58. Green SB, & Salkind, N. J. *Usins SPSS for windows and Macintosh: Analyzing and understanding data.*: Prentice Hall press; 2010.
59. Hudley G. The effectiveness of "delivering unfavorable news to patients diagnosed with cancer" training program for oncologists in Uzbekistan. The effectiveness of "delivering unfavorable news to patients diagnosed with cancer" training program for oncologists in Uzbekistan. Florida: University of Central Florida; 2008.
60. Back AL, Arnold RM, Tulsy JA, Baile WF, Fryer-Edwards KA. Teaching communication skills to medical oncology fellows. *Journal of clinical oncology*. 2003;21(12):2433-6.
61. Back AL, Arnold, R. M., Tulsy, J. A., Baile, W. F., & Fryer-Edwards, K. A. *Journal of clinical oncology*. 2003;21 (12), 2433-6.
62. Fallowfield L, & Jenkins, V. Communicating sad, bad, and difficult news in Medicine. *The Lancet*. 2004;363, 12-19.
63. Hulsman R, Ros W, Winnubst J, Bensing J. Teaching clinically experienced physicians communication skills. A review of evaluation studies. *Medical education*. 1999;33(9):655-68.
64. Fallowfield L, Lipkin M, Hall A. Teaching senior oncologists communication skills: results from phase I of a comprehensive longitudinal program in the United Kingdom. *Journal of Clinical Oncology*. 1998;16(5):1961-8.
65. Levinson W, Roter, /d., Mullooly, J. P., Dull, V. T., & Frankel, R. M. Physician-Patient communication: The relationship with malpractice claims among primary care physicians and surgeons. *JAMA*. 1997;277 (7) 553-9.
66. Heaven C, Clegg, J., & Miguire, P. Transfer of communication skills training from workshop to workplace: The impact of clinical supervision. *Patient Education Counselling*. 2006;60 (3) 313-25.
67. Ley P. Satisfaction, Compliance and Communication. *British Journal of Clinical Psychology*. 1982;21 (4) 241-54.
68. Banja JD. Empathy in the physicians pain practice: Benefits, barriers and recommendations. *Pain Medicine*. 2006;7 (3), 265-75.
69. Hojat M, Erdmann, J. B., Frisby, A. J., Veloski, J. J., & Gonnella, J. Assessing physicians' orientation towards lifelong learning. *Journal of General Internal Medicine*. 2006;21 (9) 931-6.
70. Elizur A, & Rosenheim, E. Empathy and attitudes among medical students: the. *Journl os Medical Education*. 1992;57, 675-83.
71. Feighny KM, Monaco, M., & Arnold, L. Empathy training to improve physician-patient communication skills. *Academic Medicine*. 1995;70 (5) 435-6.
72. Mangione S, Kane, G. C., Caruso, J. W., Gonnella, J. S., Nasca, T. J., & Hojat, M. Assessment of Empathy in different years of internal medicine training. . *Medical Teacher*. 2002;24 (4) 370-3.
73. McLennan J, Jansen-McWilliams, L., Comer, D., Gardener, W., Kelleher, K. The physician belief scale and psychosocial problems in children: a report from the pediatric research in office settings and the ambulatory sentinel practice network. *Journal of Developmental and Behavioral Pediatrics*. 1999;20, 4-30.
74. Answorth C, D., Williamson, P., & Montano, D. A scale to measure physician beliefs about psychosocial aspects of patient care. *Social Science and Medicine*. 1984;19 (1), 1235-8.
75. Hojat M, Gonnella, J. S., Nsaca, T. J., Mangione, S., Vergare, M., & Magee, M. Physician Empathy: Definition, components,, measurement and relationship to gendr and speciality. *Amercian Journal of Psychiatry*. 2002;159 (9) 1563-9.
76. Grassi L, Travado, L., Gil, F., Campos, R., Lluch, P., & Baile, W. A communication intervention for training southern European oncologists to recognize psychosocial morbidity in cancer. *Journal of Cancer Education*. 2005;20, 79-84.



Doctors Academy Workshop on Key Skills for Urology Trainees

Lia Gan JJ*, Wei Gan JJ**, Hsien Gan JJ***, Kuah CY****, Ojha H*****, Ganta S*****, Enoch S*****

Institution

*Lister Hospital, Coreys Mill Lane, Stevenage SG1 4AB, United Kingdom

**Westmorland General Hospital, Burton Rd, Kendal LA9 7RG, UK

***University College London, Gower St, Bloomsbury, London WC1E 6BT, UK

****Basildon University Hospital, Nether Mayne, Basildon SS16 5NL, UK

*****Heart of England NHS Foundation Trust

*****Walsall Healthcare NHS Trust, Moat Rd, Walsall WS2 9PS, UK

*****Doctors Academy Group of Educational Establishments, 189 Whitchurch Rd, Cardiff CF14 3JR, UK

Abstract

The Key Skills for Urology Trainees Course offers delegates the opportunity to practice and enhance their urological skills on animal tissue and dry models. To evaluate the effectiveness of the course which was conducted in 2016 and 2017, feedback was collected from the attendees on both occasions and evaluated.

The delegates' feedback that has been collected and analysed will help the organisers to improve the course and, thus, continue to benefit surgical trainees.

Key Words

Key Skills; Urology; Urology Trainees; Surgical Trainees; Educational Training; Simulation

Corresponding Author:

Dr Jaslyn Gan Ju-Lia; E-mail: juliaganjaslyn@gmail.com

WJMER, Vol 18: Issue 1, 2018

Aims of the Course

The main objective of Key Skills for Urology Trainees was to offer delegates the opportunity to utilise animal tissue and dry models to enhance their urology skills. Many doctors in their early years often have limited exposure to practice basic and routine urological procedures.¹ We intended to encourage doctors to deliver these practical skills effectively at an early stage. We also wanted to ensure that surgical trainees are competent in the management of acute urological emergencies, as well as common scenarios in the urology outpatient clinic.

Target Audience

Delegates primarily comprised of junior surgical trainees who were preparing for specialty training and their Specialty Training 3 (ST3) application, but also included professionals at any level with an interest in Urology. A total of 19 delegates attended the course in 2016, and 21 delegates attended in 2017. Each cohort comprised of Core Surgical Trainees, Foundation Year Doctors and Medical Students.

About the course

Key Skills for Urology Trainees was held on 19th November 2016 at Walsall Manor Hospital, Walsall. The fee was £85, including lunch and refreshments. This course was held again the following year on 18th November 2017.

Organisers of the Course

The course was conducted by Doctors Academy (UK), a non-profit organisation that delivers education and training for healthcare professionals alongside programmes run by medical universities, institutions and hospitals. Consultant Urologists and Specialist Registrars in Urology were invited to deliver lectures and supervise the workshops.

Structure of the Course

Delegates were divided into groups to attend a series of workshops supervised by Urological Consultants. The attendees received hands-on experience on hydrocele repair, scrotal exploration and scrotal fixation (Figure 1a, b), circumcision (Figure 2) and vasectomy (Figure 3). They also practiced using the kidney and bladder ultrasound scan (Figure 4), and suprapubic catheterisation. These workshops were run in a circuit over the course of the day.

Lectures were organised according to scenarios encountered as urological emergencies and in outpatient clinics to complement the experience on

developing key skills as a surgical trainee. Course material was provided, making it possible for delegates to hold written information on their learning.

Feedback from Delegates

Delegates were asked to complete: 1) feedback for each lecture; 2) feedback for each workshop session; 3) feedback for the overall course; and 4) The Dundee Ready Education Environment Measure (DREEM) questionnaires

Feedback for each lecture and the overall course were scored on a scale of Excellent, Good, Neither Good Nor Poor, Fair, and Poor. Feedback for each workshop session was scored based on a 7-item personal questionnaire that was scaled on Strongly Agree, Agree, Neither Agree Nor Disagree, Disagree, or Strongly Disagree. In this article, we demonstrate the percentage of responses to lectures, the 'Strongly Agree' rates in each workshop session, and 'Excellent' feedback to overall course.

We demonstrate the compliance of our outcomes to expected standards (Strongly Agree; Excellent) in our feedback for each workshop and the overall course to aid improvement in the delivery of this course in subsequent years. We do this because they are the most modifiable aspect of the course for improvement in training of basic urology skills.



Figure 1a: Workshop on scrotal exploration using sheep testicles



Figure 1b: Closure of skin

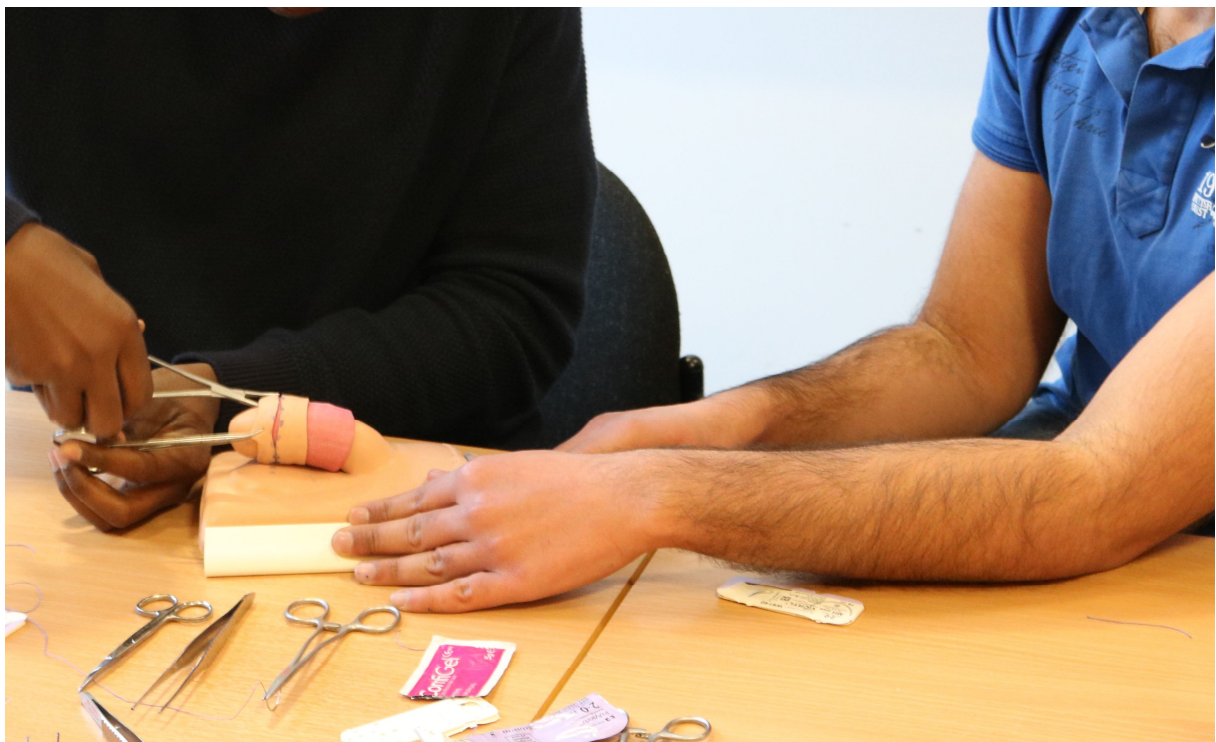


Figure 2: Circumcision taught to the delegates using a plastic model from 'Limbs and Things'



Figure 3: Vasectomy taught using a realistic home-made model



Figure 4: Kidney and bladder ultrasound demonstration

Feedback to each lecture	How to deal with urological emergencies (%)	Common scenarios in the urology OPD clinic (%)
Excellent	53	47
Good	47	47
Neither	0	0
Fair	0	6
Poor	0	0

Table 1: Percentage (%) responses to lectures in 2016

Feedback to session	1(%)	2(%)	3(%)	4(%)	5(%)
Appropriate to level of training	76	82	59	41	71
Sufficient time allocated	41	53	30	47	76
Adequate supervision	53	65	47	47	76
Tutor-delegate ratio	65	76	47	59	76
Workshop objectives met	65	71	53	47	76
Useful to urology career	82	88	59	35	71
Useful for ST3 interview preparation	59	65	59	35	71

Table 2: Percentage (%) of 'strongly agree' rate among delegates for individual workshop sessions in 2016

1. Hydrocele repair
2. Scrotal exploration and scrotal fixation
3. Circumcision and vasectomy
4. Kidney and bladder ultrasound scan
5. SPC catheterisation

The feedback received for the practical workshops was generally highly positive. For individual workshops, most delegates thought that the sessions were appropriate for their level of training,

had sufficient allocated time, were satisfied with the tutor-delegate ratio, and agreed that the workshop met their objectives to be useful towards their urology career or ST3 interview.

Feedback to overall course	2016	2017	Average
Trainee experience	50	71	60
Facilities and venue	64	53	59
Refreshments and lunch	37	6	22
General friendliness of faculty organisers	77	71	74
Recommendation to friend	68	65	67

Table 3: Comparison of percentage (%) in 'excellent' feedback for overall course in 2016 and 2017

An increase in trainee experience is noted, with 71% of delegates rating it as 'Excellent' in 2017. For future years, course organisers can improve on refreshments and lunch. The reason for which 'Excellent' feedback in this area dropped in 2017 was due to a delay between the arrival of food and actual lunchtime. One of the workshops was brought forward to before lunchtime as the Consultant leading the session had unavoidable circumstances and needed to leave early.

We also distributed The Dundee Ready Education Environment Measure (DREEM) questionnaires to all delegates in both 2016 and 2017. DREEM is a 50-point questionnaire initially developed to measure the quality of an educational environment, based on five domains of perception that reflect the education climate.² These five areas are perception of learning, perception of teachers, academic self-perception, perception of atmosphere and social self-perception. Each parameter is scored on

a Likert scale: 0 is strongly disagree, 1 is disagree, 2 is neither agree nor disagree, and 4 is strongly agree.

A score of 168.6(±21.92) indicates an excellent perception among the course delegates³ (Appendix 1). In 2017, we used a modified DREEM questionnaire removing items that we thought were not relevant to this course, such as "Cheating is a problem in this school", "I seldom feel lonely", and "My accommodation is pleasant". We have removed the social domain altogether in 2017 as this was irrelevant to this one-day course. This amounts to 38 items instead of 50, leaving 152 points in total. We have expressed a comparison between DREEM scores of both years by using percentages instead of absolute scores. There is no significant difference between results compiled in 2016 and 2017 between total scores (p=0.66) and scores in each domain.

	2016	2017	p-value of difference in percentage
Number of delegates, n	19	21	
Response rate (%)	93.8	100	
Points achieved	168.6 (±21.9)	127.7(±12.5)	
Total points	200	152	
Percentage (%) of total	84.3(±0.11)	84(±0.08)	0.66

Figure 4a: Comparison of DREEM questionnaire responses in 2016 and 2017 where p value=0.66 (>0.05)

Domain	2016			2017			2016/17 p-value of difference in percentage
	Mean score achieved	Total in each domain	Percentage of total (%)	Mean score achieved	Total in each domain	Percentage of total (%)	
Learning	45.5(±3.2)	48	94.8	42.7(±4.7)	48	89.0	0.14
Teachers	38.9(±5.4)	44	88.4	25.4(±2.8)	32	79.3	5.00
Self-perception	23.8(±8.0)	32	74.3	23.4(±3.9)	28	83.6	1.00
Atmosphere	40.9(±8.5)	48	85.2	36.2(±5.1)	44	82.2	0.08
Social	19.5(±6.5)	28	69.6	0	0	-	-
DREEM total	169 (±22)	200	84.3	128(±13)	152	84.0	

Figure 4b: Breakdown of DREEM scores in individual domains where p values are >0.05

Data analysis on each domain in 2016 (*Appendix 1*) correlates with teaching highly thought of, model teachers, students feeling more on the positive side, a good feeling overall on the learning environment and the social environment being not too bad.³

There is no significant difference ($p>0.05$) in DREEM scores in each domain between 2016 and 2017.

Delegates' Individual Comments

"Very well run course, providing very good value for money."

"Very well organised, one to one teaching. Picked up a lot of surgical skills from the course."

"Course is very relevant to daily practice."

"Very well organised. Useful for those considering a career in urology."

Conclusion

This course has been very well received by delegates so far in years 2016 and 2017. It gives the

opportunity for greater exposure of hands-on experience for medical students and junior doctors with an enhanced interest in Urology. With delegates' feedback, we aim to improve this reproduce this course in subsequent years for further training and education with Doctors Academy.

References

1. Floyd Jr MS. The importance of increasing urology exposure among undergraduates: A UK Perspective. *Canadian Urological Association Journal*. 2015 Dec 14;9(11-12):426-7.
2. Miles S, Swift L, Leinster SJ. The Dundee Ready Education Environment Measure (DREEM): a review of its adoption and use. *Medical Teacher*. 2012 Sep 1;34(9):e620-34.
3. McAleer S, Roff S. A practical guide to using the Dundee Ready Education Environment Measure (DREEM). *AMEE medical education guide*. 2001;23(5):29-33.

Appendix 1. Interpretation of DREEM³

Section	Interpretation
<i>Total DREEM score (out of 200)</i>	
0-50	Very poor
51-100	Plenty of problems
101-150	More positive than negative
151-200	Excellent
<i>DREEM subscales</i>	
Students' perception of learning	0-12, very poor
	13-24, teaching is viewed negatively
	25-36, a more positive approach
	37-48, teaching highly thought of
Students' perception of teachers	0-11, abysmal
	12-22, in need of some retraining
	23-33, moving in the right direction
	34-44, model teachers
Students' academic self-perceptions	0-8, feeling of total failure
	9-16, many negative aspects
	17-24, feeling more on the positive side
	25-32, confident
Students' perception of atmosphere	0-12, a terrible environment
	13-24, there are many issues that need changing
	25-36, a more positive atmosphere
	37-48, a good feeling overall
Students' social self-perceptions	0-7, miserable
	8-14, not a nice place
	15-21, not too bad
	22-28, very good socially

The World Journal of Medical Education & Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to encourage the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting-edge technology and those who need to innovate within their resource constraints. It is our hope that this interaction will help develop medical knowledge & enhance the possibility of providing optimal clinical care in different settings all over the world.



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy

ISBN 978-93-80573-06-9



9 789380 573069 >