

# GLOBAL JOURNAL

OF MEDICAL RESEARCH: E

## Gynecology and Obstetrics

Integration of Long Acting

Knowledge, Attitude & Practice

### Highlights

Duration on Liver Enzymes

Influence of Clinic-Based Health

Discovering Thoughts, Inventing Future

VOLUME 14

ISSUE 1

VERSION 1.0



GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS

---

GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS

---

VOLUME 15 ISSUE 1 (VER. 1.0)

OPEN ASSOCIATION OF RESEARCH SOCIETY

© Global Journal of Medical Research . 2015.

All rights reserved.

This is a special issue published in version 1.0 of "Global Journal of Medical Research." By Global Journals Inc.

All articles are open access articles distributed under "Global Journal of Medical Research"

Reading License, which permits restricted use. Entire contents are copyright by of "Global Journal of Medical Research" unless otherwise noted on specific articles.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without written permission.

The opinions and statements made in this book are those of the authors concerned. Ultraculture has not verified and neither confirms nor denies any of the foregoing and no warranty or fitness is implied.

Engage with the contents herein at your own risk.

The use of this journal, and the terms and conditions for our providing information, is governed by our Disclaimer, Terms and Conditions and Privacy Policy given on our website <http://globaljournals.us/terms-and-condition/menu-id-1463/>

By referring / using / reading / any type of association / referencing this journal, this signifies and you acknowledge that you have read them and that you accept and will be bound by the terms thereof.

All information, journals, this journal, activities undertaken, materials, services and our website, terms and conditions, privacy policy, and this journal is subject to change anytime without any prior notice.

Incorporation No.: 0423089  
License No.: 42125/022010/1186  
Registration No.: 430374  
Import-Export Code: 1109007027  
Employer Identification Number (EIN):  
USA Tax ID: 98-0673427

## Global Journals Inc.

(A Delaware USA Incorporation with "Good Standing"; **Reg. Number: 0423089**)

Sponsors: *Open Association of Research Society*  
*Open Scientific Standards*

### *Publisher's Headquarters office*

Global Journals Headquarters  
301st Edgewater Place Suite, 100 Edgewater Dr.-Pl,  
Wakefield MASSACHUSETTS, Pin: 01880,  
United States of America  
USA Toll Free: +001-888-839-7392  
USA Toll Free Fax: +001-888-839-7392

### *Offset Typesetting*

Global Journals Incorporated  
2nd, Lansdowne, Lansdowne Rd., Croydon-Surrey,  
Pin: CR9 2ER, United Kingdom

### *Packaging & Continental Dispatching*

Global Journals  
E-3130 Sudama Nagar, Near Gopur Square,  
Indore, M.P., Pin:452009, India

### *Find a correspondence nodal officer near you*

To find nodal officer of your country, please  
email us at [local@globaljournals.org](mailto:local@globaljournals.org)

### *eContacts*

Press Inquiries: [press@globaljournals.org](mailto:press@globaljournals.org)  
Investor Inquiries: [investors@globaljournals.org](mailto:investors@globaljournals.org)  
Technical Support: [technology@globaljournals.org](mailto:technology@globaljournals.org)  
Media & Releases: [media@globaljournals.org](mailto:media@globaljournals.org)

### *Pricing (Including by Air Parcel Charges):*

#### *For Authors:*

22 USD (B/W) & 50 USD (Color)  
Yearly Subscription (Personal & Institutional):  
200 USD (B/W) & 250 USD (Color)



INTEGRATED EDITORIAL BOARD  
(COMPUTER SCIENCE, ENGINEERING, MEDICAL, MANAGEMENT, NATURAL  
SCIENCE, SOCIAL SCIENCE)

---

**John A. Hamilton, "Drew" Jr.,**  
Ph.D., Professor, Management  
Computer Science and Software  
Engineering  
Director, Information Assurance  
Laboratory  
Auburn University

**Dr. Henry Hexmoor**  
IEEE senior member since 2004  
Ph.D. Computer Science, University at  
Buffalo  
Department of Computer Science  
Southern Illinois University at Carbondale

**Dr. Osman Balci, Professor**  
Department of Computer Science  
Virginia Tech, Virginia University  
Ph.D. and M.S. Syracuse University,  
Syracuse, New York  
M.S. and B.S. Bogazici University,  
Istanbul, Turkey

**Yogita Bajpai**  
M.Sc. (Computer Science), FICCT  
U.S.A. Email:  
yogita@computerresearch.org

**Dr. T. David A. Forbes**  
Associate Professor and Range  
Nutritionist  
Ph.D. Edinburgh University - Animal  
Nutrition  
M.S. Aberdeen University - Animal  
Nutrition  
B.A. University of Dublin- Zoology

**Dr. Wenying Feng**  
Professor, Department of Computing &  
Information Systems  
Department of Mathematics  
Trent University, Peterborough,  
ON Canada K9J 7B8

**Dr. Thomas Wischgoll**  
Computer Science and Engineering,  
Wright State University, Dayton, Ohio  
B.S., M.S., Ph.D.  
(University of Kaiserslautern)

**Dr. Abdurrahman Arslanyilmaz**  
Computer Science & Information Systems  
Department  
Youngstown State University  
Ph.D., Texas A&M University  
University of Missouri, Columbia  
Gazi University, Turkey

**Dr. Xiaohong He**  
Professor of International Business  
University of Quinipiac  
BS, Jilin Institute of Technology; MA, MS,  
PhD,. (University of Texas-Dallas)

**Burcin Becerik-Gerber**  
University of Southern California  
Ph.D. in Civil Engineering  
DDes from Harvard University  
M.S. from University of California, Berkeley  
& Istanbul University

**Dr. Bart Lambrecht**

Director of Research in Accounting and Finance  
Professor of Finance  
Lancaster University Management School  
BA (Antwerp); MPhil, MA, PhD  
(Cambridge)

**Dr. Carlos García Pont**

Associate Professor of Marketing  
IESE Business School, University of Navarra  
Doctor of Philosophy (Management),  
Massachusetts Institute of Technology (MIT)  
Master in Business Administration, IESE,  
University of Navarra  
Degree in Industrial Engineering,  
Universitat Politècnica de Catalunya

**Dr. Fotini Labropulu**

Mathematics - Luther College  
University of Regina  
Ph.D., M.Sc. in Mathematics  
B.A. (Honors) in Mathematics  
University of Windsor

**Dr. Lynn Lim**

Reader in Business and Marketing  
Roehampton University, London  
BCom, PGDip, MBA (Distinction), PhD,  
FHEA

**Dr. Mihaly Mezei**

ASSOCIATE PROFESSOR  
Department of Structural and Chemical  
Biology, Mount Sinai School of Medical  
Center  
Ph.D., Eötvös Loránd University  
Postdoctoral Training,  
New York University

**Dr. Söhnke M. Bartram**

Department of Accounting and Finance  
Lancaster University Management School  
Ph.D. (WHU Koblenz)  
MBA/BBA (University of Saarbrücken)

**Dr. Miguel Angel Ariño**

Professor of Decision Sciences  
IESE Business School  
Barcelona, Spain (Universidad de Navarra)  
CEIBS (China Europe International Business School).  
Beijing, Shanghai and Shenzhen  
Ph.D. in Mathematics  
University of Barcelona  
BA in Mathematics (Licenciatura)  
University of Barcelona

**Philip G. Moscoso**

Technology and Operations Management  
IESE Business School, University of Navarra  
Ph.D in Industrial Engineering and  
Management, ETH Zurich  
M.Sc. in Chemical Engineering, ETH Zurich

**Dr. Sanjay Dixit, M.D.**

Director, EP Laboratories, Philadelphia VA  
Medical Center  
Cardiovascular Medicine - Cardiac  
Arrhythmia  
Univ of Penn School of Medicine

**Dr. Han-Xiang Deng**

MD., Ph.D  
Associate Professor and Research  
Department Division of Neuromuscular  
Medicine  
Davee Department of Neurology and Clinical  
Neuroscience  
Northwestern University  
Feinberg School of Medicine

**Dr. Pina C. Sanelli**

Associate Professor of Public Health  
Weill Cornell Medical College  
Associate Attending Radiologist  
NewYork-Presbyterian Hospital  
MRI, MRA, CT, and CTA  
Neuroradiology and Diagnostic  
Radiology  
M.D., State University of New York at  
Buffalo, School of Medicine and  
Biomedical Sciences

**Dr. Roberto Sanchez**

Associate Professor  
Department of Structural and Chemical  
Biology  
Mount Sinai School of Medicine  
Ph.D., The Rockefeller University

**Dr. Wen-Yih Sun**

Professor of Earth and Atmospheric  
SciencesPurdue University Director  
National Center for Typhoon and  
Flooding Research, Taiwan  
University Chair Professor  
Department of Atmospheric Sciences,  
National Central University, Chung-Li,  
TaiwanUniversity Chair Professor  
Institute of Environmental Engineering,  
National Chiao Tung University, Hsin-  
chu, Taiwan.Ph.D., MS The University of  
Chicago, Geophysical Sciences  
BS National Taiwan University,  
Atmospheric Sciences  
Associate Professor of Radiology

**Dr. Michael R. Rudnick**

M.D., FACP  
Associate Professor of Medicine  
Chief, Renal Electrolyte and  
Hypertension Division (PMC)  
Penn Medicine, University of  
Pennsylvania  
Presbyterian Medical Center,  
Philadelphia  
Nephrology and Internal Medicine  
Certified by the American Board of  
Internal Medicine

**Dr. Bassey Benjamin Esu**

B.Sc. Marketing; MBA Marketing; Ph.D  
Marketing  
Lecturer, Department of Marketing,  
University of Calabar  
Tourism Consultant, Cross River State  
Tourism Development Department  
Co-ordinator , Sustainable Tourism  
Initiative, Calabar, Nigeria

**Dr. Aziz M. Barbar, Ph.D.**

IEEE Senior Member  
Chairperson, Department of Computer  
Science  
AUST - American University of Science &  
Technology  
Alfred Naccash Avenue – Ashrafieh

## PRESIDENT EDITOR (HON.)

---

### **Dr. George Perry, (Neuroscientist)**

Dean and Professor, College of Sciences

Denham Harman Research Award (American Aging Association)

ISI Highly Cited Researcher, Iberoamerican Molecular Biology Organization

AAAS Fellow, Correspondent Member of Spanish Royal Academy of Sciences

University of Texas at San Antonio

Postdoctoral Fellow (Department of Cell Biology)

Baylor College of Medicine

Houston, Texas, United States

## CHIEF AUTHOR (HON.)

---

### **Dr. R.K. Dixit**

M.Sc., Ph.D., FICCT

Chief Author, India

Email: [authorind@computerresearch.org](mailto:authorind@computerresearch.org)

## DEAN & EDITOR-IN-CHIEF (HON.)

---

### **Vivek Dubey(HON.)**

MS (Industrial Engineering),

MS (Mechanical Engineering)

University of Wisconsin, FICCT

Editor-in-Chief, USA

[editorusa@computerresearch.org](mailto:editorusa@computerresearch.org)

### **Sangita Dixit**

M.Sc., FICCT

Dean & Chancellor (Asia Pacific)

[deanind@computerresearch.org](mailto:deanind@computerresearch.org)

### **Suyash Dixit**

(B.E., Computer Science Engineering), FICCTT

President, Web Administration and

Development , CEO at IOSRD

COO at GAOR & OSS

### **Er. Suyog Dixit**

(M. Tech), BE (HONS. in CSE), FICCT

SAP Certified Consultant

CEO at IOSRD, GAOR & OSS

Technical Dean, Global Journals Inc. (US)

Website: [www.suyogdixit.com](http://www.suyogdixit.com)

Email: [suyog@suyogdixit.com](mailto:suyog@suyogdixit.com)

### **Pritesh Rajvaidya**

(MS) Computer Science Department

California State University

BE (Computer Science), FICCT

Technical Dean, USA

Email: [pritesht@computerresearch.org](mailto:pritesht@computerresearch.org)

### **Luis Galárraga**

J!Research Project Leader

Saarbrücken, Germany



## CONTENTS OF THE ISSUE

---

- i. Copyright Notice
  - ii. Editorial Board Members
  - iii. Chief Author and Dean
  - iv. Contents of the Issue
- 
1. Knowledge, Attitude and Practice on Emergency Contraception and Associated Factors among Female Students of Debre-Markos university, Debre-Markos town, East Gojam Zone, North west Ethiopia, 2013. ***1-8***
  2. Effect Normal Pregnancy and Duration on Liver Enzymes Tests. ***9-12***
  3. Influence of Clinic-Based Health Education on Pregnant Women's Knowledge and Attitudes in Relation to Pregnancy Management: Evidence from Ogun State, Nigeria. ***13-20***
  4. Integration of Long Acting and Permanent Contraceptive Methods with an ART Program Was Poor in Tigray Region, Ethiopia. ***21-29***
- 
- v. Fellows and Auxiliary Memberships
  - vi. Process of Submission of Research Paper
  - vii. Preferred Author Guidelines
  - viii. Index



GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS  
Volume 15 Issue 1 Version 1.0 Year 2015  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

# Knowledge, Attitude and Practice on Emergency Contraception and Associated Factors among Female Students of Debre-Markos University, Debre-Markos Town, East Gojam Zone, North West Ethiopia, 2013

By Marta Tessema & Hinsermu Bayu

*Mekelle University College Of Health Sciences, Ethiopia*

**Abstract-** In Ethiopia more than 60% of the pregnancies in adolescents are unwanted and most of these pregnancies end up with unsafe abortion which is the most common cause of maternal morbidity and mortality. Unwanted pregnancy can occur due to missed pills, forced sex, method failures, and condom breakage. To prevent such problem, emergency Contraceptives (EC) is the only method that can be used after unprotected sex.

**Objective:** The aim of the study is to assess the knowledge, attitude and practice of emergency contraception and associated factors among female regular undergraduate students of Debre-markos University.

*GJMR-E Classification : NLMC Code: WJ 140*



*Strictly as per the compliance and regulations of:*



# Knowledge, Attitude and Practice on Emergency Contraception and Associated Factors among Female Students of Debre-Markos University, Debre-Markos Town, East Gojam Zone, North West Ethiopia, 2013

Marta Tessema<sup>α</sup> & Hinsermu Bayu<sup>ο</sup>

**Abstract-** In Ethiopia more than 60% of the pregnancies in adolescents are unwanted and most of these pregnancies end up with unsafe abortion which is the most common cause of maternal morbidity and mortality. Unwanted pregnancy can occur due to missed pills, forced sex, method failures, and condom breakage. To prevent such problem, emergency Contraceptives (EC) is the only method that can be used after unprotected sex.

**Objective:** The aim of the study is to assess the knowledge, attitude and practice of emergency contraception and associated factors among female regular undergraduate students of Debre-markos University.

**Method:** A cross-sectional study design was employed from March 26 to 30/2013, on 624 regular undergraduate female students of Debre-markos University. Self administered questionnaires were used for data collection and analyzed using logistic regression. OR with 95% CI was taken as statistically significant association.

**Results:** A total of 599 voluntary students were participated in the study with overall response rate of 96%. 374(62.5%) of respondents had good knowledge and 322(53.8%) had favorable attitude towards EC. Only 68(11.4%) used the method. 158 (26.4%) of students were sexually active, 32(78%) had history of unwanted pregnancy of this 30 (93.7%) had history of induced abortions. Residence (AOR: 2.3, 95% CI: 1.3, 4.3), Year of study (AOR: 2.1, 95% CI: 1.1, 4.1), Mather's educational status of the student (AOR: 4.4, 95% CI: 1.1, 17.8) and ever use of regular contraceptive (AOR: 3.2, 95% CI: 1.0, 9.6), showed significant association with knowledge of EC. Age (AOR: 9.0, 95% CI: 1.4, 20.0), Marital status (AOR: 6.5, 95% CI: 2.5, 17.3), father's educational status of the students (AOR: 4.5, 95% CI: 1.1, 17.6) and knowledgeable on EC (AOR: 23.97, 95%CI: 3.19, 35.83) showed significant association with practice of Ec.

**Conclusion:** Knowledge and attitude of EC among female regular undergraduate students in this University was good , but utilization of EC was very low There was misinformation among these students such as correct indication of EC.

**Author α:** MT; Department of Midwifery, College of Health Sciences, Jima University, Ethiopia.

**Author ο:** HB; Department of Midwifery, College of Health Sciences, Mekelle University, Ethiopia. e-mail: HB: henybayu1@gmail.com

## I. INTRODUCTION

One fourth of world population is between age 10 and 24. One third of the total population of sub Saharan Africa is aged between 10-24 years (1). Ethiopia has a predominantly young population that makes up to 30% of the total population (2). Young people today marry later, and more start sex before marriage. Thus they face more risk of unwanted or unintended pregnancy results in unsafe abortion (3).

Behavioral factors that frequently put adolescents at greater risk of unintended pregnancy include experimentation and risk taking, as well as limited ability to plan ahead. The nature of relationships and frequency of intercourse are often different during adolescent years than later in life. Shorter relationships, sometimes with long intervals in between, are not uncommon, and sex may be infrequent and sporadic. This may lead to reluctance to adopt a regular family planning method or make it harder to plan to use one (4). For many youth, sex is largely unplanned and sporadic yet few young people know about the option of emergency contraception, contraceptives after unprotected intercourse (5).

World health organization (WHO) estimates that every year, nearly 5.5 million African women have an unsafe abortion, as many as 36,000 of these women die from the procedure, while millions more experience short- or long term illness and disability. Moreover, 59 % of all unsafe abortions in Africa are among young women aged 15-24 years (6).

Despite the technological advancements in modern contraception methods, unintended pregnancy is still a big problem in Ethiopia. More than 60% of the pregnancies in adolescents are unintended; ones which result from contraception non-use, contraception method failure and rape. The incidence of unintended pregnancy and unsafe abortion, particularly among adolescents, remains high. In Ethiopia, abortion emanating from unintended pregnancy is one of the

most significant causes of maternal morbidity and mortality; it is also a major medical and public health problem (7).

EC uses the same hormones that regular oral hormonal contraceptives contain, but EC is administered in higher doses and within a defined period of time.

EC is a method that is safe for women's health there are no known medical conditions under which ECPs should not be used. From a medical perspective, EC does not interrupt pregnancy; therefore it does not induce abortion (8).

In 2001, the Family Guidance Association of Ethiopia (FGAE) in collaboration with the Population Council initiated for the time a pilot project to introduce EC in selected youth center clinics in the country. In this project EC was provided in a repackaged attractive brand for adolescents and youth by cutting the regular contraceptive pills though the services were limited in scope and coverage. Emergency contraception was officially introduced in Ethiopia by the Ministry of Health in 2005 with the aim of improving sexual and reproductive health (SRH). The method, however, remained poorly known and unavailable (9).

Studies showed that there was a gap on knowledge, attitude and practice of emergency Contraception in the studies conducted in different countries. Different studies conducted in Ethiopia indicated that awareness of EC is less than 50% and utilization is less than 10% (10, 11, 12, and 13). Thus, this thesis was tried to assess knowledge, attitude and practice of emergency contraception and its associated factors among female students of Debre-Markos University. The information attained from this study could help to improve reproductive health services for young people and to apply appropriate interventions based on the findings.

## II. METHODS

Institution based cross-sectional study was employed at Debre-Markos University from March 26 to 30/2013. Debre-Markos University is found in Debre-Markos town, East Gojam zone of Amhara regional state and is located 300 km North West of Addis Ababa. Debre-Markos University began its operation in 1993. It has 33 departments under seven colleges these are College of Agriculture, College of Business and Economics (CBE), College of Engineering (CE), College of Law and Governance (CLG), College of Language and Social Science (CLSS), College of Natural and Computational science (CNCS) and College of Health Sciences (CHS). According to the statistics obtained from student service center, in Debre-Markos University in the seven colleges, the total number of regular undergraduate students enrolled at the time of survey were about 8094 and 2176 (26.9%) of them were

females. The university has one clinic in campus which provides health services to the university students and there is one referral hospital in the town owned by the town which provides service to the population of Debre-Markos and the university students.

The study population was comprised of all female regular undergraduate students of, Debre-Markos University attending their education during time of data collection. A two-stage sampling technique was used; where first 18 departments were selected from the total of 33 departments using lottery method,. The number of study participants from the selected departments was determined using probability proportionate-to-population size allocation methods depending on their educational year. The sample size was determined by using a single population proportion formula considering the following assumptions: proportion of students with positive attitude towards Emergency contraception to be 53 % (  $p = 0.53$  ), 5% level of significance (  $\alpha = 0.05$  ) and 2 design effect. The final sample size was adjusted for none response rate of 10% and the total samples arrived at was 624.

Two diploma nurses and Eight 12 th grade completed female student were assigned and trained for supervisor and data collection respectively. Data analysis was performed using SPSS version 16.0 software package. Variables found significant (  $p$ -value  $\leq 0.2$  ) on bivariate analysis was included in multiple logistic regression analysis. The results were presented in the form of tables, figures and text using frequency and summary statistics such as mean, standard deviation and percentage. The degree of association between the independent and dependent variables was analyzed using odds ratio with 95% confidence interval.

Ethical clearance was obtained from Midwifery department, College of medicine and Health sciences, University of Gondar review board. Both written and verbal permissions were secured to undertake the study from Educational Office of Debre-Markos University

## III. RESULT

### a) Socio-demographic characteristics of respondents

A total of six hundred twenty four (624) female students were included in which 599 female students were willing to participate in the study with overall response rate of 96%. Majority of the respondents 438(73.1%) belongs to age group of 20-24years. The mean age was 20.29years ( $\pm 1.4SD$ ). Majority 540(90.1%) were not currently married, 527(87.9%) were Orthodox Christian followers, 477(79.6%) of students were Amhara in ethnicity, 408(68.1%) were originally from urban area and 583(97.3%) students were studying undergraduate 3rd year and below. Regarding Parent Educational Status 495(82.6%) of the respondents' fathers were alive and of them 29.9% were do not read and write. Similarly, 546 (91.1%) of the respondents'

mother were alive and of those 238 (43.6%) were do not read and writes. (Table1).

**Table 1:** Socio-demographic characteristics and academic distribution of female regular undergraduate Debre\_Markos University students, March 2013

Characteristics	Number(n=599)	Percent
<b>Age</b>		
15-19	151	25.2
20-24	438	73.1
25+	10	1.7
<b>Marital status</b>		
Single	540	90.1
Married	50	8.4
Divorced	9	1.5
<b>Religion</b>		
Orthodox	527	87.9
Protestant	38	6.4
Muslim	30	5.0
Others	4	.7
<b>Residence</b>		
Urban	408	68.1
Rural	191	31.9
<b>Ethnicity</b>		
Amhara	477	79.6
Oromo	50	8.4
Tigre	40	6.7
Others	32	5.3
<b>Year of study</b>		
First year	285	47.6
Second year	169	28.2
Third year	129	21.5
Fourth year	16	2.7
<b>Father educational status</b>		
Don't read and write	148	29.9
Elementary	197	39.8
Secondary	72	14.5
College and above	78	15.8
<b>Mother educational status</b>		
Don't read and write	238	43.6
Elementary	191	35
Secondary	73	13.4
College and above	44	8

*Ethnicity (Others;- Agew ,Guragea) Religion (others;- Catholic,Joba*

#### b) Sexual and Reproductive Characteristics of Respondents

One hundred fifty eight (26.4%) of the respondents were sexually active, from those 74%, started sex between the age 15 and 19 years and the mean age at first sex was 18.7 years. From those of sexually active students (41) 26% students had an experience of pregnancy. Majority, 32(78.0%) of the pregnancies were unwanted. Among students who

faced unwanted pregnancy 30 (93.7%) of pregnancies were ended with induced abortions. From those who have induced abortion about 13.3% were induced by self infliction.

**Table 2 :** Sexual and Reproductive History of female regular undergraduate Debre-Markos University students, March 2013

Variables	Number	Percent
<b>Sexually active(n=599)</b>		
Yes	158	26.4
No	441	73.6
<b>Age at first sex (n=158)</b>		
15-19	117	74
20+	41	26
<b>Ever been pregnant (n=158)</b>		
Yes	41	26
No	117	74
<b>Age at first pregnancy(n=41)</b>		
15-19	22	53.6
20+	19	46.4
<b>Unwanted pregnancy (n=41)</b>		
Yes	32	78.0
No	9	22.0
<b>Induced abortion(32)</b>		
Yes	30	93.7
No	2	6.3
<b>Place of abortion (n=30)</b>		
Health institution	17	56.7
Private clinic	9	30
Self infliction	4	13.3

#### c) Contraceptive history of respondents

Five hundred fifty (91.8%) of respondents have heard about regular modern contraceptive methods. Oral contraceptive pills were the most commonly known method 86.3% followed by injectables (81.4%). From those who heard about regular modern contraceptive methods 132 (24%) of the respondents used regular contraceptive methods and of these the most commonly used methods was pills 74 (56%) followed by Injectables (42.4%) (Table 3).

**Table 3 :** Contraceptive history of Female regular Undergraduate Debre-Markos University students, March 2013

Variables	Number	Percent
<b>Ever heard about regular modern contraceptive (n=599)</b>		
Yes	550	91.9
No	49	8.2
<b>Types of regular modern contraceptive ever heard</b>		
Pills	475	86.3
Injectable	448	81.4



Condom	396	72
Implant	336	61
IUCD	303	55
<b>Ever used regular modern contraceptive (n=550)</b>		
Yes	132	24
No	418	76
<b>Types of regular contraceptive ever used</b>		
Pills	74	56.0
Injectable	56	42.4
Condom	27	20.4
Implant	10	7.5
IUCD	4	3.0

d) Knowledge of EC among female regular undergraduate Debre-Markos University Students.

An overall 374 (62.5%) had good knowledge while 225(37.5%) had poor knowledge about the method. When asked about specific types of emergency contraceptives, among those who have ever heard about EC, 419(98.3%) and 101 (23.7%) mentioned pills and IUCDs respectively. Of those who have heard about pills as an EC method, 262 (61.5%) could tell the correct timing of administration of pills, while, of the respondents who have heard about IUCDs, only 38 (8.9%) could tell the correct timing of administration of the IUCD. When asked about the indication of EC, majority of them mentioned the correct indication, 321 (75.4%) after unprotected sexual intercourse and 229(53.8%) when slippage of condom. And others gave different incorrect responses like after unwanted pregnancy 83(19.5%). Two hundred sixty eight (62.9%) respondents stated that they could get EC from government hospitals/health centers, 203 (47.6%) from pharmacy.

**Table 4 :** Knowledge of emergency contraceptives among female regular undergraduate Debre-Markos University students; March, 2013

Variables	Number	Percent
<b>Ever heard about EC(599)</b>		
Yes	426	71.1
No	173	28.9
<b>Method reported as EC</b>		
Pills	419	98.3
IUCD	101	23.7
Injectable	90	21.1
Implant	44	10.3
<b>Source of EC</b>		
Gov't health institution	268	62.9
Pharmacy	203	47.6
Private clinic	75	17.6
Shop	33	7.7
<b>Indication EC can be used</b>		
-After unprotected sexual intercourse	321	75.4
-When slippage/breakage of condom happens	229	53.8

-When unwanted pregnancy occurs	83	19.5
-As regular modern contraceptive	21	4.9
<b>Time frame EC can work ECP:-</b>		
Within 72 hours	262	61.5
Within 24 hours	67	15.7
Within 1 wks	1	.2
Within 48 hours	24	5.6
I don't know	72	17
<b>IUCD:-</b>		
Within 7 days	38	8.9
5 to 10 days	8	1.9
I don't know	380	89.2
<b>Knowledge of EC</b>		
Adequate knowledge	374	62.5
Inadequate knowledge	225	37.5

e) *Attitude and Practice of EC among female Debre-Markos University Students.*

Three hundred twenty two (53.8%) of the students have positive attitude towards emergency contraceptives. some of the positive attitudes reported by the respondents were: 502 (83.7%) respondent support availing EC for all females, 494(82.5%) support the idea of EC safe for its users, 532(88.9%) said I would use EC if I have unsafe sex and 543(90.6%) support use of EC after unsafe sex by all female.

The prevalence of ever use of emergency contraception among female students was only 68(11.4%). Emergency contraceptive pills were the commonest EC method used which accounted for 65(95.6%) and IUCD only 3(4.4%) (Table 5).

f) *Factors associated with Knowledge of EC*

Among variable showed association on bivariate logistic regression analysis , only Residence, Year of study, Mather's educational status of the student and ever use of regular contraceptive showed significant association with knowledge of EC in multivariate logistic regression analysis.

Female students who came from urban area were 2.34 times more likely to have knowledge of EC when compared to those who came's from rural area (ARO: 2.34, 95% CI: 1.27, 4.29). Female students who are third year and above were 2.13 times more likely to have knowledge of EC when compared to first year female students (AOR: 2.13, 95% CI: 1.08, 4.19).

Female student's whose mother's educational status college and above were 4.37 times more likely to have knowledge of EC when compared to who their mother's do not read and write (AOR: 4.37, 95%CI: 1.07, 17.84).

Female students who ever used modern contraceptive were 3.17 times more likely to have adequate knowledge of EC when compared to those who were not ever used (AOR:3.17, 95% CI: 1.04, 9.55)(Table 6).



**Table 6:** Factors associated with knowledge of EC among female undergraduate Debre-Markos University students, March 2013

characteristics	Knowledge of EC		COR(95%CI)	AOR(95%CI)
	(Yes)	(no)		
<b>Residence</b>				
Urban	293	115	1.00	1.00
Rural	81	110	3.41(2.208,5.28)	<b>2.34(1.272,4.290)</b>
<b>Year of study</b>				
First year	155	130	1.00	1.00
Second year	111	58	1.61(.958,2.603)	1.58(.910,4.290)
Third year	108	37	2.33(1.34,4.060)	<b>2.13(1.084,4.195)</b>
<b>Mather's educational status</b>				
Do not read and write	124	114	1.00	1.00
Elementary school	93	97	1.87(.874,4.037)	1.85(.689,4.984)
Secondary school	55	19	2.39(.958,5.998)	3.06(.921,10.221)
College and above	35	9	3.36(1.105,10.2)	<b>4.37(1.070,17.87)</b>
<b>Father's educational status</b>				
Do not read and write	77	71	1.00	
Elementary school	124	73	1.14(.631,2.070)	
Secondary school	37	35	1.51(.697,3.274)	
College and above	43	35	2.27(1.0221,5.0)	
<b>Ever had sexual inter.</b>				
Yes	117	41	2.01(1.233,3.27)	
No	257	184	1.00	
<b>Ever had p<sub>x</sub></b>				
Yes	30	11	1.00	
No	87	30	2.10(1.204,3.66)	
<b>Ever used regular contraceptive</b>				
Yes	108	24	3.44(1.92,6.188)	<b>3.16(1.049,9.557)</b>
No	238	180	1.00	1.00

**g) Factor associated with practice of EC**

Among Factors associated with practice of EC during Bi-variate analysis ,only Age, Marital status, father's educational status of the respondents and having adequate Knowledge of EC showed significant association with student's practice of EC in Multivariate analysis.

Students age 25 and above were 9 times more likely practice EC than who are age between 15-19years old(AOR :9.00,95%CI:1.448, 20.040).

Students who are married were 7 times more likely practice EC than not married (AOR: 6.51, 95% CI: 2.455, 17.279).

Respondents whose father's educational status secondary school and above were 4 times more likely practice EC when compared to who their father's do not read and write (AOR:4.493, 95% CI: 1.146, 17.619).

Students who has adequate knowledge of EC were 24 times more likely practice EC than who has inadequate knowledge of EC (AOR: 23.97, 95%CI: 3.19, 35.83).(Table 7).

**Table 7 :** Factors associated with practice of EC among female regular undergraduate Debre-Markos University students March 2013

Characteristics	Practice of EC		COR(95%CI)	AOR(95%CI)
	n(Yes)	n(no)		
<b>Age in groups</b>				
15-19	10	141	1.00	1.00
20-24	53	385	1.87(.80,4.36)	1.31(.48,3.61)
25+	5	5	10.17(1.89,17.73)	<b>9.00(1.44,20.04)</b>
<b>Marital status</b>				
Single	47	493	1.00	1.00
Married	21	38	5.67(2.57,12.52)	<b>6.51(2.45,17.27)</b>
<b>Residence</b>				
Urban	59	349	3.47(1.43,8.42)	
Rural	9	182	1.00	
<b>Year of study</b>				
First year	25	260	1.00	
Second year	19	150	1.33(.62,2.85)	
Third year and above	24	121	2.33(1.11,4.87)	

#### Father's educational status

Do not read and Wright	9	139	1.00	1.00
Elementary school	25	172	2.41(.78,7.48)	2.37(.67,8.42)
Secondary school and above	28	122	5.35(1.61,17.78)	4.49(1.14,17.61)

#### Mather's educational status

Do not read and Wright	15	223	1.00
Elementary school	32	158	3.10(1.41,6.82)
Secondary school and above	16	102	3.31(1.26,8.69)

#### Ever had unwanted pregnancy

Yes	17	15	1.00
No	5	4	13.39(5.35,33.47)

#### Ever had induced abortion

Yes	16	12	1.00
No	0	2	13.68(5.58,34.80)

#### Knowledge of EC

Adequate knowledge	65	309	15.78(3.76,20.14)	23.97(3.19,35.83)
Inadequate knowledge	3	222	1.00	1.00

## IV. DISCUSSION

### a) Knowledge, attitude and Practice among female Debre-Markos University Students.

Although emergency contraception is not recommended as a regular family planning method it is a useful method after unprotected sexual intercourse to reduce the chance of unwanted pregnancies. Emergency contraception is most useful when there is a failure of barrier methods such as slippage and breakage of condoms, or when sexual intercourse was unplanned (8).

The overall prevalence of awareness among the study participant was 426(71.1%). It's greater than studies conducted in Adama University (46.8%), Jimma University (41.9%) and Kampala University, Uganda (45.1%) (11, 12 and 24). This difference might be due to difference in study setting, time variation related with currently accelerated RH promotion activities and youth friendly programs in some health institutions of the study area.

In this study the most common sources of information for EC were health institution/personnel's which is in agreement with studies from Bahirdar University and Nigeria, in tertiary schools (25, and 22). But different from Jimma University which is the most common source of information were peers/friends and for Addis Ababa and UUC students, mass media (12, 10). This difference may be due to the method they use for education of EC.

The efficacy of EC is dependent on how soon after the unprotected intercourse treatment is administered. If women are to benefit from EC, they need to have prior knowledge and easy access to the method since it has a time limit. Two hundred sixty two (61.5%) of them had identified the correct timing of administration of the pills after unexpected sexual contact with in 72 hrs, which is higher than reports from jimma University(30%) and Addis Ababa and Unity University college (26.2%)(12, 10). The possible reason may be linked to the source of information; health

personnel/institutions that have good information on the subject than peers/friends and time difference may also be one reason.

In this study, 62.5% of the study participants had adequate knowledge about EC when overall summary index for knowledge is computed which is nearly similar to the studies conducted in Cameroon and USA (62.7% and 64.7% respectively) (23 and 16). But higher than that of Adama University (27.2%), Jimma University (50%) and Addis Ababa and UUC (43.5%) (11, 12 and 10). The possible reason may be due to time variation related with the currently accelerated RH promotion activities in the country and youth friendly programs in some health institutions of the study area.

Most of the respondents 53.8% had positive attitude towards EC. It is comparable to studies from Addis Ababa and Unity University College (53%)(10). But lower than the studies on Haramaya University (76.5%)(13). This difference might be due to difference in study setting and socio-demographic variation of study participants. Majority of participants (88.9%) had agreed that I would use EC if I have unsafe sex and (90.6%) support use of EC after unsafe sex by all female which is higher than the results of Jimma University (71.2%)(12). Eighty-three point seven percent of students believed that emergency contraceptives are important and they should be available for all females.

The ever use of EC in this study was 11.4% which is comparable to a study conducted among university students in Cameroon(12.7%) and Kampala, Uganda (14.5%)(23,24). Its higher than reports from Jimma University (6.8%), Addis Ababa and Unity University college (4.7%) and Adama University (4.7%)(12,10 and 11). The possible reason for such higher prevalence of EC use in this study could be also time variation, related with the currently accelerated RHs promotion activities in the country and increasing availability of EC in many Gev't and non Gev'n't health institutions.

Findings from this study showed that the prevalence of regular contraceptive use was

132(23.5%). The most common methods used were Pills (56.2%) followed by (19%) injectables. As compared to regular contraceptive methods emergency contraceptive use was low. One important reason could be the lack of awareness of the place where it is available, and also indicates the fact that there is low promotion and availability of methods in most health institutions and providers.

#### b) *Factors associated with knowledge and practice of EC*

In this study students who come from urban area were 2 times more likely to have knowledge of EC than who comes from rural area (AOR : 2.33, 95% CI: 1.27, 4.29). In a situation where use of any modern family planning is low (23%) in most areas of the rural Ethiopia, it is likely that female students with rural background know little about such rarely available contraception. A study conducted on Finnish adolescents also documented that girls from rural villages or sparsely populated areas were less often aware of EC than those from city areas. Similarly, the result is consistent with the study conducted at Haramaya University (28, 29 & 13).

Moreover, as the year of study in campus increases, there appears to be an increase on emergency contraceptive knowledge. Respondents who are third year and above were 2 times more likely to have knowledge of EC than first year students (AOR: 2.13, 95% CI: 1.08, 4.19). The reason of this result may be as the year of study in campus increases students are more exposed to RH education in Campus and difference in educational level. The result is consistent with similar studies conducted in Haramaya and Adama University (13 and 11).

Student's whose mother's educational status college and above were 4 times more likely to have knowledge of EC than who had mother's do not read and Wright (AOR: 4.37, 95%CI: 1.07, 17.84). The reason may be most of the time educated mother may discuss sexual issues with their daughter more openly about matters related to health including EC. Result is consistent with similar studies conducted in Kampala University, Uganda and Haramaya University (24, 13).

Knowledge of EC was 3 times higher among the respondents who had ever used regular contraceptives than those who had no experience of it (AOR: 3.16, 95% CI: 1.04, 9.55). Those respondents who already use some method of regular contraceptive are more likely to know the importance of EC. Because when giving service of family planning, health personnel gives information to clients about different type of contraception, where EC is a part, it is likely that using some method of contraception may help access knowledge on others. Result is consistent with similar studies conducted in Haramaya University (13).

In this study, students age 25 and above were 9 times more likely practice EC than who are age between 15-19years old (AOR: 9.00,95%CI:1.44,20.04) its consistent study done in Adama University and Addis Ababa and Unity University College(11,10).The reason may be Younger girls may have less information about the availability and indication of EC due to the fact that difference in educational level and life experience.

Married respondents were 7 times more likely utilize EC than those never married respondents (AOR: 6.51,95% CI:2.45,17.27).It's similar to the study conducted in Adama University and Addis Ababa and Unity University College (11,10). The possible reason may be that the service sites may not be convenient to non married clients.

Respondents whose father's educational status secondary school and above were 4 times more likely practice EC than who has illiterate fathers (AOR: 4.49, 95% CI: 1.14, 17.61). Discussion of RH issue in the house hold and economic difference could be the possible explanation for this difference.

In this study, female students who had adequate knowledge about EC were found 23 times more likely practice EC than their counterparts (AOR: 23.97, 95%CI: 3.19, 35.83). The possible explanation may be as students become exposed to information regarding emergency contraceptive, their knowledge become improved. As a result, they practice EC if they face risk of unprotected sexual intercourse.

## V. CONCLUSION

Knowledge and Attitude towards EC among the regular under graduate female students in this University was good. But there was misinformation among these students such as correct indication of EC.

Residence, Year of study, Mather's educational status of the student and ever use of regular contraceptive are determinant factors for knowledge of EC.

Utilization of emergency contraceptive was very low and determinant factors for practice of EC are Age, Marital status, father's educational status of the respondents and having adequate knowledge of EC.

## REFERENCE RÉFÉRENCES REFERENCIAS

1. World Health Organization. World health report, reducing risks and promoting healthy life, 2nd edition. Geneva, Switzerland: WHO, 2000
2. Federal Democratic Republic of Ethiopia Ministry of Health. National Adolescent and Youth Reproductive Health Strategy. Addis Ababa, Ethiopia: MOH, 2006

3. Robert A,et al. Future methods in Contraceptive technology.Irvington: New York, 1994, 16th revised edition.
4. Parker.C. "Adolescents and Emergency Contraceptive Pills in Developing Countries.2005, 8(4):153200.Avaiblebleat"http://ec.princeton.edu/references/ecpsadolescents.pdf. Date Accessed December 2011
5. Clark .S, Bruce. J and Dude A. Protecting Young Women from HIV/AIDS: The Case against Child and Adolescent Marriage. International Family Planning Perspectives New York, U.S.A.2006, 32(2):23-30.
6. World Health Organization. Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2003, 5th edition. Geneva, Switzerland: WHO, 2007.
7. Tadesse E, Yoseph S, Gossa A. Illegal abortion in five hospitals in Addis Ababa. Ethiop Med J. 1994, 32 (4):83-84.
8. Elizabeth Raymond,et al. Emergency Contraceptive Pills: Medical and Service Delivery Guidelines. The International Consortium for Emergency Contraception Washington, DC USA, 2004, Second Edition.
9. Ethiopian Society of Obstetricians and Gynecologists. Ministry of Health,ECafrique. 2004. "Emergency contraception: A training curriculum for mid-level health workers in Ethiopia"AddisAbaba.<http://www.esog.org.et/Emergency%20Contraception%20Guideline.htm>. Date accessed January 20, 2011.
10. Tamire W, Enqueselassie F . Knowledge, attitude, and practice on emergency contraceptives among female university students in Addis Ababa, Ethiopia. Ethiop.J.Health Dev. 2007,21(2):111-116.
11. Tilahun D, Assefa T, Bellachew T.Knowledge ,attitude and practice of emergency contraceptive among Adama Universty female student. Ethiopia Journal of health sciences.2010,20(3):195-201.
12. Tajure N , B.Pharm. Knowledge, attitude and practice of emergency contraception among graduating female students of Jimma University, southwest Ethiopia. Ethiop J Health Sci.2010;20(2):91-97.
13. Desta B and Regassa N. On Emergency Contraception among Female Students of Haramaya University, Ethiopia: Surveying the Level of Knowledge and Attitude. International Research Journals. 2011;2(4):1106-1117.
14. International Consortium for Emergency Contraception. Emergency Contraceptive Pills: Medical and Service Deliver y Guidelines, 2003, Second Edition.
15. Sharif M, Ricardo V, John T, Victoria R: Introducing and Mainstreaming the Provision of Emergency Contraceptive Pills in Developing Countries. Washington, DC, 2010: 1-25. Available online [www.popcouncil.org](http://www.popcouncil.org) Date Accessed November 12, 2013
16. Allison M., Melanie A. and Andrew M. changes in young women's awareness, attitudes, and perceived barriers to using emergency contraception USA.2005.
17. Akani CI, Enyindah CE, and Babatun S. Emergency Contraception Knowledge and Perception of Female Undergraduates in the Niger Delta of Nigeria. Ghana Med J. 2008, 42(2): 68–70.
18. Laura M. College student knowledge and attitudes toward emergency contraception. USA, 2010, 83 (2011) :68–73
19. Anobia IC and Ikpeme EE. Prevalence of sexual activity and outcome among female secondary school students in Port Harcourt,Nigeria. African Journal of Reproductive Health. 2001, 5(2):63-67.
20. Ramesh A . Factors affecting awareness of emergency contraception among college students in Kathmandu. Nepal BMC Women's Health. 2009, 9(27):1-5.
21. Fagan E, Boussios H, Moore R, Galvin S. Knowledge, Attitudes, and Use of Emergency Contraception among Rural Western North Carolina Women, USA. Southern Medical Journal. 2006, 99(8): 806-810.
22. Obiechina Nworah J. A. ,Mbamara Sunday, U. Ugboaja Joseph O., Ogele Monday O. and Akabuike Josephat C. Knowledge, attitude and practice of emergency contraception among students in tertiary schools in Anambra State Southeast Nigeria. International Journal of Medicine and Medical Sciences .2010, 2(1):001-004.



GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS  
Volume 15 Issue 1 Version 1.0 Year 2015  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

## Effect Normal Pregnancy and Duration on Liver Enzymes Tests

By Dunia M. R. M.Sc

*University of Kufa, Iraq*

**Abstract-** The current study was designed to investigate the changes of liver enzymes during normal pregnancy. To achieve the intended aim, 185 pregnant women of aged 20 – 37 years (60 women in first trimester, 65 women in second trimester and 60 women in third trimester of pregnancy), also the study contain 70 women (control individuals) in age near to age of pregnant women. The levels of Alanine amino transferase (ALT), Aspartate amino transferase (AST) and Alkaline Phosphatase (ALP) were determined by enzymatic methods. The results indicated a significant ( $P < 0.05$ ) increase of ALT and significant ( $P < 0.01$ ) increase of AST activities in pregnant women in third trimester when compared with those of the control group, while ALP indicated higher significantly ( $P < 0.0005$ ) in third and second trimester when compared with control group.

**Keywords:** *alanine amino transferase (ALT), aspartate transferase (AST) and alkaline phosphatase (ALP).*

**GJMR-E Classification :** *NLMC Code: WJ 190*



*Strictly as per the compliance and regulations of:*





# Effect Normal Pregnancy and Duration on Liver Enzymes Tests

Dunia M. R. M.Sc

**Abstract-** The current study was designed to investigate the changes of liver enzymes during normal pregnancy. To achieve the intended aim, 185 pregnant women of aged 20 – 37 years (60 women in first trimester, 65 women in second trimester and 60 women in third trimester of pregnancy), also the study contain 70 women (control individuals) in age near to age of pregnant women. The levels of Alanine amino transferase (ALT), Aspartate amino transferase (AST) and Alkaline Phosphatase (ALP) were determined by enzymatic methods. The results indicated a significant ( $P < 0.05$ ) increase of ALT and significant ( $P < 0.01$ ) increase of AST activities in pregnant women in third trimester when compared with those of the control group, while ALP indicated higher significantly ( $P < 0.0005$ ) in third and second trimester when compared with control group. The liner regression analysis demonstrated significant ( $r = 0.85$ ,  $P < 0.0005$ ) positive correlation for ALT levels when compared with AST and significant positive correlation for ALT with ALP ( $r = 0.89$ ,  $P < 0.0005$ ) and AST levels with ALP levels ( $r = 0.9$ ,  $P < 0.0005$ ). I am found from my study, the elevated liver enzymes during pregnancy as part of physiological changes.

**Keywords :** alanine amino transferase (ALT), aspartate transferase (AST) and Ikaline phosphatase (ALP).

## I. INTRODUCTION

The liver in the body is the most important organ after the heart. Performing many important functions including metabolism, detoxification and formation of important compounds including blood clotting factors and albumin (16). The pregnant women experiences physiological changes to support fetal growth and development (1,2,3). The levels of estrogens (estradiol) and progesterone increase progressively during pregnancy (4,5). These sex hormones have effects on hepatic metabolic, synthesis, and excretory functions (6,7,8). The biliary excretion of bromsulophthalein decreases during late pregnancy and the clearance of some compounds that are secreted into bile may therefore be impaired (9,10). The phenomenon of hemodilution secondary to the increase in plasma volume decreases the serum protein concentrations. Consequently, certain changes in values of liver function tests occur during normal pregnancy (11,12,13). Pregnancy does not change liver size but in the third trimester the enlarging uterus displaces the liver superiorly and posteriorly, therefore a palpable liver

disease (14,15). Liver cell injury or necrosis is measured by determent Glutamate Oxaloacetate Transaminase (AST) and Glutamate Pyruvate Transaminase (ALT) levels (17). While liver synthetic function is quantified by determining albumin level and prothrombin time. Biliary obstruction are elevated by measuring alkaline phosphatase (18). The most commonly used indicators of liver damage (hepatocellular) are the alanine aminotransferase (ALT) and aspartate aminotransferase (AST), formerly referred to as SGPT and SGOT (19). These are enzymes normally found in liver cells that leak out of these cells and make their way to the blood when liver cells are injured. The ALT is felt to be a more specific indicator of liver inflammation as AST is also found in other organs such as the heart and skeletal muscle, the level of the ALT and AST may be used as a general measure of the degree of liver inflammation or damage (19,20). Measurement of serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) activities levels is the most useful tests for the routine diagnosis of liver diseases (18,19). While serum Alkaline phosphatase (ALP) activity level increase in late pregnancy, mainly during the third trimester.

## II. MATERIALS AND METHODS

Four groups of individuals were included in this study. Group 1 contained 60 pregnant women in first trimester of pregnancy (1 – 3 months). Group 2 consisted of 65 pregnant women in second trimester of pregnancy (4 – 6 months). Group 3 comprised 60 pregnant women of pregnancy (7 – 9 months) and Group 4 contained 70 non pregnant women as control in this study.

Disposable syringes and needles were used for blood collection. Venous blood samples, about 5ml were collected from pregnant and non pregnant women (control group). The blood collected in a polyethylene tubes without anticoagulant, allowed to clot at room temperature for 15 min, blood samples were centrifuged at 3000Xg for 15 min, sera were removed and stored at -17 C until analysis. Labortary data were obtained by using available kits; serum ALT, serum AST (Randox Kit) and serum ALP (Kind and King). The results were expressed as mean  $\pm$  SD students t test was used for comparison of different groups with controls.

**Author:** Dept. of Bio chemistry, college of medicine, university of Kufa, IRAQ. e-mail: Duniam.mohammedali@uokufa.edu.iq



### III. RESULTS

a) Serum ALT, AST and ALP in normal pregnancy during the three times of pregnancy and control group: The characteristics of the study groups are presented in table1 which consists of data of both pregnant women and control group not receiving oral contraception. The results were analyzed using students- test. There was significant ( $P<0.05$ ) increase in ALT activity level during the third trimester ( $9.5\pm3.3$ ) when compared with those of the control group ( $7.0\pm2.5$ ), while there was no significant difference in ALT during the

second ( $7.8\pm2.8$ ) and first ( $7.1\pm2.8$ ) trimester, also the serum AST activity level found to increase significantly ( $P<0.01$ ) during the third trimester ( $38.9\pm4.5$ ) when compared with those of control group ( $14.5\pm2.5$ ) and no significant difference in AST in second ( $23.7\pm6.1$ ) and first ( $18.9\pm3.3$ ) trimester. On the other hand, serum ALP activity level show higher significant ( $P<0.0005$ ) during the third ( $379.0\pm70.2$ ) and second ( $173.1\pm46.8$ ) trimester when compared with those of the control group ( $75.2\pm11.1$ ) and no significant difference in ALP activity level in first ( $79.2\pm25.2$ ) trimester.

**Table 1 :** Serum ALT, AST, and ALP in normal pregnancy during the three times of pregnancy and control group.

Parameter	Subjects	NO	Mean $\pm$ SD	P Value
ALT (U/L)	Control	70	7.0 $\pm$ 2.5	
	1 <sup>st</sup> . trimester	60	7.1 $\pm$ 2.8	N.S
	2 <sup>nd</sup> .	65	7.8 $\pm$ 2.8	N.S
	3 <sup>rd</sup> .	60	9.5 $\pm$ 3.3	<0.05
AST (U/L)	Control	70	14.5 $\pm$ 2.5	
	1 <sup>st</sup> .	60	18.9 $\pm$ 3.3	N.S
	2 <sup>nd</sup> .	65	23.7 $\pm$ 6.1	N.S
	3 <sup>rd</sup> .	60	38.9 $\pm$ 4.5	<0.01
ALP(U/L)	Control	70	75.2 $\pm$ 11.1	
	1 <sup>st</sup> .	60	79.2 $\pm$ 25.2	N.S
	2 <sup>nd</sup> .	65	173.1 $\pm$ 46.8	<0.0005
	3 <sup>rd</sup> .	60	379.0 $\pm$ 70.2	<0.0005

b) Correlation factors of ALT, AST and ALP levels in normal pregnant women: The linear regression analysis stated significant ( $r=0.85, P<0.0005$ ) positive correlation for ALT with AST activities and

significant positive correlation for ALT activity with ALP activity ( $r=0.89, P<0.0005$ ) and AST activity with ALP activity ( $r=0.9, P<0.0005$ ) in pregnant women (Table2).

**Table 2 :** Correlation Factors of serum ALT, AST and ALP activities in normal pregnant women

Parameter	ALT		AST		ALP	
	r	P	r	P	r	P
ALT			0.85	<0.0005	0.89	<0.0005
AST	0.85	<0.0005			0.9	<0.0005
ALP	0.89	<0.0005	0.9	<0.0005		

c) Influence the duration of pregnancy time on liver enzymes activities. To demonstrate the influence of duration of pregnancy time on ALT, AST and ALP values in pregnant women. As shown in Table3 no significant in ALT and AST activities in second trimester when compared with those of the first trimester, while a significant ( $P<0.01$ ) less elevation of ALP activity in the same comperation. On the

other hand there were significant ( $P<0.0001$ ) increases in ALT, AST and Alp activities levels in third trimester when compared with those of first trimester, the table show also a significant ( $P<0.001$ ) increase in activities levels of AST and ALP during the third trimester when compared with those of second trimester and less elevation in significant ( $P<0.01$ ) for ALT activity.

**Table 3 :** Influence the duration of pregnancy on liver enzymes activities

Parameter	1 <sup>st</sup> Vs 2 <sup>nd</sup> Trimester	1 <sup>st</sup> Vs 3 <sup>rd</sup> Trimester	2 <sup>nd</sup> Vs 3 <sup>rd</sup> Trimester
ALT	N.S	0.001	0.01
AST	N.S	0.001	0.001
ALP	0.01	0.001	0.001

### IV. DISCUSSION

In the present study ALT, AST and ALP activities were measured in 185 healthy pregnant women and 70

control group not receiving oral contraception. None of the women included had evidence of liver disease. When liver cells are damaged or destroyed, the enzymes in the cell leak out into the blood, where they

check the blood for two main liver enzymes ALT and AST(22,23).

In the present investigation that serum ALT activity was significantly higher during the third trimester than in controls ( $P<0.05$ ). The present results were in agreement with previous works (24, 25), while Bacq et al (12) found that serum ALT activity was significantly higher during the second trimester than in controls but was no different during the third trimester. The current results illustrated that serum AST activity was significantly higher during the third trimester than in controls ( $p<0.01$ ), two other studies found the same results (14,26), while Bacq et al (12) have stated that serum AST activity was during all three trimesters not significantly higher than in control group. Other study (27) found a significant increase in AST levels between first and third trimester of pregnancy. An increase in ALT and AST levels was found during labor, which might be caused by contractions of uterine muscle (28, 29).

The results indicate that serum ALP activity was significantly higher during the third and second trimesters as compared to control group ( $P<0.0005$ ). This is primarily due to placental isoenzyme production (30,31). During the third trimester, there was also increase in the production of the bone isoenzyme. The results of this study, showed serum ALT, AST and ALP increased in normal pregnancy as compared to non pregnant women.

## V. CONCLUSIONS

1. The results indicated a significant increase of ALT in pregnant women in third trimester when compared with those of the control group.
2. The levels of AST activity in cease significantly in third trimester when compared with those of control group.
3. The ALP activity indicated higher significantly in third and second trimester when compared with control group.
4. Liver enzymes activities elevated during normal pregnancy.

## VI. ACKNOWLEDGMENTS

First of all, thanks to good for giving me the power and the insistence to complete this work. I want to thank the staff of the AL- Sadder Teaching Hospital in Najaf Governorate for their help during the work. Special thanks are due to Mr. Layth AL faham for this help. I would also like to express my gratitude to my family.

## REFERENCE RÉFÉRENCES REFERENCIAS

1. Black burn ST., Loper DL.: Maternal, fetal and neonatal physiology, A clinical perspective. Philadelphia: WB Saunders, 1992.
2. Campbell E., Dickinson C., Slater J. et al: Clinical Physiology. 5th ed. Black Well. Scientific publication, 1984 ; P 651.

3. Magueda I., Armada E., Diaz J., et al: Practice Guidelines of the Spanith Society of Cardiology for management of cardiac disease in pregnancy, 2000.
4. Taylor D.: Biological Science 2. Oxford university press, New yourk, 1995; P 665.
5. Van thiel D H., Gavalier JS: Pregnancy- associated Sex steroids and their effects on the liver Semin liver Dis, 1987; 7(1): 1- 7.
6. Vigil D. and Gratia P.: Acute fatty liver in pregnancy. Current concepts. Rev. Med. Panama, 2004; 22: 1621.
7. Bacq Y: liver and pregnancy. Patho. Biol, 1999; 47: 958- 965.
8. Marpeau L., Verspyck E., Descarques G.: Management of cholestasis in pregnancy. Press. Med, 1999; 28:2132- 2134.
9. Tindall VR., Beazley JM.: An assessment of changes in liver function during normal pregnancy- using a modified bromsulphthaline test. J Obslet Gynaecol, 1965; 75(5): 717- 737.
10. Ylostalo P. (1970): Liver function in hepatosis of pregnancy and preeclampsia with special refrance to modified bromsulphthaline tests. Acta obstet Gynecol Scand, 1970; 49(supple 4): 1-53.
11. Everson GT.: Liver problems in pregnancy; Distinguishing normal from abnormal hepatic changes. Med. Scope women Health, 1998; 3(2): 3.
12. Bacq Y., Zarka O., et al: Liver function test in normal pregnancy: A prospective study of 103 pregnant women and 103 matched controls. Hepatology, 1996; 23: 1030- 1034.
13. Alonso AG.: Effect of pregnancy on preexisting liver disease physiological changes during pregnancy. Annals of Hepatology, 2006; 5(3): 184- 186.
14. Knopp R., Well P., et al: Clinical chemistry Alterations in pregnancy and contraceptive use. Obstetries and Gynecology, 1998; 66: 682- 690.
15. Hilsden R. and Shaffer E.: Liver disease in pregnancy. Chpter 14, 2005.
16. Hunt CM., Sharara ALA: Liver disease in pregnancy. American Academy of family physician, 1999; Vol 59/No.4.
17. Chopra S., Griffin PH.: Laboratory tests and diagnostic procedures in evaluation of liver disease. A M J med: 1985; 79: 221- 230.
18. Guyton A. and Hall G.: Text book of medical Physiology. 9th ed. W.B. Saunders. Company, 1996; P855.
19. Yonegama K. and Ikeda J: Changes in maternal bone mineral density during pregnancy and relation ship between the density and fatus growth a prospective study. Nippon. Kosu. Eisei, Zasshi, 2000; 47:661- 669.
20. Morgan M., Hainsuonth I. and Kinghom J.: Prospective study on liver dysfunction in pregnancy in south west wales, 2005.

21. 21-Knopp RH. , Bergelin RO.: Clinical chemistry alterations in pregnancy and oral contraceptive use. *Obstet Gynecol*, 1985; 66(5):682- 690.
22. Riely CA: Hepatic disease in pregnancy. *Am j Med* 1994; 96(1):18-22.
23. Samuels p., Cohen Aw.: Pregnancies complicates by liver disease and liver dysfunction. *Obstet Gynecol Clin North Am* 1992; 19:745-763.
24. Cerutti R, Ferraris S, etal: Bahaviour of serum enzymes in pregnancy. *Clin Exp Obstet Gynecol* 1976; 3:22-24.
25. Salgo L, Pal A: Variation in some enzymes in amniotic fluid and maternal serum during pregnancy. *Enzyme* 1989; 41:101-107.
26. Elliott JR, Kell RT: Normal Clinical values for pregnant women at term. *Clin Chem* 1971; 17:156-157.
27. Guntupalli RS, Steingrub J: Hepatic disease and pregnancy: An over view of diagnosis and management. *Crit Care Med*: 2005;33(10. Suppl.):332-339.
28. Meade BW, Rosalki SB: Serum enzyme activity in normal pregnancy and newborn. *J Obstet Gynaecol* 1993; 70 : 693-700.
29. Loganathan G, Rachel G, etal: Liver function tests in normal pregnancy: a study from Southern India, *Indian J of gastroenterology* 2005; 24(6):268-269.
30. Siogren MH: Hepatic emergencies in pregnancy. *Med Clin North Am* 1993; 77:1115-1127.
31. Smoleniec JS, James DK: Gastro intestinal crises during pregnancy. *Dig Dis* 1993; 11:313-324.



GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS  
Volume 15 Issue 1 Version 1.0 Year 2015  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

## Influence of Clinic-Based Health Education on Pregnant Women's Knowledge and Attitudes in Relation to Pregnancy Management: Evidence from Ogun State, Nigeria

By C.O. Agbede, P.E. Omeonu & J.O. Kio

*Babcock University Nigeria*

**Abstract-** The study assessed the influence of clinic-based health education on women's knowledge and attitudes in relation to pregnancy management in Ogun State. Stratified sampling method was used to allocate 48 pregnant women each to experimental and control groups, making a total of 96 respondents. Structured questionnaire was used to gather data from the respondents. The women in the experimental group were exposed to two hours of health education discussion addressing pertinent maternal health issues weekly for five weeks. Data were analyzed using descriptive statistics and independent t-test. All tests were measured at  $p \leq 0.05$  level of significance.

**Keywords:** *clinic-based, health education, pregnant women, knowledge and attitudes, pregnancy management.*

**GJMR-E Classification :** *NLMC Code: WQ 150*



*Strictly as per the compliance and regulations of:*



# Influence of Clinic-Based Health Education on Pregnant Women's Knowledge and Attitudes in Relation to Pregnancy Management: Evidence from Ogun State, Nigeria

C.O. Agbede<sup>a</sup>; P.E. Omeonu<sup>o</sup> & J.O. Kio<sup>p</sup>

**Abstract-** The study assessed the influence of clinic-based health education on women's knowledge and attitudes in relation to pregnancy management in Ogun State. Stratified sampling method was used to allocate 48 pregnant women each to experimental and control groups, making a total of 96 respondents. Structured questionnaire was used to gather data from the respondents. The women in the experimental group were exposed to two hours of health education discussion addressing pertinent maternal health issues weekly for five weeks. Data were analyzed using descriptive statistics and independent t-test. All tests were measured at  $p \leq 0.05$  level of significance. Results showed that the women were between 19 and 24 years, had up to secondary education, recorded parity of 1-2 while timing of first visit was between 20 and 24 weeks of gestation and number of Ante-natal visits were  $\geq 4$ . At baseline, there were no significant difference in all the knowledge variables and attitudes measured for the experimental and control groups. However, after intervention, the mean scores for all the knowledge variables and measured attitudes in the experimental group increased and were significantly higher than the control group. In conclusion, corroborative intervention directed at creating more awareness on maternal reproductive health and providing necessary education for pregnant women should be encouraged.

**Keywords:** clinic-based, health education, pregnant women, knowledge and attitudes, pregnancy management.

## 1. INTRODUCTION

Several studies have shown the nexus between pregnant women's decision to use the primary health care facility especially for delivery and their knowledge of normal signs and symptoms of pregnancy, labour and puerperium, danger signs and symptoms of pregnancy, labour and puerperium, birth preparedness and complication readiness plans during pregnancy, labour and puerperium (JHPIEGO, 2004; Ujah et al., 2005; Abass, 2008). Further studies have shown that about 75% of all maternal deaths, globally, are those associated directly and indirectly with some

sort of health care facility particularly during delivery and the week immediately after (Choudhry, 2005; FMOH, 2009). The situation is particularly bad in developing countries like Nigeria (Bale, Stoll and Lucas, 2003; Ekele, Bello, Adamu, 2003).

Nigeria is still one of the forty countries that had high Maternal Mortality Ratio (MMR) (defined as MMR  $\geq 300$  maternal death per 100,000 live births) giving a life time risk of maternal death 1 in 18 (WHO, UNICEF, UNFPA and the World Bank, 2010). When these rates are viewed globally, approximately 1 in 9 maternal deaths occur in Nigeria alone (USAID, 2009). Beyond mortality cases, many other women suffer from injuries, infections or diseases related to pregnancy basically from lack of adequate knowledge (WHO, UNICEF, UNFPA, 2012). It is estimated that for every maternal death, at least thirty women suffer short to long term disabilities such as Vesico- Vaginal Fistula (VVF). For example, Nigeria accounts for 40% of the global burden of VVF (FMOH, 2007). This condition arises from prolonged unmanaged labour and complicated deliveries. For example, when the pregnant woman is still contemplating on going to the health facilities for delivery, she encounters three other delays according to Thaddeus and Mane (1994):

1. Delay at home in recognizing complications and deciding to seek for care. A woman may delay in deciding to seek care because of ignorance, inability to recognize danger signs or because of cultural inhibitions.
2. Delay in accessing the appropriate health facilities. A further delay occurs when a woman is unable to reach a health facility due to distance, poor communication, inability to mobilize transport or to pay for transportation.
3. The delay in receiving care. The third delay occurs at the health facility when trained personnel and supplies are not immediately available to provide critical, life-saving care.

All these have a lot of bearing on the health and well-being of families, communities and in the social and economic situations of the societies. Each year an

*Author <sup>a</sup> :* Department of Public Health, Babcock University, Ilishan-Remo, Ogun State, Nigeria. e-mail: akindan15ster@gmail.com

*Author <sup>p</sup> :* Department of Nursing Science, Babcock University, Ilishan-Remo, Ogun State, Nigeria.



estimated US \$15.5 billion is lost in potential productivity due pregnancy complications or when women and newborns die (WHO 2007). Every year an additional two million children worldwide are maternal orphans (WHO, 2007). Children without a mother are less likely to be immunized and are more likely to suffer from malnutrition (WHO, 2007).

Many intervention projects, programmes and policy strategies have been initiated globally and nationally in many countries including Nigeria to reduce complications surrounding pregnancy and parturition such as the Safe Motherhood Initiative (Berer, 1988), International Planned Parenthood Federation (IPPF) and the Population Council (WHO, 2006). Some of these efforts are profiled in Table 1. Despite all these efforts, maternal death tolls increase is still a phenomenon (Moore, Hart & George 2011; Ishola, 2011). Research into collaborative intervention efforts is therefore pertinent and imperative for the achievement of the Millennium Development Goal (MGD) of reducing MMR by 75% between 1990 and 2015 (WHO, UNICEF, UNFPA and World Bank, 2012). It is against this backdrop that this study examined the effects of motivational health education in improving pregnant women's knowledge of signs, symptoms, birth preparedness and complication readiness in Ikenne Local Government Area of Ogun State.

## II. THEORETICAL FRAMEWORK

The study focused on health information dissemination necessary to equip selected pregnant women with the necessary knowledge and skills that will bring about changes in their attitudes and decrease in

maternal death. A theoretical model that suggested effective approach to ensure participants in the intervention complied with the information delivered and thus increased their knowledge level leading to decisions for better patronage of the healthcare facility was employed. The Comprehensive Health Education model (CHEM) was employed.

Following Farotimi (2011) the CHEM model was applied following six steps thus:

*Step I:* The participants (pregnant women) were involved in an active learning process.

*Step II:* At the end of the program, these pregnant women were able to have in-depth understanding on Normal Symptoms of Pregnancy, Labour, Delivery and Puerperim; have better understanding as regards birth Preparedness and Complication Readiness (BP/CR) and to demonstrate positive attitudes towards Birth Preparedness and Complication Readiness (BP/CR).

*Step III:* The *a priori* expectation was that significant increase in knowledge of the participant will improve their attitudes and responses to health care services and consequently reduce complications associated with pregnancy and maternal mortality.

*Step IV:* The sampled women for the study were categorized into experimental and control groups. The experimental group were exposed to the motivational education and compared with the control group for knowledge increase.

*Step V:* Necessary resources were acquired and utilized to implement the program

*Step VI:* Evaluation was done with the use of questionnaire.

*Table 1:* Policies to Reduce Maternal Morbidity and Mortality in Nigeria

Polices	Goals
The International Safe Motherhood Initiative launched in Nairobi, Kenya, 1987	To reduce maternal mortality in the country by 50% by the year 2000
The National health policy and strategy. Developed in 1988, revived in 1998 and 2004.	To achieve health for all Nigerians, emphasizing Primary Health Care as key to developing the health care
The National Policy on Population for Development, Unity, Progress and Self Reliance, 1998	To promote maternal health especially vulnerable groups such as adolescents.
The National Economic Empowerment Development Strategy (NEEDS) 1999.	To reduced the level of poverty in Nigeria
The National Reproductive Health Policy (NRHP) developed by FMOH in 2001.	a) To "achieve quality reproductive and sexual health for all Nigerians b) To "reduce maternal morbidity and mortality due to pregnancy and childbirth by 50% by 2006
The National Reproductive Health Strategic Framework, developed by FMOH 2002	To reduce maternal mortality. (FMOH, 2002)
The National Guidelines for Women's Health, developed by (FGN) 2002	To establish women-friendly services at all levels of the health care system. (FMOH and UNICEF, 2002)
The Health Sector Reform policy, developed (FMOH) 2003	To improve the functioning of Nigeria's health system as a way of reducing maternal mortality in the country.
National Strategic Plan for Reproductive Health Commodity Security developed (FMOH) 2003	To develop a strategy to secure the supply of reproductive health commodities.



Revision of the government's National Policy on Population for Sustainable Development. 2004.	To reduce maternal mortality ratio to 75% by the year 2015 (FMOH), 2004
The National Family Planning/Reproductive Health Policy Guidelines and Standards of Practice. 2004	To improve the quality of reproductive health and family planning.
A National Strategic Framework and Plan for Vesico-Vaginal Fistula (VVF) Eradication in Nigeria Developed by (FMOH & UNFPA, 2005)	To improve the quality of life of women by eliminating obstetric fistulae by 80% and a 300% increase in health care services to repair them between 2005 and 2010 (FMOH & UNFPA, 2005).
National Health Promotion Policy (NHPP). Developed by (FMOH, 2006)	To expand and elaborate on the health promotion/education component of (NHPP)
Integrated Maternal, Newborn and Child Health (IMNCH) Strategy Developed by 2007	a) To build synergy among many programs designed to reduce maternal and child mortality in Nigeria. b) To ensure a continuum of care from pregnancy
National Breastfeeding Policy. Developed in 1994	To reduce maternal mortality and morbidity in Nigeria
National Adolescent Health Policy Developed in 1995	To reduce maternal mortality and morbidity in Nigeria
National Policy on HIV/STIs Control Developed in 1997	To reduce maternal mortality and morbidity in Nigeria
National Policy on the Elimination of Female Genital Mutilation Developed in 1998	To reduce maternal mortality and morbidity in Nigeria

### III. RESEARCH METHODOLOGY

#### a) Study area and Description of Population

This study was carried out in Ikenne Local Government Area (LGA) in Ogun state, Nigeria. Ikenne community houses culturally diversified people of different background. This LGA is semi-urban comprising of five towns- namely, Ikenne-Remo (the LGA headquarter), Ilisan-Remo, Iperu-Remo, Ogere-Remo and Irolu-Remo. Estimated population of women of reproductive age is 27, 713 (Nigeria Demographic and Health Survey [NDHS], 2008). However, the target population included women who were pregnant and in the third trimester of pregnancy (28-40 weeks of pregnancy). The health facilities available in the LGA include Babcock University Teaching Hospital at Ilisan, State General Hospital at Ikenne, State Hospital at Iperu, Community Hospital at Ilisan and ten (10) Primary Health Care (PHC) Centres in Wards situated in the five towns.

There are also eight registered Private Hospitals/Clinics, some Traditional Birth Attendants and religious Health Care Centres within the Local Government Area.

### IV. SAMPLING TECHNIQUE AND DATA COLLECTION

The multi-stage sampling technique was used to select a total of 96 participants from the five healthcare centres in the study area offering maternity care. The healthcare facilities were stratified into two for the control and experimental groups. Ikenne PHC ward II, Ilisan town PHC ward VII and Irolu PHC ward X were in the control groups while Iperu PHC, ward V and Ogere PHC VII were in the experimental group. Forty eight pregnant women were purposively selected from each group to represent the sample frame. Structured questionnaires designed in line with the developed Motivational Health Education Information (MHE) and with study objectives were used to gather data from the

respondents. Reliability analysis was applied to test the internal consistency of the questionnaire. Result of the analysis showed that the average Cronbach's alpha value for the instrument was 0.82. Items of an instrument were considered to represent a measure of high internal consistency if the total Cronbach's alpha value was more than 0.7 (Graham, 2008 and Muhamad, 2010). The intervention group was exposed to 5 weeks of intervention education following the focus group discussions.

### V. METHOD OF DATA ANALYSIS

Both descriptive and inferential statistics were employed in analyzing data collected in the study. Frequency tables were used to present results for the descriptive analysis. Each construct of the questionnaire was coded along the appropriate ranking scale. Maximum point-scales were generated for each construct to measure the stated research variables, mean scores were also computed. The t-test was used to determine significant difference in the mean of the analyzed variables in the experimental and control groups. All statistical analysis were done using the statistical package for social science (SPSS version 17) and set at  $P \leq 0.05$  levels of significances. Ethical clearance was obtained from the Ethical Review Committee, Babcock University and consent forms were filled by all participants.

### VI. RESULTS AND DISCUSSION

#### a) Socio-demographic information of respondents

Results in Table 1 show that the respondents generally were below 35 years old (79% for control and 92% for experimental groups), mostly married (96% for control and 100% for experimental groups), from Yoruba ethnic group (75% for control and 76% for experimental groups) and largely Christians (50% for control and 57% for experimental groups). The result for educational level showed that the respondents had relatively good level of education with majority having secondary education and

above (92% for control and 72% for experimental groups). The nexus between education and adoption of innovations for behavioral change has been detailed in previous studies (Babalola et al., 2013; Omeonu et al., 2014; Babalola, 2014). Thus the intervention is expected to have a significant impact on knowledge and attitude of the respondents. However, most of them were artisans (41% for control and 38% for experimental groups) and their monthly income was below ₦16,000 (<\$81) (42% for control and 66% for experimental groups) which is clearly below the national minimum wage of ₦18,000. This implies that although, most of these women may depend on their husbands for household financial sustenance, poverty level is likely high among the women. This may pose a challenge to the women's capacity to afford certain financial requirements for necessary healthcare.

Further results in Table 1 showed that within the control group the majority of the respondents (67%) had 1-2 children and also in the experimental group (45.2%) had 1-2 children. Thus the women are expected to have certain knowledge about pregnancy management since they have had children before. Results of antenatal care (ANC) showed that most of the women (67% for control and 74% for experimental groups) had their first visit to the healthcare center between 20<sup>th</sup> and 24<sup>th</sup> weeks of pregnancy. However, the majority of the respondents

(63% for control and 62% for experimental groups) visited the healthcare facility up to 4 times during ANC.

## VII. RESULT OF THE INTERVENTION EFFORT

The women in the experiment group were exposed to 5 weeks of intervention education as earlier stated. The knowledge levels and attitude, with respect to the earlier stated pregnancy management factors and practices, for both the control and experimental groups were assessed both at the beginning (baseline) and at the end of the intervention exercise. Results are in Tables 3 and 4.

Generally, at baseline, the knowledge levels for all variables were relatively low compared to the respective maximum point on scale of measure (MPS). The knowledge variable about signs and symptoms about normal pregnancy for the experimental group measured at baseline (MPS =20) had a mean score of  $14.26 \pm 1.64$  while the control group had a mean of  $13.98 \pm 1.67$ .

Comparing the two mean scores, there was no significant difference between these mean scores ( $P=0.348$ ). However, at immediate post-intervention, the experimental group had a mean score of  $16.9405 \pm 1.07$  which was significantly higher than that of the control group ( $14.08 \pm 1.72$ ) ( $P=0.04$ ).

Table 2 : Demographic information of respondents

Variables	Groups			
	Control (n= 48)		Experimental (n= 48)	
	Freq	%	Freq	%
Age				
19-24yrs	16	33.3	15	31.0
25-29yrs	10	20.8	11	23.8
30-34yrs	12	25.0	18	38.1
35-39yrs	4	8.3	4	7.1
≥40	6	12.5	0	0
Marital status				
Married	46	95.8	48	100.0
Tribe				
Yoruba	36	75	37	76.2
Non-Yoruba	12	25	11	23.8
Religion				
Christianity	24	50	27	57.1
Islam	22	45.8	18	38.1
Traditional	2	4.2	3	4.8
Education				
Below Secondary	4	8.3	14	28.6
Secondary and above	44	91.8	34	71.5
Husbands' Education				
Below Secondary	6	12.5	10	21.4
Secondary and above	44	87.5	38	78.6
Occupation				
Farming	14	28.8	16	32.4
Civil Servant	8	16.8	9	19.5
Artisans	20	40.8	18	38.4
Housewives	7	13.6	5	9.7
Income level (₦)				

≤15,000	20	41.6	32	66.6
16,000-30,000	10	20.8	9	19.0
31,000-45,000	6	12.5	3	7.1
>45,000	12	25.1	4	7.3
Parity				
None	2	4.2	7	14.3
1-2	32	66.7	22	45.2
3 and above	14	29.1	19	40.5
Timing of ANC first visit				
8-16 weeks	6	13	6	12.0
20-24 weeks	32	66.7	35	74.0
28 weeks +	10	20.8	7	14.0
No. of ANC visits				
1 ANC visit	4	8.3	5	9.5
2 ANC visit	12	25.0	10	21.4
3ANC visit	2	4.2	3	7.1
4 and above	30	62.5	30	61.9

Source: Computed from field Survey (2013)

The knowledge variable about signs and symptoms of normal child birth measured at baseline (MPS = 20) showed no significant difference in respondents' knowledge level for experimental group (mean score of  $16.45 \pm 2.69$ ) and the control group (mean of  $16.2 \pm 2.16$ ) ( $P=0.281$ ). At immediate post-intervention, there was a significant difference between the mean score of the knowledge level of the experimental group ( $18.88 \pm 1.03$ ) and the control group ( $16.47 \pm 2.10$ ) ( $P=0.001$ ). The knowledge variable about signs and symptoms of normal puerperium measured at baseline (MPS = 20) also showed no significant difference in the respondents' level of knowledge for experimental (mean score of  $16.20 \pm 2.24$ ) and the control groups (mean of  $16.50 \pm 1.82$ ) ( $P=0.409$ ). The knowledge variable for the experimental group measured at immediate post-intervention increased to  $17.92 \pm 1.66$  which was significantly higher than that of the control group ( $16.45 \pm 1.80$ ) ( $P=0.048$ ).

The knowledge variable about danger signs during pregnancy, measured at baseline (MPS = 24), had mean scores of  $17.17 \pm 2.84$  and  $16.83 \pm 2.25$  for the experimental and control groups respectively. There was no significant difference in the knowledge level for both groups at baseline ( $P=0.459$ ). However, after the intervention, the mean scores knowledge level measured were  $18.85 \pm 0.96$  and  $16.83 \pm 2.14$  for the experimental and control groups respectively. Comparing the two mean scores, there was a significant difference between the mean scores ( $P=0.041$ ). The knowledge variable about danger signs during labour, measured at baseline (MPS = 12) on scale, had mean scores of  $7.12 \pm 1.81$  and  $6.67 \pm 1.23$  for the experimental and control groups respectively. The test statistics for significant difference showed no statistical significant difference between these two mean scores ( $P=0.09$ ). After intervention, mean scores changed to  $6.02 \pm 0.15$  and  $6.79 \pm 1.30$  for the experimental and control groups respectively. The test statistics for

significant difference showed statistically significant difference between the two mean scores ( $P=0.001$ ). The knowledge variable about danger signs 7 days after delivery, measured at baseline (MPS = 12), had mean scores of  $7.69 \pm 2.09$  and  $7.33 \pm 1.81$  for the experimental and control groups respectively. There was no significant difference between the mean scores for the two groups ( $P=0.306$ ). After the intervention, the knowledge mean scores for experimental group became significantly higher ( $9.00 \pm 0.01$  and  $7.25 \pm 1.83$  for the experimental and control groups respectively) ( $P=0.001$ ). The knowledge variable about birth preparedness and complication readiness measured at baseline (MPS = 30), had mean scores of  $19.81 \pm 1.90$  and  $21.25 \pm 2.21$  for the experimental and control groups respectively. The test statistics for significant difference showed no significant difference between the two mean scores ( $P=0.126$ ). When measured at immediate post-intervention, the mean scores were  $26.18 \pm 1.13$  and  $21.79 \pm 1.87$  for the experimental and control groups respectively indicating significantly higher knowledge level for experimental group ( $P=0.001$ ).



**Table 3 :** Pre-intervention (clinic-based education) or baseline result for control and experimental group

Variables	Groups	Max points on scale of measure	Mean	±SD	Std. Error Mean	Level of Sig
Knowledge about signs & symptoms of normal preg	control	20	13.9792	1.669	.24095	0.348
	experiment		14.2619	1.636	.17854	
Knowledge about signs and symptoms of normal labour & delivery	control	20	16.2167	2.161	.31204	0.281
	experiment		16.4524	2.694	.29404	
Knowledge about signs and symptom of normal puerperium	control	20	16.5000	1.821	.26296	0.409
	experiment		16.2024	2.237	.24414	
Knowledge about danger signs and symptoms of preg	control	24	16.8333	2.253	.32526	0.459
	experiment		17.1667	2.836	.30946	
Knowledge about danger signs and symptoms during labour	control	12	6.6667	1.226	.17699	0.091
	experiment		7.1190	1.812	.19781	
Knowledge about danger signs and symptoms after delivery (puerperium)	control	12	7.3333	1.814	.26184	0.306
	experiment		7.6905	2.088	.22785	
Knowledge about birth preparedness and complication readiness	control	30	21.2500	2.207	.31860	0.126
	experiment		19.8095	1.904	.20776	
Attitudes towards birth preparedness & complication readiness plans	control	52	24.8333	4.411	.63674	0.324
	experiment		22.7381	4.854	.52970	

Source: Computed from field survey (2013)

**Table 4:** Post-intervention (clinic-based education) results for control and experimental groups.

Variables	Groups	Max points on scale of measure	Mean	±SD	Std. Error Mean	Level of Sig
Knowledge about signs & symptoms of normal preg	control	20	14.0833	1.723	.24882	0.049
	experiment		16.9405	1.068	.11655	
Knowledge about signs and symptoms of normal labour	control	20	16.4667	2.096	.30267	0.001
	experiment		18.8810	1.026	.22109	
Knowledge about signs and symptoms about normal puerperium	control	20	16.4583	1.797	.25950	0.048
	experiment		17.9286	1.663	.18146	
Knowledge about danger signs and symptoms during preg	control	24	16.8333	2.137	.30847	0.041
	experiment		18.8452	0.963	.10508	
Knowledge about danger signs and symptoms during labour	control	12	6.7917	1.303	.18821	0.001
	experiment		9.0238	0.153	.01673	
Knowledge about danger signs and symptoms after delivery (puerperium)	control	12	7.2500	1.827	.26380	0.001
	experiment		9.0000	0.010	.00100	
Knowledge about birth preparedness and complication readiness	control	30	21.7917	1.867	.26955	0.001
	experiment		26.1786	1.131	.12349	
Attitudes towards birth preparedness & complication readiness plans	control	52	24.3750	4.123	.59521	0.001
	experiment		41.3690	4.250	.46377	

Source: Computed from field survey (2013)

The attitude variable towards birth preparedness and complication readiness for the experimental group measured at baseline (MPS = 52) had a mean score of  $22.73 \pm 4.85$  while the control

group had a mean of  $24.83 \pm 4.41$ . There was no significant difference between these mean scores ( $P=0.324$ ). At immediate post-intervention, the mean score for the experimental group ( $41.37 \pm 4.85$ ) was

significantly higher than that for the control group ( $24.83 \pm 4.12$ ) ( $P=0.001$ ). This result confirmed that the intervention influenced the participants by improving their knowledge and attitudes towards pregnancy management, birth preparedness and complication readiness.

## VIII. CONCLUSION AND RECOMMENDATION

This study assessed the influence of clinic based education on pregnant women's knowledge on normal pregnancy, danger signs and symptoms of pregnancy, labour and puerperium and their attitudes towards Birth Preparedness and Complication Readiness. The participants were selected from Ikenne LGA of Ogun state Nigeria. The investigation concluded by affirming significant impact of the motivational education on the stated knowledge variables and the attitudes of the respondents. Based on the findings of the study, the following recommendations have been suggested for policy action:

- o Corroborative intervention programme initiatives, directed at creating more awareness and necessary education for pregnant women should be encouraged
- o There is the need for improvement in the education given to pregnant women for general pregnancy management and care during delivery especially following recommended benchmark by WHO.
- o Pregnant women should be encouraged to start ANC appointments earlier and any cost implication subsidized to motivate use of healthcare facilities.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. Abass B A, (2008). Poverty and maternal mortality in Nigeria: towards a more viable ethics of modern medical practice, *International Journal for Equity in Health*, 7(11): 22-25.
2. Adamu Y M (2003). Maternal mortality in northern Nigeria: a population-based study, *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 2003, 109(2):153-159.
3. Babalola D A (2014). Determinants of Farmers' Adoption of Agricultural Insurance: the Case of Poultry Farmers in Abeokuta Metropolis of Ogun State, Nigeria. *British Journal of Poultry Sciences* 3 (2): 36-41.
4. Babalola, D A, Olarewaju M, Omeonu PE, Adefelu A O and Okeowo, R (2013). Assessing the adoption of Roll Back Malaria Programme (RBMP) among women farmers in Ikorodu Local government area of Lagos state. *Canadian Journal of Pure and Applied Science*. SENRA Academic Publishers, British Columbia. 7(2): 2375-2379,
5. Bale R. Judith, Stoll J. Barbara and Lucas O. Adetokunbo (2003). *Improving Birth Outcomes meeting the challenge in the developing world*; Institute of Medicine of the National Academies of science, The National Academies Press, Washington DC 20001.
6. Berer M (1988). *Maternal Mortality: A Call to Women for Action International Day of Action for Women's Health* May 28, 1988.
7. Choudhry M. Tauqeer Mustafa (2005) *Maternal Mortality and Quality of Maternity Care implications for Pakistan* Karolinska Institute Master of Health Promotion *Department of Public Health Sciences*.
8. Farotimi, A A (2011) *Influence of Health Education Programmes on Knowledge, Attitude and Practice of students nurses towards reducing HIV/AIDS Related Stigma and is crimination in Lagos State, Nigeria*. Unpublished PhD thesis, University of Ibadan, Nigeria..
9. Federal Ministry of Health (Nigeria),( 2003) *Nation/HIV and Reproductive Health Survey, 2003*, FMOH, Abuja, Nigeira
10. Federal Ministry of Health, Nigeria (2007). *Integrated Maternal Newborn and Child Health Strategy*, Abuja, Nigeria: Federal Ministry of Health, 2007.
11. Graham, S. W and Gisi, L. S (2008). The Effects of Institutional Climate and Student Services on College Outcomes and Satisfaction. *Journal of College Student Development*, 41(3)
12. JHPIEGO (2004). *Maternal and neonatal health. Monitoring birth preparedness and complication readiness, tools and indicators for maternal and newborn health. Johns Hopkins, Bloomberg school of Public Health, Center for communication programs, Family Care International*. Available and assessed at: <http://pdf.dec.org> November 2013.
13. Muhamad Saiful Bahri Y (2010): Stress, Stressors and coping strategies among secondary School students in a Malaysian Government secondary school: Initial findings, *ASEAN Journal of Psychiatry*, 11(2): 60-68
14. Nigeria Demographic and Health Survey (NDHS) (2008) Preliminary report National Population Commission. Federal Republic of Nigeria, Abuja, Nigeria, May 2009.
15. Omeonu PE; Babalola DA and Agbede OC (2014). Qualitative Analysis of Adolescents' Sexual Behaviour in Ogun State, Nigeria: Implication for HIV/AIDS Policy. *Journal of Biology, Agriculture and Healthcare*, 4 (24): 162-166.
16. Thaddeus S and D Maine (1994). Too far to walk: Maternal mortality in context. *Social Science and Medicine* 38: 109
17. Ujah IAO, Aisien OA, Mutihir JT, Vanderagt DJ, Glew RH, Uguru VE (2005). Factors Contributing to Maternal Mortality in North-Central Nigeria: A Seventeen-year Review *African Journal Reproduction Health* 9(3): 27-40



18. WHO, UNICEF, UNFPA and the World Bank (2010)  
*Maternal Mortality in Estimates; Geneva*, Maternity  
Survival Series, 368:1189-2007
19. World Health Organization (WHO) (2007), *Maternal  
Mortality in 2005*: Estimates Developed by WHO,  
UNICEF, UNFPA, and the World Bank, Geneva:  
WHO, 2007.
20. World Health Organization, UNICEF, UNFPA (2012).  
*Maternal mortality in 2012*: estimates developed by  
WHO, UNICEF and UNFPA.





GLOBAL JOURNAL OF MEDICAL RESEARCH: E  
GYNECOLOGY AND OBSTETRICS  
Volume 15 Issue 1 Version 1.0 Year 2015  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

## Integration of Long Acting and Permanent Contraceptive Methods with an ART Program Was Poor in Tigray Region, Ethiopia

By Mussie Alemayehu, Belachew Etana, Girmatsion Fisseha, Kiday Haileslassie,  
Yibrah Berhe & Henock Yebyo

*Mekelle University, Ethiopia*

**Abstract- Background:** Use of contraceptive methods is one of the efficacious interventions that help to prevent HIV transmission and unintended pregnancies among HIV positive women. However, contraceptive utilization, in general, and Long Acting and Permanent Contraceptive (LAPM) methods, in particular, and its integration with HIV treatment services is not well understood in poor-resource settings. The study aimed to assess the level of integration of LAPM with ART, LAPM utilization and associated factors among HIV positive women in public hospitals of Tigray, northern Ethiopia.

**Methods:** A cross-sectional study was conducted in 2013 among 343 HIV positive married women selected using two-stage cluster sampling.

**Keywords:** *integration, utilization of Lapm, tigray, public hospitals, ethiopia.*

**GJMR-E Classification :** NLMC Code: QV 177



*Strictly as per the compliance and regulations of:*



# Integration of Long Acting and Permanent Contraceptive Methods with an ART Program Was Poor in Tigray Region, Ethiopia

Mussie Alemayehu<sup>α</sup>, Belachew Etana<sup>σ</sup>, Girmatsion Fisseha<sup>ρ</sup>, Kiday Hailelassie<sup>ω</sup>, Yibrah Berhe<sup>\*</sup> & Henock Yebyo<sup>§</sup>

**Abstract- Background:** Use of contraceptive methods is one of the efficacious interventions that help to prevent HIV transmission and unintended pregnancies among HIV positive women. However, contraceptive utilization, in general, and Long Acting and Permanent Contraceptive (LAPM) methods, in particular, and its integration with HIV treatment services is not well understood in poor-resource settings. The study aimed to assess the level of integration of LAPM with ART, LAPM utilization and associated factors among HIV positive women in public hospitals of Tigray, northern Ethiopia.

**Methods:** A cross-sectional study was conducted in 2013 among 343 HIV positive married women selected using two-stage cluster sampling. Data were analyzed using SPSS version 20. Multiple logistic regression analysis was used to identify independent predictors of LAPM utilization.

**Results:** Long Acting and Permanent Contraceptive utilization was 29.7%; among which, only 37.3% got LAPM from ART clinics. Higher knowledge on LAPM (OR=3.2, 95% CI:1.35,7.8), positive attitudes towards LAPM (OR=4.2, 95% CI:2.19,8.2), delivery at age older than 18 years (OR=2.5, 95% CI:1.19,5.4), having less CD4 cells (OR=2.8, 95% CI:1.2,6.3) and desire to limit number of children (OR=2.1, 95% CI:1.2,4.1) were positively associated with LAPM utilization.

**Conclusion:** Overall LAPM utilization and integration of family planning services with ART service were lower. Integration of LAPM service with ART is crucial to optimize ART and address the special needs of HIV positive women to prevent unwanted pregnancy.

**Keywords:** integration, utilization of Lapm, tigray, public hospitals, ethiopia.

## I. INTRODUCTION

The World Health Organization (WHO) promotes a strategy of preventing HIV infection among women, and preventing unintended pregnancies [1]. Prevention of unintended pregnancies among HIV positive women, although highly cost-effective, is a neglected strategy in combating HIV/AIDS [2-4].

**Author α σ ρ ω §:** Department of Public Health, Mekelle University, Mekelle, Ethiopia. e-mails: mossalex75@gmail.com, belachewetana@yahoo.com, girmaf4@yahoo.com, hkiday@gmail.com, henokyeybo@yahoo.com

**Author \*:** Department of Gynecology and Obstetrics, Mekelle University, Mekelle, Ethiopia. e-mail: yibrhe@yahoo.com

Studies done in different countries of Sub-Saharan Africa (SSA) show that the use of ART was associated with almost 80% increased risk of pregnancy [5]. Prevention of unwanted pregnancy using contraceptive methods would benefit HIV positive mothers as compared to HIV free women to decrease HIV transmission and prevent unwanted pregnancy [6].

In Ethiopia, a large proportion of people living with HIV/AIDS are under ART including the Prevention of Mother to Child Transmission of HIV (PMTCT) service [7]. However, family planning utilization is low and the integration of family planning service with ART is observed to be poor. Especially, the Long Acting and Permanent contraceptive Methods (LAPM) are least used by HIV positive mothers, though these methods are more advantageous to reduce problems of non-adherence to family planning methods than the short acting methods [8, 9]. Not only LAPM utilization would be important for preventing unintended pregnancies among HIV positive mothers, but also it would be a cost effective strategy to prevent mother to child transmission rate of HIV [10, 11]. In Tigray, not limited to HIV positive women, the unmet need for family planning among unmarried women is 15% for child spacing and 7% for child limiting. In the same study, only 5.6% and 0.3% were using implants and female sterilization, respectively, and none of them were Intra Uterine Contraceptive Device (IUCD) users. However, evidence on LAPM utilization among HIV positive mothers in the region is scarce. One of the reasons for the hypothesized lower LAPM utilization among HIV positive women would be poor integration of family planning services with ART clinics.

In light of these, the current study aimed to point out the level of LAPM utilization among HIV positive mothers, reasons associated with non-use of LAMP and the integration level of family planning services with ART clinics among HIV positive women in public hospitals of Tigray, region northern Ethiopia.

## II. METHODS

An institutional based cross-sectional study was conducted in four hospitals of Tigray region in 2013. The

region has an estimated total population of over four million with a sex ratio of one [12]. The region owns 16 public hospitals including one teaching hospital and a number of private hospitals. Unlike the private hospitals, family planning and ART services are provided for free in the public hospitals in Ethiopia. Thus, our study focused merely on public hospitals in which majority of women receive family planning and ART services.

The study focused on HIV positive married women of reproductive age who were on ART during the study period. Using predetermined parameters of 95% Confidence Interval (CI), 4% Marginal Error, 7.1% estimated proportion of LAPM utilization in South Africa [13], 10% non-response rate, Design Effect of two to compensate the higher variability that may be introduced due to the sample design, we included a total of 348 HIV positive women in our study.

The study women were selected using a two-stage cluster sampling. In the first stage, all the public hospitals were considered as clusters. There may be no or little difference in the provision of family planning and ART services among the hospitals since the treatment protocols are similar. Thus, we selected four public hospitals at random out of 16. We allocated the sample size needed from each hospital using probability proportional to size sampling. In the second stage, women were selected using systematic random sampling at every equal interval. The women were consented for service-exit interview using a face-to-face approach. The questionnaire focused on LAPM utilization and associated factors. It was first prepared in English and then translated back into the local language-Tigrigna. To check consistency of the contents of each question, the questionnaire was back translated into English by a different person. The questionnaire was adapted from different studies [13-16] but customized to the contextual population and health settings. It contained socio-demographic and economic characteristics of study participants, reproductive history, clinical characteristic, knowledge on LAPM, attitude towards and utilization of LAPM. We pretested the questionnaire on 15 HIV positive women in a different area to check the plausibility of the tool, estimate time for the interview, ensure understandability of the questions.

To assess the level of LAPM integration with ART services, we used checklist enquiring availability of contraceptive methods and teaching materials, number and type of trained health professionals and availability of registration book and referral document. Integration of family planning with ART services was defined as receiving any types of family planning methods from ART clinics together with the ARV drugs. The data collection was carried out by twelve trained clinical nurses who used to work in different hospitals and the overall data collection process was supervised by other four health professionals.

#### a) Data analysis

The raw data were entered into EPI data version 3.1 and analyzed using SPSS version 20 for windows (SPSS Inc. version 20, Chicago, Illinois). Descriptive analyses were run to estimate the level of LAPM utilization, integration of LAPM with ART services and descriptions of women characteristics. Knowledge of and attitude towards LAPM utilization among the study participants were measured based on respondents' answers to certain knowledge and attitude questions. Accordingly, knowledge was defined as "higher knowledge", "moderate knowledge" and "lower knowledge" if a woman answered 80%, 60-79% and less than 60% of the knowledge questions, respectively. Similarly, attitude was defined as "positive" and "negative" if a woman answered above the average of the attitude questions, and below the average of the attitude questions, respectively average and below.

The predictors of LAPM utilization were assessed using multiple logistic regression analysis. The effect sizes of predictors was estimated using adjusted Odds Ratio (OR) for the sample and 95% CI of OR for the population effect sizes. A p-value of less than 0.05 was considered as statistically significant for all tests.

#### b) Ethics statement

The Ethical Review Committee of Mekelle University, College of Health Sciences approved the study protocol as well as the verbal consent of the participants. Informed verbal consent was obtained from study participants after the purposes of the study were explained to them. The information and informed consent sheet contained information on selection criteria, confidentiality, voluntary participation, benefit and risks and contact information of the investigators. The right of the respondents to withdraw from the interview was assured. Any personal identifier was not encoded; identifiers of the women were replaced with identification numbers. The study neither had employed any intervention nor had taken any biomedical body sample.

### III. RESULTS

#### a) Sociodemographic and economic characteristics of women

A total of 343 HIV positive reproductive aged women who were on ART participated in the study which gave a response rate of 98.5%. Fifty percent of the women were younger than 31 years. The vast majority of the women, (92.7%), were followers of Orthodox Christianity. With regard to place of residence, 65.3% of the women used to live in urban during the study period. Overall, women were with less educational level than their partners. Only 51.9% and 64.4% of the women and their partners attended a formal education. Nearly one-third (65.9%) of the women were limited to indoor

activities. As such, half of the study participants had an average household monthly income of \$55.6-111.1 [Table 1].

**Table 1:** Sociodemographic and clinical characteristics of respondents and their partner in Tigray Public hospitals, 2013

Variables	n(%)
<b>Age (n=343)</b>	
20-24	29(8.5)
25-29	89(25.9)
30-34	113(32.9)
35-39	112(32.7)
<b>Educational status of women (n=343)</b>	
uneducated	165(48.1)
1-8 grade	104(30.3)
9-12 grade	66(19.2)
College and above	8(2.3)
<b>Education status of husband (n=343)</b>	
uneducated	122(35.6)
1-8 grade	123(35.9)
9-12 grade	78(22.7)
College and above	20(5.8)
<b>Occupational status of wife (n=343)</b>	
Housewife	226(65.9)
Business	44(12.8)
Salaried employee	15(4.4)
Daily laborer	58(16.9)
<b>Household income (n=343)</b>	
<\$55.6	111(32.4)
\$55.6-111.1	171(49.9)
>\$111.1	61(17.8)
<b>ART regimen (n=343)</b>	
D4T-3TC-NVP	94(27.4)
TDF-3TC-NVP	57(16.6)
D4T-3TC-EFP	22(6.4)
TDF-3TC-EFP	37(10.8)
AZT-3TC-NVP	114(33.2)
AZT-3TC-EFV	16(4.7)
2nd Line	3(0.9)
<b>WHO clinical stage at admission (n=343)</b>	
Stage 1	59(17.2)
Stage 2	72(21.0)
Stage 3	167(48.7)
Stage 4	45(13.1)

#### *b) Antiretroviral Therapy profile*

Regarding to WHO clinical staging, 48.7% of the women were at stage 3 and 327 (95.3%) of the participants were in stage T<sub>1</sub> during admission to ART. However, the WHO clinical stage decreased to 16 (4.7%) during the study period. The proportion of women with CD4 cells less than 200cells/mm<sup>3</sup> before ART initiation was 75.5%; but, this declined to only 16.3% during the study period after ART initiation. The women were under a different ART regimen, but one-third of them were taking AZT-3TC-NVP.

#### *c) Reproductive history of respondents*

The mean age at marriage was 18.16 (SD± 3.5) and age at first birth was 21 (SD±4. 1) years. More than

two-third (67.9%) of the participants got married before the age of 18 years. Nine in ten of the respondents had history of childbirth in their lifetime. Each women had average children of 2.4(SD±1.2) and 46.1% of them had three or more children. Regardless of the number of children that the women had, however, 183 (53.4%) of mothers had desired to have more children in the future [Table 2]. Experience of unintended pregnancy was reported among 66 (19.2%) of the respondents. Similarly, 55(16%) of the women had a history of



abortion among which 11(20.4%) had more than one death; but, half of them encountered more than one episodes. Two in ten women had a history of child child deaths [Table 2].

*Table 2 :* Reproductive history of HIV positive women, in Tigray Public hospitals, 2013

Variables	n(%)
<b>Age at marriage (n=343)</b>	
<18 year	233(67.9)
≥18 year	110(32.1)
<b>History of birth (n=343)</b>	
Yes	310(90.4)
No	33(9.6)
<b>Number of children (n=310)</b>	
Two and less than two	185(53.9)
Three and above	158(46.1)
<b>Age at delivery (n=310)</b>	
<18 year	95(27.7)
≥18 year	248(72.3)
<b>Time gap between previous and last birth (n=310)</b>	
Less than 3 years	125(40.3)
3 and above	185(59.7)
<b>History of child death (n=343)</b>	
Yes	65(21.0)
No	245(79.0)
<b>Number of child deaths (n=65)</b>	
One	34(52.3)
Two and above	31(47.7)
<b>Was the last birth intended? (n=343)</b>	
Yes	277(80.8)
No	66(19.2)
<b>History of abortion (n=343)</b>	
Yes	55(16.0)
No	288(84.0)
<b>Need to have more children in the future (n=343)</b>	
Yes	183(53.4)
No	160(46.6)

*Table 3 :* Knowledge of HIV positive married women on LAPM in Tigray Public hospitals, 2013

Knowledge statements (n=219)	Yes n (%)	No n (%)
Implant prevent pregnancy effectively for 3-5 years	212(96.8)	7(3.2)
Implants require a surgical procedure during insertion & removal	173(79)	46(21)
Implants results in immediate reversal pregnancy	176(80.4)	43(19.6)
HIV positive women can use IUCD	132(60.3)	87(39.7)
Women on ARV can use IUCD	145(66.2)	74(33.8)
IUCD is not a problem in quick return of pregnancy after removal	133(60.3)	86(39.4)
IUCD is effective in preventing pregnancy for 12 years	155(70.8)	64(29.2)
IUCD has no interference with sexual intercourse	118(53.9)	101(46.1)
Women should only be sterilized when they don't want more children	129(58.9)	90(41.1)
Women on ARV can use sterilization method	126(57.3)	93(42.5)
Sterilization needs mild surgical procedure	74(33.8)	145(66.2)

#### d) Knowledge of respondents on LAPM

The proportion of women with higher knowledge on LAPM was 53 (69.9%); while 53 (24.2%) and 13 (5.9%) had moderate and lower knowledge, respectively. Nearly 219 (64%) had ever heard of LAPM. A small number of women had ever heard of permanent methods- female sterilization (37%) and vasectomy

(17.8%). However, only six in ten of the women knew the right time to have female sterilization. With regard to sources of information, most of the women (95%) had heard of LAPM from a health institution followed by media (44.3%). The reasons for LAPM utilization were for child limiting (70.5%) and child spacing (84.7%). Most of the women, 96.8% and 70.8%, had positive knowledge



on the effectiveness of implants and IUCD for prevention of pregnancy, respectively.

e) *Attitude of the respondents towards LAPM utilization*

The overall attitude showed that only 3 in 10 of the respondents had positive attitude towards LAPM utilization. Eighty six percent of the women believed that HIV positive women can use LAPM; while in contrast,

30% believed that short term contraceptives are more comfortable than LAMP for HIV positive women. In addition, 53% considered that LAPM can delay fertility when a need arises. Only half of the respondents believed that their partners have to have vasectomy given that they need no more children [Table 4].

**Table 4 :** Attitude of HIV positive women towards LAPM utilization in Tigray Public hospitals, 2013

Attitude statements (n=343)	Disagree n(%)	Neutral n(%)	Agree n(%)
HIV positive women can use LAPM	20(5.8)	27(7.9)	296(86.3)
HIV positive women on ART can use LAPM	15(4.4)	17(5)	311(90.7)
LAPM use can cause infertility	44(12.8)	118(34.4)	181(52.8)
Higher child deaths should not be compensated by many births	143(41.7)	69(20.1)	131(38.2)
Men should share the responsibility of taking vasectomy	91(26.5)	60(17.5)	192(56)
Short acting methods is more comfortable than LAPM for HIV positive women	153(44.6)	86(25.1)	104(30.3)
HIV positive women who use LAPM get abandoned by their husbands	91(26.5)	48(14)	204(59.5)
LAPM use among couple results disagreement	123(35.9)	36(10.5)	184(53.6)
Couple should have discussion before LAPM use	24(7)	9(2.6)	310(90.4)
Partners should approve family planning use	73(21.3)	3(0.9)	267(77.8)

f) *LAPM utilization and integration*

Ever users of any contraceptives were 76%; but, only 30% had utilized LAPM. Among the LAPM users, 80% of them were using implants followed by IUCD (13%). With regard to intention of using LAPM, 50% reported that they were using it since it is effective, but

11% of them were using it with the influence of health professionals. The most frequent reasons for non-use of LAPM among the eligible women were preference of short-acting methods (88%), husband's objection (4%) and fear of side effects (5.8%) [Table 5].

**Table 5 :** LAPM Utilization among HIV positive women in Tigray Public hospitals, 2013

Characteristics	n(%)
<b>Ever use of contraceptive methods (n=343)</b>	
Yes	261(76.1)
No	82(23.9)
<b>Use of LAPM (n=102)</b>	
Yes	102(29.7)
No	214(70.3)
<b>Type of LAPM (n=102)</b>	
IUCD	13(12.7)
Implant	82(80.4)
Female sterilization	7(6.9)
<b>Integration of FP with ART services (n=102)</b>	
Integrated	38(37.3)
Not integrated	64(62.7)
<b>Intention to use LAPM in the future (n=241)</b>	
Yes	59(24.5)
No	182(75.5)
<b>Counselled by health professionals on LAPM (n=241)</b>	
Yes	186(77.2)
No	55(22.8)
<b>Time of counseling (n=241)</b>	
Before starting ART	75(40.3)
After starting ART	111(59.7)

Pertaining to service integration, only 37% of the women got family planning services from ART clinic.

The rest received it from other clinics was separate from ART clinic. That's, HIV positive women had visited more

clinics at different time to get family planning methods and ART.

#### g) Predictors of LAPM utilization

Multiple logistic regression was run over the data to identify the factors that had significant association with LAPM utilization. Knowledge, attitude, age at delivery, current CD4 count and family size were significant predictors of LAPM utilization.

Higher knowledge on- and positive attitude towards LAPM were associated with the odds of using

LAPM (OR=3.2, 95% CI:1.35,7.8) and (OR=4.2, 95% CI:2.19,8.2), respectively. After controlling the effect of others, women with less CD4 cells (<200cells/mm<sup>3</sup>) (OR=2. 8, 95% CI: 1.2,6.3) and those with a desire to limit the number of children (OR=2. 1, 95% CI: 1.2,4.1) were more likely to utilize LAPM. Similarly, the odds of utilizing LAPM was higher among older women (OR=2.5, 95%: 1.19,5.4) and women with more children (OR=2.4, 95% CI: 1.2,5.08) than their counterparts [Table 6].

**Table 6 :** Predictors of LAPM utilization among HIV positive women in Tigray Public hospitals, 2013

	LAPM Utilization		OR(95% CI)
	Use n(%)	Non use n(%)	
<b>Characteristics</b>			
<b>Attitude</b>			
Positive	58(53.2)	51(46.8)	4.2(2.19, 8.2)*
Negative	44(18.8)	190(81.2)	1
<b>Knowledge</b>			
Low	3(23.1)	10(76.9)	1.1(0.2, 5.9)
Moderate	11(20.8)	42(79.2)	1
High	79(51.6)	74(48.4)	3.2(1.35, 7.8)*
<b>Age at delivery</b>			
<18y	21(22.1)	74(77.9)	1
≥18y	81(32.7)	167(67.3)	2.5(1.19, 5.4)*
<b>Family size</b>			
Less than four	58(25.3)	171(74.7)	1
Four and above	44(38.6)	70(61.4)	2.4(1.2,5. 08)*
<b>Current CD4 count (cells/mm<sup>3</sup>)</b>			
< 200	31(55.4)	25(44.6)	2.8(1.2, 6.3*
≥200	71(24.7)	216(75.3)	1
<b>Need of more children in the future</b>			
Yes	44(24)	139(76)	1
No	58(36.2)	102(63.8)	2.1(1.2, 4.1)

\* $p < 0.05$

## IV. DISCUSSION

Long Acting and Permanent Contraceptive utilization was 29.7%. Positive attitudes towards LAPM, knowledge on LAPM, age at delivery, the desire to limit the number of children and less CD4 count were predictors of LAPM utilization among HIV positive women. The integration of family planning service with ART was poor.

The current study indicates that a considerable number of HIV positive women heard of IUCD (63.5%), female sterilization (63.5%) and male sterilization (17.8%). In addition, the Ethiopian women have more knowledge on short acting contraceptives [9,19]. However, this finding was inconsistent with a study done in South Africa, in which the utilization for IUCD ranges from 26–41% [16-18]. A study in South Africa showed

that 93% of the participants heard about female sterilization and 28% about male sterilization [18]. The discrepancy could be due to the differences in the characteristics of study participants and nature of study settings and health system.

The current study found that LAPM utilization increases as the age of the participant increases. Similar finding was reported by a study done in South Africa, which shows that IUCD awareness was significantly associated with age [18]. It's obvious that women in Ethiopia start to give birth since the early age. Thus, They are more likely to use the LAPM since they would have enough number of children as their age goes on.

Attitude is the proximate predictor of LAPM utilization. If women have a positive attitude towards LAPM, they are more likely to utilize it. Working on avoiding misconception related to LAPM is crucial to

enhance the utilization of LAPM. For instance, the current study reported that more women had misconception that LAPM may cause infertility. Our study indicated a promising thing in which only 38% of the respondents had negative attitude towards LAPM utilization. The same is true in case of Pretoria where 79% and 76% had a favorable attitude towards IUCD utilization and female sterilization, respectively [13].

In the current study, a majority of the respondents (90.7%) agreed that women on ART can use LAPMs. This finding was higher as compared to a study done in Cape Town which showed that more than half of participants were either unaware of or unsure that women ART can use an IUCD [13]. Apart from this, 30.3% of the participants in this study believed that short acting contraceptive methods are more comfortable than LAPMs for HIV positive women. This is consistent with the finding in Cape Town where 44.1% of HIV positive participants were either unaware or unsure that sterilization is a more effective method of contraception than the injection [13].

The use of ART was associated with almost 80% increased risk of pregnancy since the health of the women gets improved [5]. Moreover, Ethiopia is a third country in which many HIV positive individuals reside- [7] - and has also set a plan in the HSDP IV to increase CPR from 32% in 2010 to 66% by the year 2015 [20]. However, LAPM utilization in this study is only 29.7%. This implies that the government of Ethiopia should work more on increasing the contraceptive utilization so as to reduce the unplanned pregnancies and maternal mortality. In addition, LAPM utilization among HIV positive women should be more than the general population to avert vertical transmission of the disease [20,21].

There is a good initiative from the Ethiopian government in which currently it allows the health extension workers to insert Implanon and this would increase accessibility of the methods to reach the remote areas. The same is true in this study that only 12.7% were using IUCD, while (80.4%) had used Implanon. In our study, however, the utilization of IUCD is higher than studies done in Pretoria (1%) -[22] - and there was no user of IUCD in a study done in Cape Town [15, 25]. In the current study, only 7% of the study participants used female sterilization,. But, this is consistent with three studies done in Cape Town and Pretoria in which 7.1%, 10%, and 13% of the HIV positive women used female sterilization [13,18,22].

In Ethiopia, most of the maternal health services are provided by the government at not cost. Obtaining the participation of the private health care sector in the provision of maternal health service, including LAPM could create a chance for women for easily accessibility of the services and it would be reachable to the population. On the contrast, in Nairobi only 10% of the

HIV positive mothers got the contraceptives from government health institution [15].

Providing appropriate counseling for HIV positive women about LAPM could increase the number of family planning users. But, there were different reasons why women were using or not using LAPM. The most frequently mentioned reasons for using LAPM were awareness of the effectiveness of the methods and thorough counseling from health professionals. Similar findings were reported in Tigray region, though the study was not limited to HIV positive women [23]. Among the reasons for not using LAPM, fear of insertion and removal, uncertainty of the safety for health and their effectiveness and influence of partners were some of the frequent ones. These findings are comparable with other studies in which 30.3% of the participants believed that short acting contraceptives are more comfortable than LAPM for HIV positive women and 3.7% of the respondents also mentioned fear of side effect is one of the barriers for utilization [13].

Fifty four percent of the HIV positive mothers in this study wanted to have more children in the future which is also consistent with a study done in Tigray region [23]. But, this was inconsistent with studies done in Nairobi and Swaziland in which 86% of the HIV positive women don't want to get pregnant for the next two years and 39.9% don't intend for future fertility [15,24]. This dissimilarity may be attributable to the differences in the study and population settings, including the access to health, level of awareness, sociodemographic characteristics of the women and etc.

This finding indicates that HIV positive women who had CD4 cells less than 200cells/mm<sup>3</sup> were more likely to use LAPM as compared with those who had higher CD4 cells. Moreover, the majority of LAPM users had a BMI less than 18.5 kg/m<sup>2</sup> (56.9%). As CD4 count is the indicator of viral suppression, having more CD4 count indicates that the health of the mothers is improved. Thus, they may feel to have more children. Moreover, a significant number of HIV positive women (53.2%) want to have a child for the future and one-third of household had a family size of five and more.

In our study, HIV positive women who had a higher knowledge were more likely to use LAPM and this is consistent with a study done in Rwanda which showed a greater rate of LAPM utilization as knowledge of mothers on the contraceptive methods increases [8].

While the Ethiopian family planning national guidelines advocate for dual family planning methods to prevent HIV/STI transmission and unintended pregnancies for HIV positive mothers [18], only 26% of the women were using condom together with other types of family planning methods. In addition, 2 in 5 women had an unintended pregnancy in their latest one. Increasing access to family planning and reducing

unintended pregnancies among HIV clients have a number of economic benefits [25].

A systematic review of 16 studies found that integration of family planning with HIV services had a positive contribution to the increase of HIV testing, quality of services, reduction of costs, condom and contraceptive use. It also has a potential role in reducing unwanted pregnancy, vertical transmission and health care costs [25,26]. In a study done in Tigray region, nearly half of the HIV positive women got their FP from ART clinic [23]. But, integration of family planning with the ART clinic was lower in our study which is only 37.3%. Moreover, findings from checklist also indicate that most of the hospitals don't have enough number of trained health professionals on LAPM, LAPM contraceptive methods and adequate IEC material in all ART clinics.

The study may have a limitation in that the partners' influence on the use of family planning was not addressed in this study. In addition, some of the data for the sensitive issues such as abortion might not be valid. However, we are confident that this limitation wouldn't have a negative influence on the findings given that the study attempted to cover all other attributes that may be associated with LAPM.

## V. CONCLUSION

LAPM utilization was low in the northern region of Ethiopia. Negative attitude towards LAPM, fear of developing side effects, partners objection, improvement in health and preference of short acting contraceptive influenced women not to use LAPM. Integration of family planning services with ART program was poor.

## VI. ACKNOWLEDGEMENT

The authors would like to thank Mekelle University, College of Health Sciences for funding the research. Our gratitude also goes to supervisors, data collectors, respondents who participated in the study and Tigray regional health bureau and Woreda health officials for their facilitation. We would like to thank Dr. Usha Kulkarni and Binta Sako for their support in editing the manuscript.

### *Competing interests*

The authors declare that they have no any competing interests.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. WHO. PMTCT strategic vision 2010-2015: preventing mother-to-child transmission of HIV to reach the UNGASS and Millennium Development Goals. Geneva 2010.
2. Halperin DT, Stover J, Reynolds HW. Benefits and costs of expanding access to family planning programs to women living with HIV. AIDS 2009, 23 (Suppl 1): S123-S130.
3. Rotenberg N, Baek C, Kalibala S, Rosen J: Evaluation of United Nations supported Pilot Projects for the Prevention of Mother-to-Child Transmission of HI New York: UNICEF and Population Council; 2003.
4. Myer L and Akugizibwe P. Impact of HIV Treatment Scale-Up on Women's Reproductive Health Care and Reproductive Rights in Southern Africa, J. Acquired Immune Def. Synd. 2009, 52 (1): S52-S53.
5. Myer L, Carter RJ, Katyal M, Toro P, El-Sadr WM, Abrams EJ. Impact of antiretroviral therapy on incidence of pregnancy among HIV-infected women in Sub-Saharan Africa: a cohort study. PLOs Medicine. February 9, 2010.
6. Warakamin S, Boonthai N, Tangcharoensathien V. Induced abortion in Thailand: current situation in public hospitals and legal perspectives. Reprod Health Matters. 2004; 12 (Suppl): 147-56.
7. United Nations commission. Contraceptive life saving commodities for women and children. March 2012.
8. Elul B, Delvaux T, Munyana E, Lahuerta M, Horowitz D, Ndagije F, Roberfroid D, Muqisha V, Nash D, Asimwe A: Pregnancy desires, and contraceptive knowledge and use among prevention of mother-to-child transmission clients in Rwanda. AIDS 2009, 23 (Suppl 1): S19-S26.
9. Central Statistical Agency [Ethiopia] and ORC Macro. Ethiopia Demographic and Health Survey. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ORC Macro 2011.
10. Reynolds HW, Steiner MJ, Cates W. Contraception's proved potential to fight HIV. Sex Transm Inf. 2005;81: 184-185.
11. Halperin D.T, Stover J, and Reynolds H.W. "Benefits and costs of expanding access to family planning programs for women living with HIV," AIDS, vol. 23, no. 1, pp. S123-S130, 2009.
12. TRHB. Tigray regional health bureau profile for the 2001/12 EFY. Tigray, Mekelle, 2013.
13. Credé et al. Factors impacting knowledge and use of long acting and permanent contraceptive methods by postpartum HIV positive and negative women in Cape Town, South Africa. BMC Public Health 2012, 12:197.
14. Homsy J, Bunnell R, Moore D, King R, Malamba S, et al. (2009) Reproductive intentions and outcomes among women on antiretroviral therapy in rural Uganda: a prospective cohort study. PLoS ONE 4 (1): e4149.
15. Bii SC, Otieno-Nyunya B, Siika A, Rotich JK. Family planning and safer sex practices among HIV infected women receiving prevention of mother-to-

- child transmission services at the Kitale District Hospital. *East Afr MED J* 2008; 85 (1): 46-50.
16. Gutin S.A, Mlobeli R, Moss M, Buga G, Morroni C. "Survey of knowledge, attitudes and practices surrounding the intrauterine device in South Africa," *Contraception*, vol. 83, no. 2, pp. 145–150, 2011.
  17. Van Zijl S, Morroni C, van der Spuy Z.M. "A survey to assess knowledge and acceptance of the intrauterine device in the family planning services in Cape town, South Africa," *Journal of Family Planning and Reproductive Health Care*, vol. 36, no. 2, pp. 73–78, 2010.
  18. Catherine S, et al. Awareness and Interest in Intrauterine Contraceptive Device Use among HIV-Positive Women in Cape Town, South Africa. *Infectious Diseases in Obstetrics and Gynecology*. Volume 2012, Article ID 956145, 8 pages.
  19. Alemayehu et al. Factors associated with utilization of long acting and permanent contraceptive methods among married women of reproductive age in Mekelle town, Tigray region, north Ethiopia. *BMCPregnancyandChildbirth*2012,12:6<http://www.biomedcentral.com/1471-2393/12/6>.
  20. FDRE. National Guideline for Family Planning Services in Ethiopia. FDRE: Ministry of Health. Addis Abeba. October, 2011.
  21. FMOH. Health Sector Strategic Plan (HSDP-IV) 20010/11-20014/15.FDRE:Minstry of health. Addis Ababa. 2010.
  22. Department of Health, Medical Research Council, South Africa: Demographic and Health Survey 2003 Pretoria: Department of Health; 2007.
  23. Yemane B et al. Utilization of Modern Contraceptives among HIV Positive Reproductive Age Women in Tigray, Ethiopia. *Hindawi Publishing Corporation ISRN AIDS*. Volume 2013, Article ID 319724,8pages<http://dx.doi.org/10.1155/2013/319724>.
  24. Warren et al. Family planning practices and pregnancy intentions among HIV-positive and HIV-negative postpartum women in Swaziland: a cross sectionalsurvey.*BMCPregnancyandChildbirth*2013,13:150<http://www.biomedcentral.com/14712393/13/150>.
  25. GBC health. Family planning and HIV services: increased efficiency and impact through integration may 2012.[www.gbchealth.org](http://www.gbchealth.org).
  26. Spaulding AB, et al. Linking family planning with HIV/AIDS interventions: a systematic review of the evidence. *AIDS*. 2009; 23 (Suppl 1): S79.





# GLOBAL JOURNALS INC. (US) GUIDELINES HANDBOOK 2015

---

[WWW.GLOBALJOURNALS.ORG](http://WWW.GLOBALJOURNALS.ORG)

## FELLOWS

### FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (FARSM)

Global Journals Incorporate (USA) is accredited by Open Association of Research Society (OARS), U.S.A and in turn, awards “FARSM” title to individuals. The 'FARSM' title is accorded to a selected professional after the approval of the Editor-in-Chief/Editorial Board Members/Dean.



- The “FARSM” is a dignified title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FARSS or William Walldroff, M.S., FARSM.

FARSM accrediting is an honor. It authenticates your research activities. After recognition as FARSM, you can add 'FARSM' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, and Visiting Card etc.

*The following benefits can be availed by you only for next three years from the date of certification:*



FARSM designated members are entitled to avail a 40% discount while publishing their research papers (of a single author) with Global Journals Incorporation (USA), if the same is accepted by Editorial Board/Peer Reviewers. If you are a main author or co-author in case of multiple authors, you will be entitled to avail discount of 10%.

Once FARSM title is accorded, the Fellow is authorized to organize a symposium/seminar/conference on behalf of Global Journal Incorporation (USA). The Fellow can also participate in conference/seminar/symposium organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent.



You may join as member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. In addition, it is also desirable that you should organize seminar/symposium/conference at least once.

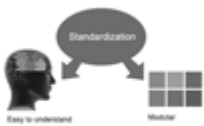
We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.





The FARSM can go through standards of OARS. You can also play vital role if you have any suggestions so that proper amendment can take place to improve the same for the benefit of entire research community.

As FARSM, you will be given a renowned, secure and free professional email address with 100 GB of space e.g. [johnhall@globaljournals.org](mailto:johnhall@globaljournals.org). This will include Webmail, Spam Assassin, Email Forwarders, Auto-Responders, Email Delivery Route tracing, etc.



The FARSM will be eligible for a free application of standardization of their researches. Standardization of research will be subject to acceptability within stipulated norms as the next step after publishing in a journal. We shall depute a team of specialized research professionals who will render their services for elevating your researches to next higher level, which is worldwide open standardization.

The FARSM member can apply for grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A. Once you are designated as FARSM, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria. After certification of all your credentials by OARS, they will be published on your Fellow Profile link on website <https://associationofresearch.org> which will be helpful to upgrade the dignity.



The FARSM members can avail the benefits of free research podcasting in Global Research Radio with their research documents. After publishing the work, (including published elsewhere worldwide with proper authorization) you can upload your research paper with your recorded voice or you can utilize chargeable services of our professional RJs to record your paper in their voice on request.



The FARSM member also entitled to get the benefits of free research podcasting of their research documents through video clips. We can also streamline your conference videos and display your slides/ online slides and online research video clips at reasonable charges, on request.





The FARSM is eligible to earn from sales proceeds of his/her researches/reference/review Books or literature, while publishing with Global Journals. The FARSS can decide whether he/she would like to publish his/her research in a closed manner. In this case, whenever readers purchase that individual research paper for reading, maximum 60% of its profit earned as royalty by Global Journals, will be credited to his/her bank account. The entire entitled amount will be credited to his/her bank account exceeding limit of minimum fixed balance. There is no minimum time limit for collection. The FARSM member can decide its price and we can help in making the right decision.

The FARSM member is eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get remuneration of 15% of author fees, taken from the author of a respective paper. After reviewing 5 or more papers you can request to transfer the amount to your bank account.



## MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (MARSM)

The ' MARSM ' title is accorded to a selected professional after the approval of the Editor-in-Chief / Editorial Board Members/Dean.

The “MARSM” is a dignified ornament which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., MARSM or William Walldroff, M.S., MARSM.



MARSM accrediting is an honor. It authenticates your research activities. After becoming MARSM, you can add 'MARSM' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, Visiting Card and Name Plate etc.

*The following benefits can be availed by you only for next three years from the date of certification.*



MARSM designated members are entitled to avail a 25% discount while publishing their research papers (of a single author) in Global Journals Inc., if the same is accepted by our Editorial Board and Peer Reviewers. If you are a main author or co-author of a group of authors, you will get discount of 10%.

As MARSM, you will be given a renowned, secure and free professional email address with 30 GB of space e.g. [johnhall@globaljournals.org](mailto:johnhall@globaljournals.org). This will include Webmail, Spam Assassin, Email Forwarders, Auto-Responders, Email Delivery Route tracing, etc.





We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The MARSM member can apply for approval, grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A.



Once you are designated as MARSM, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria.

It is mandatory to read all terms and conditions carefully.





## AUXILIARY MEMBERSHIPS

### Institutional Fellow of Open Association of Research Society (USA) - OARS (USA)

Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as “Institutional Fellow of Open Association of Research Society” (IFOARS).

The “FARSC” is a dignified title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FARSC or William Walldroff, M.S., FARSC.



The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as “Institutional Board of Open Association of Research Society”-(IBOARS).

*The Institute will be entitled to following benefits:*



The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA). The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.

The author fees of such paper may be waived off up to 40%.

The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.



The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.

The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of “Open Association of Research Society, U.S.A (OARS)” so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.



Journals Research  
inducing researches

The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.



We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.



After nomination of your institution as “Institutional Fellow” and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.

The board can also take up the additional allied activities for betterment after our consultation.

### **The following entitlements are applicable to individual Fellows:**

Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.



Open Association of Research Society (US)/ Global Journals Incorporation (USA), as described in Corporate Statements, are educational, research publishing and professional membership organizations. Achieving our individual Fellow or Associate status is based mainly on meeting stated educational research requirements.

Disbursement of 40% Royalty earned through Global Journals : Researcher = 50%, Peer Reviewer = 37.50%, Institution = 12.50% E.g. Out of 40%, the 20% benefit should be passed on to researcher, 15 % benefit towards remuneration should be given to a reviewer and remaining 5% is to be retained by the institution.



We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth \$ 2376 USD.

### **Other:**

**The individual Fellow and Associate designations accredited by Open Association of Research Society (US) credentials signify guarantees following achievements:**

- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.



- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10% discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
- The Fellow can earn 60% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.
- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in-depth understanding of the application of suitable techniques to a particular area of research practice.

## Note :

//

- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of “Difference of Opinion [if any]” among the Board members, our decision will be final and binding to everyone.

//



## PROCESS OF SUBMISSION OF RESEARCH PAPER

The Area or field of specialization may or may not be of any category as mentioned in 'Scope of Journal' menu of the GlobalJournals.org website. There are 37 Research Journal categorized with Six parental Journals GJCST, GJMR, GJRE, GJMBR, GJSFR, GJHSS. For Authors should prefer the mentioned categories. There are three widely used systems UDC, DDC and LCC. The details are available as 'Knowledge Abstract' at Home page. The major advantage of this coding is that, the research work will be exposed to and shared with all over the world as we are being abstracted and indexed worldwide.

The paper should be in proper format. The format can be downloaded from first page of 'Author Guideline' Menu. The Author is expected to follow the general rules as mentioned in this menu. The paper should be written in MS-Word Format (\*.DOC,\*.DOCX).

The Author can submit the paper either online or offline. The authors should prefer online submission.Online Submission: There are three ways to submit your paper:

**(A) (I) First, register yourself using top right corner of Home page then Login. If you are already registered, then login using your username and password.**

**(II) Choose corresponding Journal.**

**(III) Click 'Submit Manuscript'. Fill required information and Upload the paper.**

**(B) If you are using Internet Explorer, then Direct Submission through Homepage is also available.**

**(C) If these two are not convenient, and then email the paper directly to dean@globaljournals.org.**

Offline Submission: Author can send the typed form of paper by Post. However, online submission should be preferred.



# PREFERRED AUTHOR GUIDELINES

## MANUSCRIPT STYLE INSTRUCTION (Must be strictly followed)

Page Size: 8.27" X 11"

- Left Margin: 0.65
- Right Margin: 0.65
- Top Margin: 0.75
- Bottom Margin: 0.75
- Font type of all text should be Swis 721 Lt BT.
- Paper Title should be of Font Size 24 with one Column section.
- Author Name in Font Size of 11 with one column as of Title.
- Abstract Font size of 9 Bold, "Abstract" word in Italic Bold.
- Main Text: Font size 10 with justified two columns section
- Two Column with Equal Column with of 3.38 and Gaping of .2
- First Character must be three lines Drop capped.
- Paragraph before Spacing of 1 pt and After of 0 pt.
- Line Spacing of 1 pt
- Large Images must be in One Column
- Numbering of First Main Headings (Heading 1) must be in Roman Letters, Capital Letter, and Font Size of 10.
- Numbering of Second Main Headings (Heading 2) must be in Alphabets, Italic, and Font Size of 10.

**You can use your own standard format also.**

### Author Guidelines:

1. General,
2. Ethical Guidelines,
3. Submission of Manuscripts,
4. Manuscript's Category,
5. Structure and Format of Manuscript,
6. After Acceptance.

### 1. GENERAL

Before submitting your research paper, one is advised to go through the details as mentioned in following heads. It will be beneficial, while peer reviewer justify your paper for publication.

### Scope

The Global Journals Inc. (US) welcome the submission of original paper, review paper, survey article relevant to the all the streams of Philosophy and knowledge. The Global Journals Inc. (US) is parental platform for Global Journal of Computer Science and Technology, Researches in Engineering, Medical Research, Science Frontier Research, Human Social Science, Management, and Business organization. The choice of specific field can be done otherwise as following in Abstracting and Indexing Page on this Website. As the all Global



Journals Inc. (US) are being abstracted and indexed (in process) by most of the reputed organizations. Topics of only narrow interest will not be accepted unless they have wider potential or consequences.

## 2. ETHICAL GUIDELINES

Authors should follow the ethical guidelines as mentioned below for publication of research paper and research activities.

Papers are accepted on strict understanding that the material in whole or in part has not been, nor is being, considered for publication elsewhere. If the paper once accepted by Global Journals Inc. (US) and Editorial Board, will become the copyright of the Global Journals Inc. (US).

**Authorship: The authors and coauthors should have active contribution to conception design, analysis and interpretation of findings. They should critically review the contents and drafting of the paper. All should approve the final version of the paper before submission**

The Global Journals Inc. (US) follows the definition of authorship set up by the Global Academy of Research and Development. According to the Global Academy of R&D authorship, criteria must be based on:

- 1) Substantial contributions to conception and acquisition of data, analysis and interpretation of the findings.
- 2) Drafting the paper and revising it critically regarding important academic content.
- 3) Final approval of the version of the paper to be published.

All authors should have been credited according to their appropriate contribution in research activity and preparing paper. Contributors who do not match the criteria as authors may be mentioned under Acknowledgement.

Acknowledgements: Contributors to the research other than authors credited should be mentioned under acknowledgement. The specifications of the source of funding for the research if appropriate can be included. Suppliers of resources may be mentioned along with address.

**Appeal of Decision: The Editorial Board's decision on publication of the paper is final and cannot be appealed elsewhere.**

**Permissions: It is the author's responsibility to have prior permission if all or parts of earlier published illustrations are used in this paper.**

Please mention proper reference and appropriate acknowledgements wherever expected.

If all or parts of previously published illustrations are used, permission must be taken from the copyright holder concerned. It is the author's responsibility to take these in writing.

Approval for reproduction/modification of any information (including figures and tables) published elsewhere must be obtained by the authors/copyright holders before submission of the manuscript. Contributors (Authors) are responsible for any copyright fee involved.

## 3. SUBMISSION OF MANUSCRIPTS

Manuscripts should be uploaded via this online submission page. The online submission is most efficient method for submission of papers, as it enables rapid distribution of manuscripts and consequently speeds up the review procedure. It also enables authors to know the status of their own manuscripts by emailing us. Complete instructions for submitting a paper is available below.

Manuscript submission is a systematic procedure and little preparation is required beyond having all parts of your manuscript in a given format and a computer with an Internet connection and a Web browser. Full help and instructions are provided on-screen. As an author, you will be prompted for login and manuscript details as Field of Paper and then to upload your manuscript file(s) according to the instructions.



To avoid postal delays, all transaction is preferred by e-mail. A finished manuscript submission is confirmed by e-mail immediately and your paper enters the editorial process with no postal delays. When a conclusion is made about the publication of your paper by our Editorial Board, revisions can be submitted online with the same procedure, with an occasion to view and respond to all comments.

Complete support for both authors and co-author is provided.

#### 4. MANUSCRIPT'S CATEGORY

Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

#### 5. STRUCTURE AND FORMAT OF MANUSCRIPT

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also. Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

**Papers:** These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

- (a) Title should be relevant and commensurate with the theme of the paper.
- (b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.
- (c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.
- (d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.
- (e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.
- (f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;
- (g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.
- (h) Brief Acknowledgements.
- (i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.



The Editorial Board reserves the right to make literary corrections and to make suggestions to improve brevity.

It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

## Format

*Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.*

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than  $1.4 \times 10^{-3} \text{ m}^3$ , or 4 mm somewhat than  $4 \times 10^{-3} \text{ m}$ . Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

## Structure

All manuscripts submitted to Global Journals Inc. (US), ought to include:

**Title:** The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

*Abstract, used in Original Papers and Reviews:*

### Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

### Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art. A few tips for deciding as strategically as possible about keyword search:



- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

*Acknowledgements: Please make these as concise as possible.*

## References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

## Tables, Figures and Figure Legends

*Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.*

*Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.*

## Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution (at final image size) ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs) : >350 dpi; figures containing both halftone and line images: >650 dpi.



**Color Charges:** It is the rule of the Global Journals Inc. (US) for authors to pay the full cost for the reproduction of their color artwork. Hence, please note that, if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a color work agreement form before your paper can be published.

*Figure Legends: Self-explanatory legends of all figures should be incorporated separately under the heading 'Legends to Figures'. In the full-text online edition of the journal, figure legends may possibly be truncated in abbreviated links to the full screen version. Therefore, the first 100 characters of any legend should notify the reader, about the key aspects of the figure.*

## **6. AFTER ACCEPTANCE**

Upon approval of a paper for publication, the manuscript will be forwarded to the dean, who is responsible for the publication of the Global Journals Inc. (US).

### **6.1 Proof Corrections**

The corresponding author will receive an e-mail alert containing a link to a website or will be attached. A working e-mail address must therefore be provided for the related author.

Acrobat Reader will be required in order to read this file. This software can be downloaded

(Free of charge) from the following website:

[www.adobe.com/products/acrobat/readstep2.html](http://www.adobe.com/products/acrobat/readstep2.html). This will facilitate the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof.

Proofs must be returned to the dean at [dean@globaljournals.org](mailto:dean@globaljournals.org) within three days of receipt.

As changes to proofs are costly, we inquire that you only correct typesetting errors. All illustrations are retained by the publisher. Please note that the authors are responsible for all statements made in their work, including changes made by the copy editor.

### **6.2 Early View of Global Journals Inc. (US) (Publication Prior to Print)**

The Global Journals Inc. (US) are enclosed by our publishing's Early View service. Early View articles are complete full-text articles sent in advance of their publication. Early View articles are absolute and final. They have been completely reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after sending them. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so Early View articles cannot be cited in the conventional way.

### **6.3 Author Services**

Online production tracking is available for your article through Author Services. Author Services enables authors to track their article - once it has been accepted - through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The authors will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript.

### **6.4 Author Material Archive Policy**

Please note that if not specifically requested, publisher will dispose off hardcopy & electronic information submitted, after the two months of publication. If you require the return of any information submitted, please inform the Editorial Board or dean as soon as possible.

### **6.5 Offprint and Extra Copies**

A PDF offprint of the online-published article will be provided free of charge to the related author, and may be distributed according to the Publisher's terms and conditions. Additional paper offprint may be ordered by emailing us at: [editor@globaljournals.org](mailto:editor@globaljournals.org).



Before start writing a good quality Computer Science Research Paper, let us first understand what is Computer Science Research Paper? So, Computer Science Research Paper is the paper which is written by professionals or scientists who are associated to Computer Science and Information Technology, or doing research study in these areas. If you are novel to this field then you can consult about this field from your supervisor or guide.

#### TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

**1. Choosing the topic:** In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

**2. Evaluators are human:** First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

**3. Think Like Evaluators:** If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

**4. Make blueprints of paper:** The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

**5. Ask your Guides:** If you are having any difficulty in your research, then do not hesitate to share your difficulty to your guide (if you have any). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work then ask the supervisor to help you with the alternative. He might also provide you the list of essential readings.

**6. Use of computer is recommended:** As you are doing research in the field of Computer Science, then this point is quite obvious.

**7. Use right software:** Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

**8. Use the Internet for help:** An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

**9. Use and get big pictures:** Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

**10. Bookmarks are useful:** When you read any book or magazine, you generally use bookmarks, right! It is a good habit, which helps to not to lose your continuity. You should always use bookmarks while searching on Internet also, which will make your search easier.

**11. Revise what you wrote:** When you write anything, always read it, summarize it and then finalize it.





**12. Make all efforts:** Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

**13. Have backups:** When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

**14. Produce good diagrams of your own:** Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

**15. Use of direct quotes:** When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

**16. Use proper verb tense:** Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

**17. Never use online paper:** If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

**18. Pick a good study spot:** To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

**19. Know what you know:** Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

**20. Use good quality grammar:** Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

**21. Arrangement of information:** Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

**22. Never start in last minute:** Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

**23. Multitasking in research is not good:** Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

**24. Never copy others' work:** Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

**25. Take proper rest and food:** No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

**26. Go for seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.



**27. Refresh your mind after intervals:** Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

**28. Make colleagues:** Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

**29. Think technically:** Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

**30. Think and then print:** When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

**31. Adding unnecessary information:** Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

**32. Never oversimplify everything:** To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

**33. Report concluded results:** Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

**34. After conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

## INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

### Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

### Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.



Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

### **General style:**

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

- Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

- Use standard writing style including articles ("a", "the," etc.)
- Keep on paying attention on the research topic of the paper
- Use paragraphs to split each significant point (excluding for the abstract)
- Align the primary line of each section
- Present your points in sound order
- Use present tense to report well accepted
- Use past tense to describe specific results
- Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives
- Shun use of extra pictures - include only those figures essential to presenting results

### **Title Page:**

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.



### Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

### Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

### Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

### Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.



- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

#### **Procedures (Methods and Materials):**

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

#### **Materials:**

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

#### **Methods:**

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

#### **Approach:**

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

#### **What to keep away from**

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

#### **Results:**

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



## Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

### What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

### Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

### Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

### Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

### Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.





## THE ADMINISTRATION RULES

Please carefully note down following rules and regulation before submitting your Research Paper to Global Journals Inc. (US):

**Segment Draft and Final Research Paper:** You have to strictly follow the template of research paper. If it is not done your paper may get rejected.

- The **major constraint** is that you must independently make all content, tables, graphs, and facts that are offered in the paper. You must write each part of the paper wholly on your own. The Peer-reviewers need to identify your own perceptive of the concepts in your own terms. NEVER extract straight from any foundation, and never rephrase someone else's analysis.
- Do not give permission to anyone else to "PROOFREAD" your manuscript.
- **Methods to avoid Plagiarism is applied by us on every paper, if found guilty, you will be blacklisted by all of our collaborated research groups, your institution will be informed for this and strict legal actions will be taken immediately.)**
- To guard yourself and others from possible illegal use please do not permit anyone right to use to your paper and files.



CRITERION FOR GRADING A RESEARCH PAPER (COMPILATION)  
BY GLOBAL JOURNALS INC. (US)

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals Inc. (US).

Topics	Grades		
	A-B	C-D	E-F
<b>Abstract</b>	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
<b>Introduction</b>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<b>Methods and Procedures</b>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<b>Result</b>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<b>Discussion</b>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<b>References</b>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



# INDEX

---

---

## **A**

Adetokunbo · 47

---

## **B**

Bahirdar · 13

Bromosulophthalein · 19

Bromsulphthaleine · 22

---

## **H**

Hemodilution · 19

---

## **I**

Implanon · 58

---

## **O**

Oxaloacetate · 19

---

## **T**

Tangcharoensathien · 60

Transaminase · 19

---

## **W**

Weldegerima · 16



save our planet



# Global Journal of Medical Research

---

Visit us on the Web at [www.GlobalJournals.org](http://www.GlobalJournals.org) | [www.MedicalResearchJournal.org](http://www.MedicalResearchJournal.org)  
or email us at [helpdesk@globaljournals.org](mailto:helpdesk@globaljournals.org)

ISSN 9755896



© Global Journals