Online ISSN : 2249-4618
Print ISSN : 0975-5888
DOI : 10.17406/GJMRA

Global Journal

of Medical Research: E

Gynecology & Obstetrics



Reproductive Health Education

Oligohydramnios with Good Fetal

Highlights

Bovine Serum in Different Cell

Maternal and Perinatal Morbidity

Discovering Thoughts, Inventing Future

VOLUME 19 ISSUE 3 VERSION 1.0

© 2001-2019 by Global Journal of Medical Research, USA

Volume 19 Issue 27 was originally issued as E3

Global Journal of Medical Research: E
Gynecology and Obstetrics

Volume 19 Issue 27
Originally issued as E3

Global Journal of Medical Research: E
Gynecology and Obstetrics
Volume 19 Issue 3 (Ver. 1.0)

Open Association of Research Society

© Global Journal of Medical Research. 2019.

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
945th Concord Streets,
Framingham Massachusetts Pin: 01701,
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 Pvt Ltd
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*

eContacts

Press Inquiries: *press@globaljournals.org*
Investor Inquiries: *investors@globaljournals.org*
Technical Support: *technology@globaljournals.org*
Media & Releases: *media@globaljournals.org*

Pricing (Excluding Air Parcel Charges):

Yearly Subscription (Personal & Institutional)
250 USD (B/W) & 350 USD (Color)

Editorial Board

Global Journal of Medical Research

Dr. Jixin Zhong

Department of Medicine, Affiliated Hospital of Guangdong Medical College, Zhanjiang, China, Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH 43210, United States

Dr. Han-Xiang Deng

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

Rama Rao Ganga

MBBS MS (University of Health Sciences, Vijayawada, India) MRCS (Royal College of Surgeons of Edinburgh, UK) United States

Dr. Roberto Sanchez

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

Dr. Feng Feng

Boston University Microbiology 72 East Concord Street R702 Duke University, United States of America

Dr. William Chi-shing Cho

Ph.D., Department of Clinical Oncology Queen Elizabeth Hospital Hong Kong

Dr. Lisa Koodie

Ph.D. in Pharmacology, University of Minnesota Medical School, Minnesota, United States

Dr. Yash Kapadia

Doctor of Dental Surgery, University of Louisville School of Dentistry, United States

Dr. Krishna M Vukoti

Ph.D in Biochemistry, M.Tech in Biotechnology, B.S in Pharmacy, Case Western Reserve University, United States

Dr. Guodong Niu

Ph.D. in Entomology, M.S. in Microbiology, B.S. in Environmental Science, The Pennsylvania State University, University Park, PA, United States

Dr. Xingnan Li

Ph.D in Cell Biology, B.S in Molecular Biology, Stanford University, United States

Dr. Arpita Myles

Ph.D, M.Sc. in Biotechnology, B.Sc in Microbiology, Botany and Chemistry, United States

Dr. Michael Wink

Ph.D., Technical University Braunschweig, Germany Head of Department Institute of Pharmacy and Molecular Biotechnology, Heidelberg University, Germany

Dr. Wael Ibrahim Abdo Aikhiary

Ph.d, M.Sc in Clinical Pathology, MBBCH, M.D in Medicine, Mansoura University, Faculty of Medicine, Egypt

Dr. Izzet Yavuz

Ph.D, M.Sc, D Ped Dent. Associate Professor, Pediatric Dentistry Faculty of Dentistry, University of Dicle, Turkey

Dr. Rabiatul Basria SMN Mydin

Ph.D in Cancer Genetics, BSC (HONS) in Biotechnology, University of Science Malaysia, Malaysia

Dr. (Mrs.) Sunanda Sharma

Ph.D, M.V.Sc., AH, M.V.Sc in Animal Reproduction, Veterinary Obstetrics and Gynaecology, College of Veterinary & Animal Science, Rajasthan Agricultural University, Bikaner, India

Dr. Subhadra Nandakumar

Ph.D., M.Sc in Applied Microbiology, B.Sc in Microbiology, University of Madras, India

Sanguansak Rerksuppaphol

Department of Pediatrics Faculty of Medicine Srinakharinwirot University NakornNayok, Thailand

Antonio Simone Lagan

M.D. Unit of Gynecology and Obstetrics Department of Human Pathology in Adulthood and Childhood “G. Barresi” University of Messina, Italy

Dr. Pejcic Ana

Assistant Medical Faculty Department of Periodontology, and Oral Medicine University of Nis, Serbia

Dr. Sunil Sirohi

B.Pharm in Pharmaceutical Sciences, MS in Pharmacology, Ph.D in Pharmacology, Washington State University, Pullman, WA, United States

Dr. Tsvetelina Velikova

Ph.D, MD in Clinical Immunology, Medical University of Sofia Sofia University, Bulgaria

Dr. M. Alagar Raja

Ph.D in Pharmaceutical Sciences, M.Pharmacy in Pharmaceutical Analysis, B.Pharmacy S. Chattanatha Karayalar College of Pharmacy, Nalanda Collge of Pharmacy Tenkasi, Tamil Nadu, India

Dr. Osama Hasan Alali

Ph.D, Master's Degree, Postgraduate Diploma in Orthodontics, Dentistry, Department of Orthodontics, University of Aleppo Dental School Aleppo, Syria

Dr. Sultan Sheriff Dhastagir

Ph.D, M.Sc in Medical Biochemistry, Faculty of Medicine, Garyounis/Benghazi University, Libya

Dr. Seung-Yup Ku

M.D., Ph.D., Seoul National University Medical College, Seoul, Korea Department of Obstetrics and Gynecology Seoul National University Hospital, Seoul, Korea

Dr. Ivandro Soares Monteiro

M.Sc., Ph.D. in Psychology Clinic, Professor University of Minho, Portugal

Dr. Pina C. Sanelli

Associate Professor of Radiology 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

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 Int, United States

Dr. Alfio Ferlito

Professor Department of Surgical Sciences University of Udine School of Medicine, Italy

Dr. Rajeev Vats

Ph.D., M.Sc., B.Sc in Zoology, M.Phil in Bioinformatics, PGDCA, The University of Dodoma, Tanzania

Contents of the Issue

i. Copyright Notice
ii. Editorial Board Members
iii. Chief Author and Dean
iv. Contents of the Issue

1. Maternal and Perinatal Morbidity in Second Stage Versus First Stage Cesarean Sections in Sultan Qaboos University Hospital. *1-6*
2. Severe Oligohydramnios with Good Fetal Outcome- A Case Report. *7-8*
3. Alternatives to Fetal Bovine Serum in Different Cell Cultures. *9-16*
4. Reproductive Health Education Package to Reduce Risky Sexual Behaviors among Undergraduates in Selected State Universities in Sri Lanka: A Controlled Trial. *17-24*

v. Fellows
vi. Auxiliary Memberships
vii. Preferred Author Guidelines
viii. Index

Global Journal of Medical Research: E
Gynecology and Obstetrics
Volume 19 Issue 3 Version 1.0 Year 2019
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Maternal and Perinatal Morbidity in Second Stage Versus First Stage Cesarean Sections in Sultan Qaboos University Hospital

By Mallak Alkalbani & Mariam Mathew
Sultan Qaboos University

Abstract- *Introduction:* Over the last few decades, cesarean sections have been increased dramatically due to several medical and non-medical reasons. We can classify cesarean sections in emergency into either of the two stages of labor; at the first stage in which the cervix is dilated but not fully or at the second stage where the cervix is fully dilated. Studies revealed that the second stage cesarean sections are associated with a higher risk of maternal morbidities such as, intraoperative trauma and hemorrhage, which increase the need for blood transfusion. Also, some fetal morbidities can manifest, such as low APGAR score and umbilical artery pH at birth. This study aimed to assess the maternal and perinatal morbidity in the second stage cesarean sections compared to the first stage cesarean sections in Sultan Qaboos University Hospital.

Materials and Methods: This is a retrospective cross-sectional study. The study included all emergency cesarean sections on both stages of labor done in SQUH during a three years from January 2015 to December 2017. Maternal and neonatal characteristics and outcomes were obtained from delivery ward registers and Hospital Information System, which were analyzed later. Bar charts were used to display the prevalence. The continuous variables were tested by t- test and Mann-Whitney U test.

Keywords: *cesarean sections, second stage, maternal, neonatal, morbidities.*

GJMR-E Classification: *NLMC Code: WQ 430*



Strictly as per the compliance and regulations of:

© 2019. Mallak Alkalbani & Mariam Mathew. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Maternal and Perinatal Morbidity in Second Stage Versus First Stage Cesarean Sections in Sultan Qaboos University Hospital

Mallak Alkalbani [α] & Mariam Mathew [σ]

Abstract- Introduction: Over the last few decades, cesarean sections have been increased dramatically due to several medical and non-medical reasons. We can classify cesarean sections in emergency into either of the two stages of labor; at the first stage in which the cervix is dilated but not fully or at the second stage where the cervix is fully dilated. Studies revealed that the second stage cesarean sections are associated with a higher risk of maternal morbidities such as, intraoperative trauma and hemorrhage, which increase the need for blood transfusion. Also, some fetal morbidities can manifest, such as low APGAR score and umbilical artery pH at birth. This study aimed to assess the maternal and perinatal morbidity in the second stage cesarean sections compared to the first stage cesarean sections in Sultan Qaboos University Hospital.

Materials and Methods: This is a retrospective cross-sectional study. The study included all emergency cesarean sections on both stages of labor done in SQUH during a three years from January 2015 to December 2017. Maternal and neonatal characteristics and outcomes were obtained from delivery ward registers and Hospital Information System, which were analyzed later. Bar charts were used to display the prevalence. The continuous variables were tested by t- test and Mann-Whitney U test.

Results: Out of 172 cesareans sections, 93 (54.3%) were done during the first stage of labor, and 79 (45.9%) were during the second stage of labor. Second stage cesarean sections are associated with higher rate of maternal and neonatal morbidities compared to first stage cesareans. The rate of intraoperative hemorrhage (9.0% vs. 1.1%), the extension of the uterine incision (10.1% vs. 1.1%) and the need for blood transfusion (73.4% vs. 37.6%) are significantly higher in second stage cesareans. The mean length of hospital stay is significantly higher in the second stage cesareans. The babies born by second stage cesareans have a lower mean umbilical artery pH (7.22).

Conclusion: Intraoperative hemorrhage, the extension of uterine incision, increased need for blood transfusion and low neonatal arterial cord pH were the most morbidities associated with second-stage cesarean sections in SQUH. Further prospective multicentric studies with more sample size should be done.

Keywords: cesarean sections, second stage, maternal, neonatal, morbidities.

Author α: Medical student, College of Medicine, Sultan Qaboos University, Oman. e-mail: aalhabsi526@gmail.com
Author σ: Department of Obstetrics & Gynecology, Sultan Qaboos University Hospital, Oman.

I. Introduction

a) Cesarean sections

Over the last few decades, cesarean sections have been increased dramatically due to several medical and non-medical reasons (1). The average rate of the cesarean sections in Oman has raised progressively from 9.7% in 2000 to 15.7% in 2009 (2). In Sultan Qaboos university hospital, the cesarean sections rate is similar to those at developed countries (2). Therefore, considerable attention has been devoted to cesarean sections as it has more adverse outcomes on the mother and baby than vaginal delivery (3), (4), (5). The worldwide increase in the cesarean section rate has been attributed to some risk factors such as; high maternal Body mass index (BMI), advanced maternal age, high birth weight, previous cesarean sections, pre-pregnancy diabetes, mal presentations and abnormal positions of the fetus. Despite these factors may be predictable, they cannot be changed in labor (3), (6), (7).

b) Types of cesarean sections

Cesarean delivery comprises two types that are elective operations and emergency operations. Elective cesarean sections are planned cesareans, whereas emergency cesarean sections are performed due to obstetric emergencies. The types of cesarean sections are linked with different degrees of morbidities. In contrast to elective cesarean section, the emergency cesarean section is riskier on mother (8). Emergency cesarean sections which are done in labor could be at either of the two stages of labour; in the first stage in which the cervix is dilated but not fully or in the second stage where the cervix is completely dilated. Fetal distress, failure to progress, and dystocia are main causes for emergency cesarean sections at both stages of labor (9), (10).

c) Emergency cesarean sections comorbidities

Many existing studies revealed that the second stage cesarean sections are associated with a higher risk of maternal and perinatal morbidities than the first stage cesareans (3), (10), (11) and (12). Vousden et al. (2014) reported that second stage cesarean sections have a higher probability of intraoperative trauma such as a laceration to bladder or bowel or extension of the

© 2019 Global Journals

uterine incision. Furthermore, women who underwent second stage cesarean sections have a higher risk of hemorrhage, which increases the need of blood transfusion (8), (10), (11).

Alongside maternal morbidities, emergency cesarean sections are associated with a higher risk of adverse outcomes on babies. In contrast to the first stage, there is a consensus that the babies who born by the second stage cesarean sections are more likely to be admitted to the Special Care Baby Unit (SCBU), because they probably have low APGAR score and umbilical artery pH at birth (10), (11).

Murphy et al. (2001: pp.1207) reveal that "women were less likely to proceed to the cesarean section or to have a major hemorrhage if they were managed by a senior operator." Therefore, skills and knowledge are required to reduce the number of emergency cesarean sections and adverse

There were no studies conducted in Oman to compare maternal and perinatal morbidity between second versus first stage cesarean sections. Thus, the aim of this study was to assess the maternal and perinatal morbidity in the second stage cesarean sections compared to the first stage cesarean sections in Sultan Qaboos University Hospital (SQUH), which advanced our understanding on this topic and will serve as a platform for future studies in this field.

II. Materials and Methods

a) Study design and sample

This study was a retrospective cross-sectional study which included pregnant women who had emergency cesarean sections in the first stage of labor and second stage of labor at Sultan Qaboos University Hospital (SQUH), during a period of three years from January 2015 to December 2017.

Medical Record Numbers of women who underwent emergency cesarean sections in the first and second stage of labor during the study period were obtained from the delivery ward registers, and the required data was gathered from the Obstetrics and Gynecology department and Neonatal Unit through Hospital Information System (Track Care system). The data was saved in a secured excel sheet. Ethical approval from Sultan Qaboos university Ethics and Research committee was obtained before the data collection.

Exclusion criteria: Women with multiple cesarean sections, multiple pregnancies, fetal anomalies, intrauterine growth restriction, premature labor and fetal malpresentation were excluded from this study.

The collected data included maternal and neonatal characteristics such as maternal age, body mass index, gestational age, parity and dilatation of cervix at cesarean, type of anesthesia used, neonatal birth weight, and gender. Data on maternal morbidity included intensive care unit admission, blood loss, need for blood transfusion, Intra-operative complications, wound infection, operative duration, and the length of hospital stay. Neonatal morbidity included APGAR score at 1 and 5 min, arterial cord pH, birth asphyxia, neonatal trauma, neonatal sepsis, and neonatal intensive care admission.

b) Statistical analysis

The data was analyzed using Statistical Package for the Social sciences (SPSS) version 23.0. Descriptive statistics were obtained and displayed in tables to represent the continuous variables. Bar charts were used to display the percentage of maternal and neonatal morbidities.

One sample Kolmogorov-Smirnov test was used to test the normality of the continuous variables. To test the difference in the variables between the two stages of cesarean sections, t-test was used for normally distributed continuous variables (arterial cord pH, APGAR score at 1 and 5 minutes) and Mann-Whitney U test for the continuous variables that do not follow the normal distribution. Chi-square test was used for categorized variables. Significance was considered when p-values were ≤ 0.05. The analysis was done under the supervision of statisticians.

III. Results

The sample size of this study included 172 women who underwent cesarean section during the period between January 2015 and December 2017. About 93 (54.1%) of the cesarean sections were done during the first stage of labor and 79 (45.9%) were during the second stage of labor.

© 2019 Global Journals

a) Maternal and neonatal characteristics

Table 1: Maternal characteristics by stage of labor

Parameters	First stage cesarean sections (total number = 93)	Second stage cesarean sections (total number = 79)
	Mean ± Standard Deviation (SD)	Mean ± Standard Deviation (SD)
Age (years)	28 ± 4	28 ± 5
BMI (Kilogram/ meter^2)	33.7 ± 6.6	31.5 ± 6.4
Gestational age (weeks)	39 ± 1	39 ± 1
Cervical dilation on decision to operate (cm)	5.6 ± 2.3	10.0 ± 0
Parity:	Number (%)	
Primigravida	74 (79.6%)	48 (60.8%)
Multigravida	19 (20.4%)	31 (39.2%)

The demographical data of the mothers in both stages is presented in Table 1. The mean age of women delivered by first stage cesarean section is 28 years, which is similar to the mean age of second stage cesarean patients. Patients who underwent cesarean sections in the first stage of labor have average body mass index of 33.7 Kg/m^2, which is higher than the second stage cesarean patients. However, the difference is not significant with P-value less than 0.05. Gestational age of women in both stages is 39 weeks. The mean cervical dilation on the decision to operate in first stage cesarean sections is 5.6 cm. The prevalence of primigravida is 79.6% and 60.8% in the first and second stages of labor, respectively.

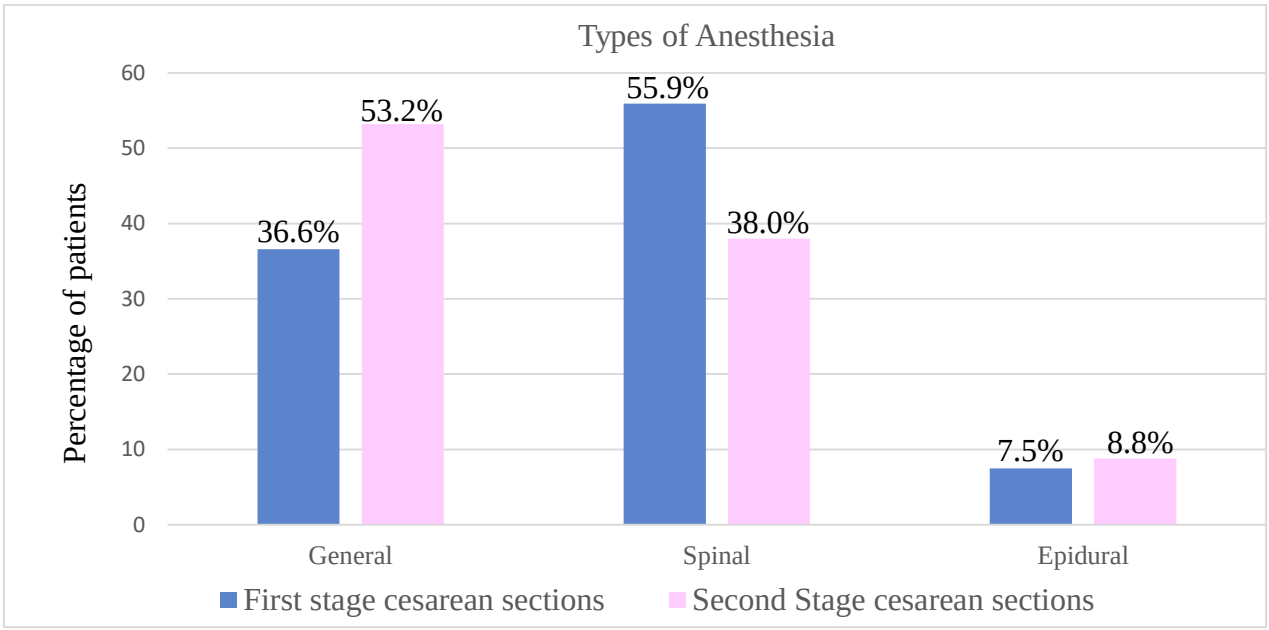


Figure 1: Type of Anesthesia used for Cesarean sections

In the first stage cesareans, the majority of mothers received spinal anesthesia 52 (55.9%). Approximately, 34 (36.6%) of them had general anesthesia. The rest of the first stage cesarean sections 7 (7.5%) were done under epidural anesthesia.

In the second stage cesarean sections, general anesthesia was received by 42 (53.2%) women. Also, 30 (38%) of second stage cesarean sections were done under spinal anesthesia, and 7 (8.8%) were done under epidural anesthesia as shown in Figure 1.

Table 2: Neonatal characteristics and stage of cesarean section

Parameters	First stage cesarean sections (total number = 93)		Second stage cesarean sections (total number = 79)	
Baby Gender	Male	Female	Male	Female
	Number (%)			
	51 (54.8)	42 (45.2%)	48 (60.8%)	31(39.2%)
Baby Birth Weight (Kilogram)	Mean ± Standard Deviation			
	3.3 ± 0.5		3.3 ± 0.3	

© 2019 Global Journals

In the first stage cesarean sections, 51 (54.8%) babies were males and 42 (45.2%) were females. In the second stage cesarean sections, 48 (60.8%) babies were males and 31 (39.2%) were females. The average weight of babies in both groups was similar to 3.3 Kg, as shown in Table 2.

b) Maternal outcomes

Table 3: Maternal Outcomes in the first stage and second stage cesarean sections

	First stage cesarean sections (Total number = 93)			Second stage cesarean sections (Total number = 79)			p- value
	Mean ± SD	Minimum value	Maximum value	Mean ± SD	Minimum value	Maximum value	
Blood loss (milliliter)	582.4 ± 230.1	200.0	1800.0	656.8 ± 334.7	250.0	2000.0	0.354
Pre-surgery Hemoglobin (gram/deciliter)	11.6 ± 1.4	8.0	15.3	11.1 ± 1.4	8.0	15.0	0.022
Post-surgery Hemoglobin (gram/deciliter)	10.1 ± 1.3	6.8	13.3	9.7 ± 1.3	7.4	13.5	0.043
Operation duration (Minutes)	59.3 ± 16.9	36	103	59.5 ± 19.2	36	120	0.732
Hospital stay (days)	2.99 ± 0.68	2	7	3.32 ± 0.89	2	7	0.05

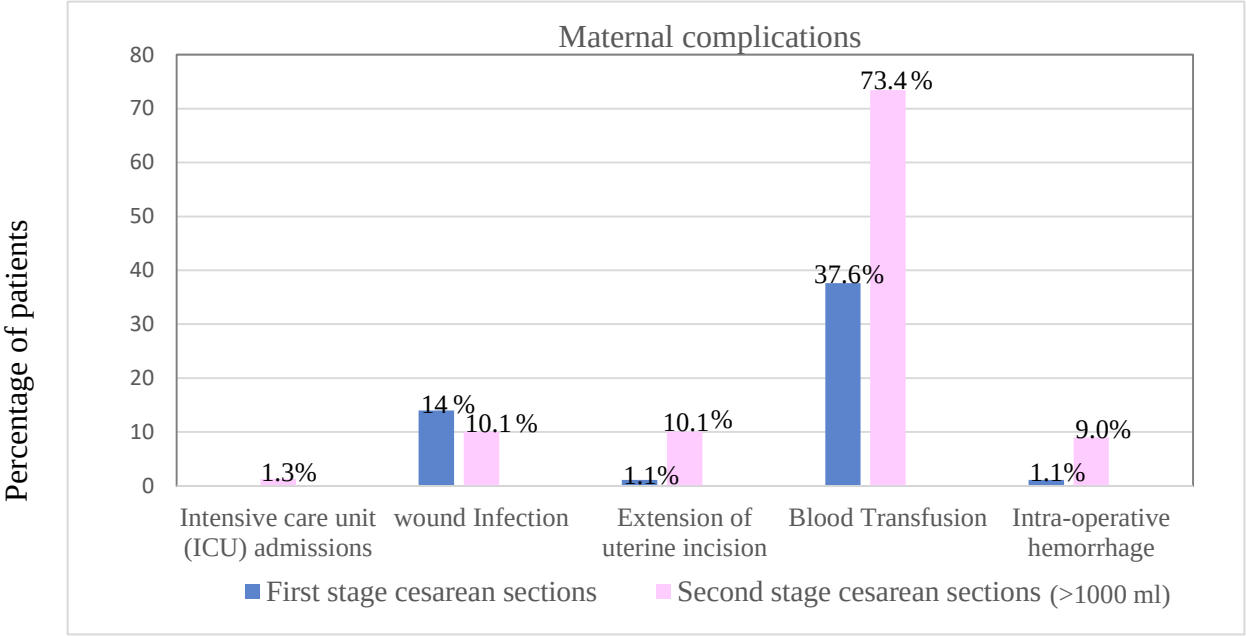


Figure 2: Maternal post-operative complications by stage of cesarean section

Table 3 represents maternal outcomes in the two types of cesarean sections, and Figure 2 represents maternal postoperative complications. The mean blood loss in women who underwent second stage cesarean sections is found to be higher (656.8 ± 334.6 ml) than the mean of the first stage (582.4 ± 230.1 ml). However, the difference is not significant as the p-value is 0.354 (more than 0.05). Pre-surgery mean hemoglobin is significantly lower in second stage cesarean sections (11.1 g/dl) and the P-value was 0.022. Post-operative mean hemoglobin is also significantly lower in the second stage cesarean sections (9.74 g/dl) with a p-value of 0.043. Women who underwent second stage cesarean sections have a significantly higher frequency of intraoperative hemorrhage (7 (9.0%)), with a p-value of 0.024. Thus, 58 (73.4%) women who underwent a second stage cesarean section needed a blood transfusion. In contrast to the second stage cesareans, there are less blood transfusion needed 35 (37.6%) for first stage cesarean sections women. The difference is significant (p-value < 0.001).

The average time needed to perform the cesarean section is almost equal in both stages, 59.3 minutes in the first stage, and 59.5 minutes in the second stage. The second stage cesareans required a significantly longer hospital stay a mean of 3.32 days, with a p-value of 0.05.

One woman (1.3%) from second stage cesareans was admitted to the Intensive care unit (ICU) and none from the first stage, which is not significant

© 2019 Global Journals

(p-value = 0.46). Thirteen patients (14%) of the first stage cesarean sections and eight patients (10.1%) of second stage cesarean sections had wound infection after the operation; the difference is not significant (p-value = 0.19). The number of extension of the uterine incision is significantly higher in second stage cesareans (8 (10.1%)), (p-value = 0.12). There were no cases of thromboembolism and visceral injury in both groups.

c) Neonatal outcomes

Table 4: Neonatal outcomes in the first stage and second stage cesareans

Parameters	First stage cesarean sections (total number = 93)			Second stage cesarean sections (total number = 79)			p - value
	Mean ± SD	Minimum value	Maximum value	Mean ± SD	Minimum value	Maximum value	
Umbilical artery pH	7.28 ± 0.11	6.9	7.9	7.22 ± 0.10	6.9	7.6	0.020
APGAR score at 1 minute	8.28 ± 1.35	4	9	8.03 ± 1.76	3	9	0.297
APGAR score at 5 minutes	9.58 ± 0.74	7	10	9.61 ± 0.89	4	10	0.830

Table 4 shows that babies delivered by second stage cesareans have a significantly lower mean arterial cord pH (7.22) compared to first stage cesareans (7.28), with a p-value of 0.02. There is no significant difference between stages in mean APGAR scores at both 1 and 5 minutes (p- values > 0.05).

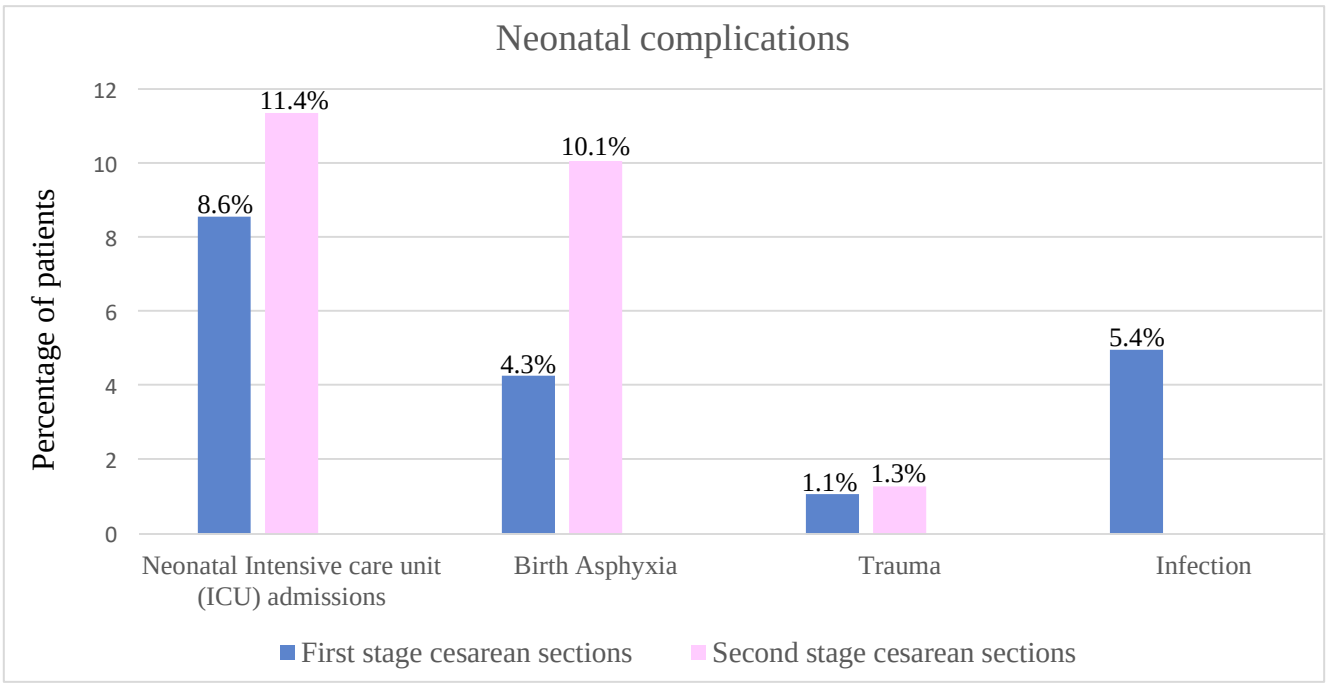


Figure 3: Percentage of Neonatal complications by stage of cesarean section

In figure 3, it is shown that neonates who were born by second-stage cesarean section have higher rates of Neonatal Intensive Care Unit (NICU) admissions 9 (11.4%) and Birth asphyxia 8 (10.1%). There is only one baby in each stage that has trauma. The difference between stages is not significant in all neonatal complications (p-value > 0.05).

IV. Discussion

Over the last few decades, cesarean sections have been increased dramatically due to various reasons. Cesarean delivery can be either elective or emergency operations. Emergency cesarean sections could be either at the first stage or the second stage of labor. Literature reveals more morbidities associated with second-stage cesarean sections compared to the first stage cesareans as shown in our study.

Unlike Asicioglu *et al*., our study revealed that the difference between first and second stage cesarean sections in mean blood loss was not significant. While, Asicioglu *et al.* revealed a significant increase in mean blood loss in second stage cesarean sections. Despite that blood loss difference is not significant in our study; it is found that intraoperative hemorrhage is significantly higher in second stage cesarean sections. Thus, the need for blood transfusion is also higher in second stage cesarean sections. These findings are supported by existing studies that revealed the same findings

© 2019 Global Journals

(Bashir *et al.*, 2018), (Asicioglu *et al.*, 2014), (Vousden *et al.*, 2014) .

Moreover, our results reveal that the extension of uterine incision cases were considerably higher in the second stage cesarean sections. This result supports the existing evidence of an increase in extension of uterine incision in the second stage cesarean sections (15), (11), (14), (13).

Based on this study, the prolonged hospital stay needed in second stage cesarean sections due to more complications is in line with the findings of Asicioglu *et al.* study. On the other hand, Lurie *et al.* reported no significant difference in length of hospitalization between the two stages of emergency cesarean patients. Thus, more studies are needed to test the difference in-hospital stay in the second versus the first stage cesarean sections.

Second-stage cesarean section babies had lower arterial cord pH in our study and other studies as well (10), (11). These studies also recorded lower APGAR score, more birth asphyxia and trauma thus more Neonatal Intensive Care Unit admissions among second stage cesarean section babies, unlike our results that reported no significant difference.

Asicioglu *et al.*, (2014) reported that "A cesarean delivery performed during the second stage of labour is technically difficult because the fetal head engagement in the maternal pelvis has already been completed, and the maternal uterine muscle is very thin and tense. Additionally, the identification of the bladder and the low segment of the uterus is very difficult and birthing relatively larger infants is more difficult and traumatic", which explains the findings. The non-significant findings in our study is probably due to the small sample size.

V. Conclusion

In conclusion, Intraoperative hemorrhage, the extension of uterine incision, increased need for blood transfusion, and low neonatal arterial cord pH were the most common morbidities associated with second-stage cesarean sections in SQUH. Other findings were not significant.

References Références Referencias

1. Ye J, Zhang J, Mikolajczyk R, Torloni M R, Gülmezoglu A M, Betran A P. Association between rates of caesarean section and maternal and neonatal mortality in the 21st century: A worldwide population-based ecological study with longitudinal data. BJOG An Int J Obstet Gynaecol. 2016; 123(5): 745–53.
2. Al Busaidi I, Al-Farsi Y, Ganguly S, Gowri V. Obstetric and non-obstetric risk factors for cesarean section in Oman. Oman Med J. 2012;27(6): 478–81.
3. Murphy D J, Liebling R E, Verity L, Swingler R, Patel R. Early maternal and neonatal morbidity associated with operative delivery in second stage of labour: a cohort study. Lance. 2001; 358(9289): 1203–7.
4. Burrows L J, Meyn L A, Weber A M. Maternal morbidity associated with vaginal versus cesarean delivery. Obstet Gynecol. 2004; 103(5 I): 907–12.
5. Liu S, Liston R M, Joseph K S, Heaman M, Sauve R, Kramer M S. Vaginal Delivery At Term. Cmaj. 2007; 176(4): 455–60.
6. Hung S, Morrison D R, Whittington L A, Fein S B. Prepartum work, job characteristics, and risk of cesarean delivery. Birth. 2002; 29(1): 10–7.
7. Patel R R, Peters T J, Murphy D J. Prenatal risk factors for Caesarean section. Analyses of the ALSPAC cohort of 12 944 women in England. Int J Epidemiol. 2005; 34(2): 353–67.
8. Allen V M, O'Connell C M, Baskett T F. Maternal morbidity associated with cesarean delivery without labor compared with induction of labor at term. Obstet Gynecol. 2006; 108(2): 286–94.
9. Victoria M. Allen, a Colleen M. O'Connell b TFB. Maternal and perinatal morbidity of caesarean delivery at full cervical dilatation compared with caesarean delivery in the first stage of labour. Arch Gynecol Obstet. 2005; 112: 986–90.
10. Selo-Ojeme D, Sathiyathasan S, Fayyaz M. Caesarean delivery at full cervical dilatation versus caesarean delivery in the first stage of labour: Comparison of maternal and perinatal morbidity. Arch Gynecol Obstet. 2008; 278(3): 245–9.
11. Vousden N, Cargill Z, Briley A, Tydeman G, Shennan A H. Caesarean section at full dilatation: incidence, impact and current management. Obstet Gynaecol. 2014;16(3):199– 205.
12. Corry EMA, Ramphul M, Rowan A M, Segurado R, Mahony R M, Keane D P. Exploring full cervical dilatation caesarean sections–A retrospective cohort study. Eur J Obstet Gynecol Reprod Biol. 2018; 224: 188–91.
13. Asicioglu O, Güngördük K, Yildirim G, Asicioglu B B, Güngördük C, Ark C, et al. Second-stage vs first-stage caesarean delivery: Comparison of maternal and perinatal outcomes. J Obstet Gynaecol (Lahore). 2014; 34(7): 598–604.
14. Bashir A J, Ibrahim R J, Ahmed Y, Elhassan M, Alawad AAM, Handady SOM. Maternal and Perinatal Outcomes Among Women Underwent Second-Stage Versus First-Stage Caesarean Delivery at Ibrahim Malik Hospital in Sudan. 2018; 4–7.
15. Lurie S, Raz N, Boaz M, Sadan O, Golan A. Comparison of maternal outcomes from primary cesarean section during the second compared with first stage of labor by indication for the operation. Eur J Obstet Gynecol Reprod Biol. 2014; 182: 43–7.

© 2019 Global Journals

Global Journal of Medical Research: E
Gynecology and Obstetrics
Volume 19 Issue 2 Version 1.0 Year 2019
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Severe Oligohydramnios with Good Fetal Outcome- A Case Report

By Dr. Sampada & Dr. Tushar Palve

Introduction- Amniotic fluid provides a protected milieu for the growing fetus, cushioning the fetus against mechanical and biological injury, supplying nutrients and facilitating growth and movement.

Oligohydramnios is defined as a single pocket measuring 2 cm in both vertical and horizontal planes or AFI less than 5 cm.

Incidence of oligohydramnios varies between 0.5 to > 5 %.

Causes of oligohydramnios:

- Maternal – postdated pregnancy, PPROM, hypertension, autoimmune disorders and maternal medications like prostaglandin synthetase inhibitors.
- Fetal- IUGR, fetal anomalies particularly of renal tract. Most commonly associated include bilateral renal agenesis, multicystic dysplastic kidneys, bladder outlet obstruction and infantile polycystic kidney disease.
- Other factors noted to affect are maternal hydration and fetal presentation.
- As per some reports Change of Breech to cephalic presentation has shown increase in AFI.

GJMR-E Classification: NLMC Code: WQ 200



Strictly as per the compliance and regulations of:

© 2019. Dr. Sampada & Dr. Tushar Palve. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Severe Oligohydramnios with Good Fetal Outcome- A Case Report

Dr. Sampada [α] & Dr. Tushar Palve [σ]

I. Introduction

Amniotic fluid provides a protected milieu for the growing fetus, cushioning the fetus against mechanical and biological injury, supplying nutrients and facilitating growth and movement.

Oligohydramnios is defined as a single pocket measuring 2 cm in both vertical and horizontal planes or AFI less than 5 cm.

Incidence of oligohydramnios varies between 0.5 to > 5 %.

Causes of oligohydramnios:

- Maternal – postdated pregnancy, PPROM, hypertension, autoimmune disorders and maternal medications like prostaglandin synthetase inhibitors.
- Fetal- IUGR, fetal anomalies particularly of renal tract. Most commonly associated include bilateral renal agenesis, multicystic dysplastic kidneys, bladder outlet obstruction and infantile polycystic kidney disease.
- Other factors noted to affect are maternal hydration and fetal presentation.
- As per some reports Change of Breech to cephalic presentation has shown increase in AFI.

Adverse perinatal outcomes associated with oligohydramnios are – structural anomalies, SGA, umbilical cord compression, uteroplacental insufficiency, which is related to fetal growth restriction, pre-eclampsia and other maternal morbidities and increased incidence of MSAF.

II. Case Report

27 yr female, married since 12 yr, G5P4L2NND2, registered and immunised came to ANC opd with USG obs s/o AFI 0.3 cm at 28 weeks of gestation breech presentation with EFW- 1200 gms.

Targetted AFI was 0+0+0+0.3 cm.

Patient was admitted in ANC ward and evaluated for oligohydramnios. O/E, patient had clinical oligohydramnios with fetal parts easily palpable. Congenital anomaly scan was done which was suboptimal due to advanced gestational age. Patient was given 1 pint alamine with D5. USG obs was done which was s/o SLIUG of MGA 28.3 weeks with AFI- 2cm with normal doppler with EFW-1272 gms with cephalic presentation.

Adequate intravenous and oral hydration was maintained. Patient was started on cap astymineforte tds, arginine granules tds and protein powder which was continued till delivery. 2 more pint alamine was transfused along with D5.

Serial USG obs with targetted AFI was done, which showed adequate liquor.

- USG obs 10.1.19- s/o SLIUG of MGA 32.4 weeks with adequate AFI – 13-14 cm with normal doppler with EFW- 2035gms with cephalic presentation.
- USG obs 2.2.19- s/o SLIUG of MGA 33.6 weeks with AFI- 12-13 cm with EFW- 2209gms with cephalic presentation.
- USG obs 16.2.19- s/o SLIUG of MGA 36 weeks with AFI- 11-12 cm with EFW- 2798gms with cephalic presentation.

Patient was closely monitored and advised regular ANC visits. FHS/NST monitoring done. DFKC charting was explained to patient. Patient was admitted at 37 weeks of gestation for safe confinement.

A full term male child weighing 2682 kg delivered by emergency LSCS in view of PROM with transverse lie at 38 weeks of gestation. Baby cried immediately after birth with good APGAR score of 8/10 at 1 min and 9/10 at 5 min of birth. Baby was discharged after routine immunisation with uneventful early neonatal period.

III. Discussion

Management depends on the associated pregnancy complication and on the gestational age. when remote from term the endeavour is to prolong the pregnancy with close fetal monitoring.

Nearer term, pregnancy termination is planned with assessement of risk to fetus. Continuous intrapartum fetal heart rate monitoring is offered, if facilities exists, to detect early signs of hypoxia and perform timely intervention.

In our case, oligohydramnios was detected in third trimester but remote from term which was actively managed with alamine infusion, adequate hydration and IUGR regimen. There was change of presentation seen from breech to cephalic in successive scans. Pregnancy was prolonged enough for fetal maturity which resulted in a good fetal and maternal outcome.

Author α: Resident, GGMC & JJH, Mumbai-08.
e-mail: reach.drsampada@gmail.com
Author σ: Asso. Prof.

© 2019 Global Journals

A study "Maternal and fetal outcome in oligohydramnios - study of 100 case" was done from May, 2009 to Nov, 2011, which included 100 patients in 3rd trimester of pregnancy with oligohydramnios. Incidence was seen more in primigravida and operative intervention was also more in primigravida. Most common reason to perform caesarean was fetal distress which was due to coordinate compression and IUGR. Oligohydramnios was related to growth retardation and NICU admission. Approx 7% patients were found with fetoplacental insufficiency on Doppler study.

Another study "Maternal and perinatal outcome in oligohydramnios- study from a tertiary care hospital, Banglore, Karnataka, India" done from Nov, 2015 to April, 2016 which included 410 pregnant women of gestational age > 37 weeks. Incidence of oligohydramnios was found to be 14%. 62% underwent LSCS with fetal distress bring most common indication for it. Incidence of low birth weight was 38.6%. 1/4th of them had APGAR score < 7 at 1 minute. 40% babies were admitted to NICU.

IV. Conclusion

- To conclude, oligohydramnios is generally associated with either maternal comorbidities or fetal anomalies, both were not seen in our case.
- Expectant management with maternal hydration, alamine infusion etc has comparable maternal and neonatal outcome in women with isolated idiopathic oligohydramnios.

© 2019 Global Journals

Global Journal of Medical Research: E
Gynecology and Obstetrics
Volume 19 Issue 3 Version 1.0 Year 2019
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Alternatives to Fetal Bovine Serum in Different Cell Cultures

By Safaa A. Warda, Hossam A. Fahmy & Fatma F. Warda
Ain shams University

Abstract- Culture of animal cells is a key operation in bioscience at which fetal bovine serum is the most widely used. Other new alternatives were examined for growth of cell culture as newly born calf serum (NBCS), goat serum (GS) and Equine platelet lysate (EPL). Cell growth and viability was investigated in target cells (Vero– MDBK) using different concentration of alternatives. In general the platelet lysate medium 7 -10 % (EPL) supported cell growth and maintained viabilities comparable or superior to (NBCS). Goat serum exihbit heterologous cells in the first passage then the growth were similar to newly born calf serum with adding low concentration % of (GS). - 5% & 6% up to 10% (GS) in MDBK and Vero cells respectively. 0.1% EPL could be used with lower % Goat serum to enhance cellular morphology.

Keywords: equine platelet lysate, goat serum, newly born calf serum, vero, MDBK, cellular viability, serum-free medium.

GJMR-E Classification: NLMC Code: WQ 211



Strictly as per the compliance and regulations of:

© 2019. Safaa A. Warda, Hossam A. Fahmy & Fatma F. Warda. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Alternatives to Fetal Bovine Serum in Different Cell Cultures

Safaa A. Warda [α], Hossam A. Fahmy [σ] & Fatma F. Warda [ρ]

Abstract- Culture of animal cells is a key operation in bioscience at which fetal bovine serum is the most widely used. Other new alternatives were examined for growth of cell culture as newly born calf serum (NBCS), goat serum (GS) and Equine platelet lysate (EPL). Cell growth and viability was investigated in target cells (Vero– MDBK) using different concentration of alternatives. In general the platelet lysate medium 7 -10 % (EPL) supported cell growth and maintained viabilities comparable or superior to (NBCS). Goat serum exihbit heterologous cells in the first passage then the growth were similar to newly born calf serum with adding low concentration % of (GS). - 5% & 6% up to 10% (GS) in MDBK and Vero cells respectively. 0.1% EPL could be used with lower % Goat serum to enhance cellular morphology.

Keywords: equine platelet lysate, goat serum, newly born calf serum, vero, MDBK, cellular viability, serum-free medium.

I. Background

Fetal bovine serum is the most widely used serum for animal cell culture, mainly due to its high concentration of growth factors and low concentration of immunoglobulins. The use of FBS is associated with challenges such as high variability in batch-to-batch composition, risk of transmitting bovine infections or the initiation of the xenogeneic immune response to bovine antigens and rising cost and complications of the purification of products (Brindley et al., 2012- Bieback, 2013).

Commercially available sera, adult bovine and newly born calf serum (NBCS), sheep, horse, goat sera found to be suitable for the growth of most cell lines and primary culture. Primary cultures from G .pig, chicken embryo fibroblast, monkey kidney (Savant, 1987), peritoneal macrophages were prepared and proliferate in media with goat serum (GS) (Paranjape, 2004). Also, GS used in studies different nutrients & cellular metabolism (Parap, 1995) and virus replication (Paranjape & Cadam 1985). Growth media supplemented with GS were used for in vitro cultivation of Thielaria parasite (Sharma et al., 1998). Developments towards reduced and serum-free media, chemically defined media, maintenance media, and suspension culture media for anchorage-dependent cell lines have been realized (Tezel and Priore 1998).

A new cell culture supplement, platelet lysate, was evaluated compared with fetal bovine serum (FBS), an established industrial medium for animal cell culture. Generally, platelet lysate medium was less complex than FBS. Platelets considered as concentrated supply of platelet-derived growth factor (PDGF) and transforming growth factor (TGF) (Fukimizu and Grinell 1990) which play an important role in the growth of cell culture as they are participating in many diverse cellular functions. Also, Platelets are the primary source of a number of growth factors, attachment factors (fibronectin and vitronectin), enzymes, serotonin and other factors (Ross and Raines, 1990). The platelet lysate medium demonstrated lack of microorganisms, mycoplasma, and endotoxins (Liselott et al., 2003). There was no significant difference in DNA methylation profiles of Human Platelets lysate and fetal calf serum on mesenchymal cells and did not affect their differentiation potential towards osteogenic or adipogenic lineage (Fernandez-Rebollo et al., 2017)

Thus, the goal of this study, to demonstrate the potential role of newly born calf serum, platelet lysate alone and goat serum, as a growth-promoting supplement in media used for the growth of different cells line culture (Vero & MDBK).

II. Materials and Methods

a) Collection of goat blood (According to Paranjape, 2004)

Keep muslin clothes covered bucket & gathered the blood as soon as the animal slaughtered. Poor the blood and leave to clot at room temperature then leave at 4^0C overnight. Discard the Cotton muslin, poor the serum and centrifugate 300 rpm for 30 min at 4^0C. Filtration by sietzfilter, sterility was applied then the serum was inactivated at 56 ^{0}C for 30 min. Quality control testing for the presence of antibodies.

b) Equine growth factors E-GF™

E-GF™ is a preparation consisting of a pale yellow round cake of Lyophilized equine Platelets Growth Factors E-GF™ According to Schallmoser and Strunk, (2013). Blood (800–900 ml) collected from 5 mature horses; blood centrifuged at 200 g for 15 min. The plasma was then centrifuged at 400 g for 15 min. The platelet pellet then resuspended with aspirated

Author α: Prof. Equine Viral Dis. Dept., Veterinary Serum and Vaccine Research Institute, Abbasia, Cairo, Postal No: 11381 P.O. Box 131.
e-mail: safaawarda@yahoo.com
Author σ: Prof. of clinical pathology Dept., faculty of medicine, Ain shams University.
Author ρ: Assistant Prof. Equine Viral Dis. Dept., Veterinary Serum and Vaccine Research Institute.

© 2019 Global Journals

platelet-poor plasma. The PC diluted to 1 x 10^{12} platelets/ l after a complete blood platelets count was performed. Platelet lysate then generated by a single freeze/thaw Cycle at 80°C overnight followed by 37°C thaw. Resulting products were pooled, centrifuged at 4000 g for 15 min, and filtered with 0.22 lm filters and was stored frozen at -18^{0}C ready for use. The breakdown of platelets in vitro before lyophilization leads to release of supra-physiological doses of growth factors. The vial is reconstituted in 2 ml of sterile normal saline; gently swirl the vial for 3 minutes just before use in cell cultures. The reconstituted vial shouldn't be used after 1 hr.

c) Cellular toxicity

In 96 wells T. C plate in triplicates wells, dispense100μ of either Vero (African green monkey transformed kidney epithelial cells) and (MDBK) Madien Darby Bovine Kidney cells cell lines supplemented with different concentrations (4, 6 ,8, 10, 12 & 15 %) of Growth enhancing additives (GS, EPL, and NBCS). Incubation was performed at 37^{0}C for 2-3 days with daily examination under a light microscope.

d) Cell cultures and Viability

Vero & MDBK cells were cultured in Modified Eagle's Medium (MEM) with 0.1% Penicillin-Streptomycin, in duplicates T.C-flasks for each concentration and incubated at 37^{0}C. Growth promoting additives (GPA) added to media in concentrations 4-10 % goat serum, newly born calf serum and platelet lysate 5-10% for several passages. Typical growth of monolayer of cells was performed. Studying viability of Vero cells after incubation 24 hr., trypsinization applied by Trypsin-EDTA for 1 min cells suspension at 5, 8 & 10% (GEA). Mix the harvested cells with equal volume of Trypan blue stain, counting the cells and viability by improved Neubauer haemocytometer were applied.

$$\% \text{ Viability} = \frac{No.\ of\ viable\ cells}{Total\ No.\ of\ cell} \times 100$$

III. Results

a) Cellular toxicity

Vero & MDBK cell lines cultured in medium supplemented with GS (Table, 1) showed No toxicity at all concentrations (6, 8, 10, 12 & 15 %) with the preferable growth rate. Low Concentration of Growth factors at 4% showed abnormal cellular shapes, but these changes did not end with cell death so all tested concentrations can use safely.

The previous cell lines exhibit No toxicity at all concentrations (4, 6, 8, 10, 12 & 15 %) using platelet lysate.

b) Proliferation and viability assays

Goat serum exhibit flattened and irregular heterologous shape of cells in the first passage, after that adaption of cell lines occurred in the following passages. The results of figure (1) revealed that cells had been proliferated using goat serum in concentration 5% & 6% in MDBK and Vero cells. 0.5-1% Equine Platelet lysate (EPL) could be added to growth mediain case of low concentration of (GS) that induced a preferable cellular morphology and proliferation rate. Growth rate% in cell lines recorded 80 and 90% in Vero & MDBK cells respectively at 7% of goat serum.

Figure (3) demonstrated a significant growth rate in either MDBK or Vero cells up to 7- 10% (EPL) supported cell growth and maintained Viabilities comparable or similar to (NBCS). Significant proliferation achieved at 10% in GS, EPL and NBCS.

Table 2 revealed that cell counting and viability of Vero After 24hr cultured in media containing at 8% EPL, NBCS, and GS were 39, 30 and 31 mean while at 10% were 52.2, 47.8

Table 1: Growth factors cytotoxicity on cell culture

Cell line	Concentration of Growth factors %	Affected wells/ Total No.	
		Goat serum	Platelets lysate
Vero and MDBK	4	3/3	1/3
	6	0/3	0/3
	8	0/3	0/3
	10	0/3	0/3
	12	0/3	0/3
	15	0/3	0/3

*No. of wells showed microscopically deviation in cells/total No.

Growth promoting factor	Used%	Vero	MDBK
Goat serum (GS)	4	30	50
	5	50	70
	6	60	70
	7	70	80
	8	90	100
	9	90	100
	10	100	100
(GS)+1%(EPL)	5	60	70
	6	60	80
	7	80	90
Newly born calf serum. (NBCS)	5	30	50
	6	50	60
	7	60	80
	8	80	90
	9	90	100
	10	100	100

© 2019 Global Journals

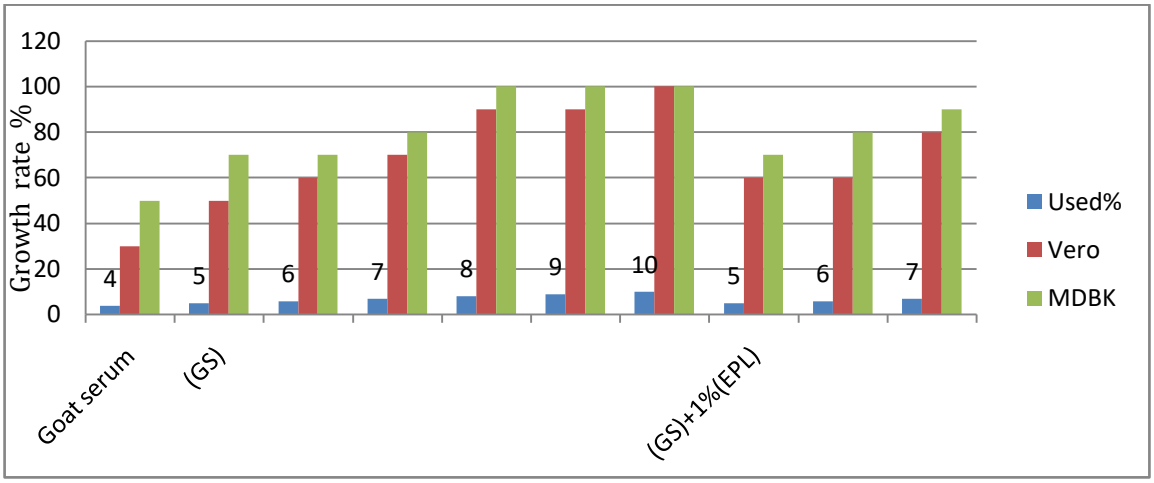


Figure 1: Comparison between GS alone and EPL with GS on the growth of Vero & MDBK cells.

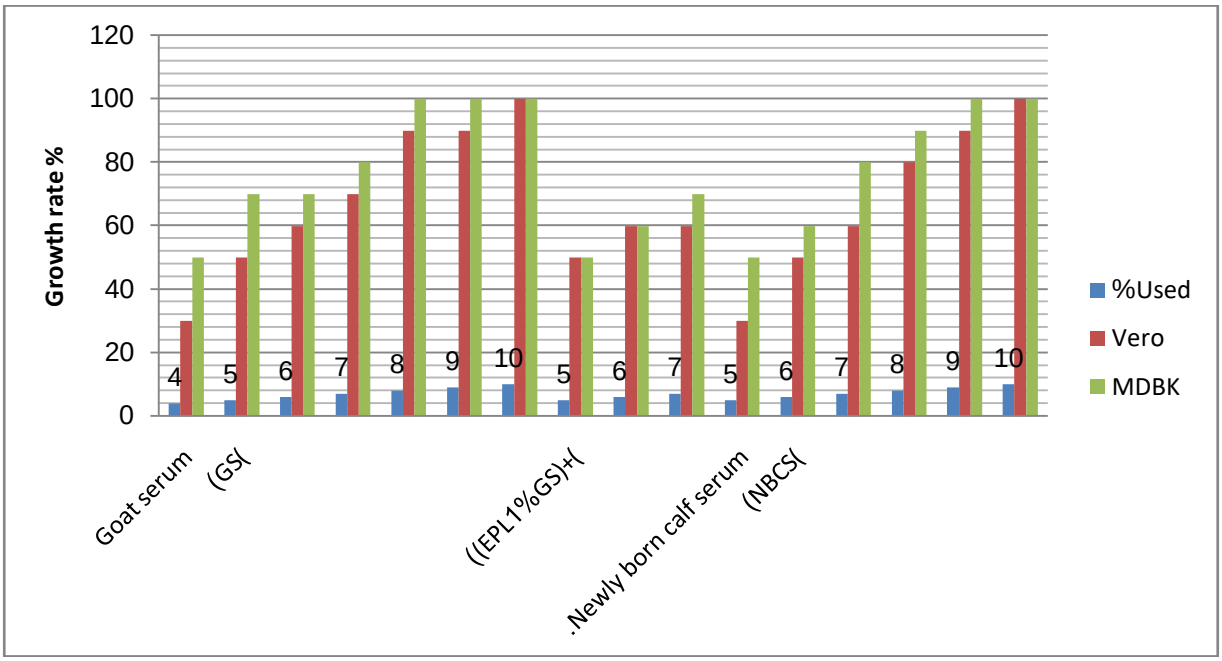


Figure 2: Multiple comparisons in the growth of Vero & MDBK cells using different Growth promoting factors at the same concentrations.

	Used %	Vero	MDBK
Newly born calf serum (NBCS)	5	30	50
	6	50	60
	7	60	80
	8	80	90
	9	90	100
	10	100	100
Equine platelet lysate (EPL)	5	30	30
	6	50	60
	7	60	80
	8	80	90
	9	90	100
	10	100	100

© 2019 Global Journals

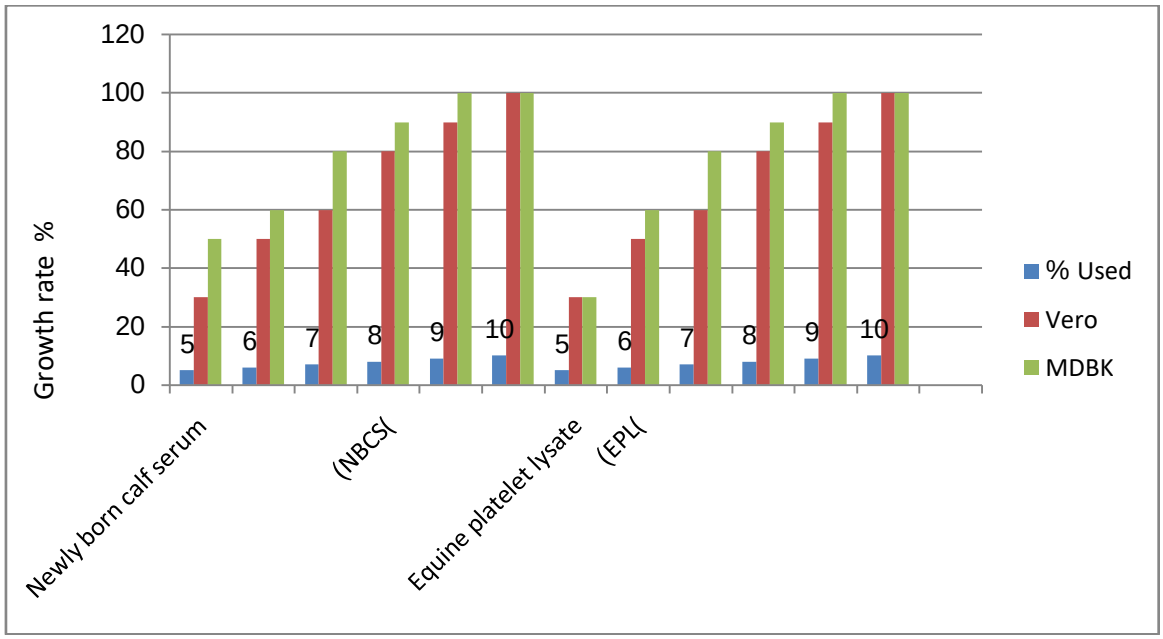


Figure 3: Comparison between NBCS and EPL on the growth of Vero & MDBK cells.

Table 2: Cell counting and viability of Vero cells Cultured in platelet lysate, *newly born calf Serum* and goat serum

Growth promoting factors	Used %	Viable cells/1ml	died cells/1ml	Total No.	Viability %
Equine platelet lysate (EPL)	5	2.35×10^4	1.35×10^5	1.58×10^5	14.8
	6	9.85×10^5	3.18×10^5	5.12×10^6	19
	8	2.05×10^6	4.13×10^5	5.13×10^6	39
	10	3.88×10^6	3.54×10^6	7.42×10^6	52.2
Newly born calf Serum (NBCS)	5	2.3×10^4	1.78×10^5	4.69×10^4	12.9
	8	2.05×10^6	6.87×10^6	5.78×10^6	30.2
	10	3.79×10^6	7.92×10^6	6.90×10^6	47.8
Goat serum(GS)	5	2.8×10^3	1.85×10^5	2.16×10^5	13
	8	2.13×10^6	4.05×10^6	5.98×10^6	31
	10	3.99×10^6	4.38×10^6	7.57×10^6	47.6

IV. Discussion

Culture of animal cells is key operation in bioscience whether it is related to research at universities or industrial production of pharmaceuticals with the help of gene technology (Hodgson, 1995). Fetal bovine serum (FBS) usually considered as the standard gold serum as a supplement for growth of cell lines. Considerable efforts have been made to reduce or eliminate serum proteins or even using its alternatives as newly born calf serum (NBCS), goat serum (GS) and Equine platelets lysate (EPL) as a serum-free media.

In this work, the first plan was establishing another alternatives to fetal bovine serum by using (NBCS) and (GS). Medium supplemented with (GS) could be used in the propagation of Vero & MDBK cell lines. Blind 7 and 4 successive passages were applied in Vero& MDBK cell lines respectively. figure (1) revealed that cells have been proliferated using goat serum alone compared to GS beside EPL or NBCS (figure, 2) cell growth was achieved in media supplemented with (GS) at concentration 5% & 6% up to 10% in MDBK and Vero cells. Another point of view, the percentage of (GS) could be decreased when 0.5-1% (EPL) was added to

© 2019 Global Journals

growth media. This also achieved a preferable cellular morphology and proliferation rate. The growth rate was higher in GS than NBCS at similar concentration up to 5-8% thereafter become the same. All growth promoting factors were significantly increased at 10%.

This finding coincidence with the result of Paranjape, 2004 that 10 % goat serum containing media is similar to fetal serum in many cell line and primary cells except BHK-21 cell line. The author found the relation between DNA, total protein and cell count of Vero cells propagated by using 10% (GS).

Furthermore, the author added that Vero cells adapted & maintained on (GS) were used in preparation of CFT & detection of Dengue virus antigen from clinical samples & interferon production in LM & MFS cells.

The second plan was designated to find alternative use to FBS by (EPL) as a serum free-media .the results in (figure, 3) demonstrated significant growth rate in either MDBK and Vero cells up to 7- 10%. The proliferation rate of EPL was nearly similar to NBCS proliferation and cellular viability is dose dependent.

The number of cells correlated with (EPL) % in the supplemented medium that agree with Liselott et al., 2003, concluded that 10% EPL induces cell growth, viability and product formation using a number of target cells including myelomas, hybridomas, hepatocytes, fibroblasts and epithelial cells.

Also Doucet et al., 2005and Horn et al., 2010 have been used (PL) as an FBS substitute in expansion medium (EM) to support the growth of human mesenchymal cells that induced higher mitogenic effect than fetal bovine serum (FBS).

Concerning with the counting and viability of adherent Vero cells after 24hr incubation at 37 ^{0}C using (GS), NBCS and (EPL) in table 2, observed that (EPL) supplemented media induce the best viability for cell culture. There was no apparent difference in Viability between (NBCS) and (GS) in spite of higher died cells in (NBCS) supplemented media.

The result disagrees with Russell & Koch, 2015, recorded no significant difference between the pooled (EPL) and (FBS) treatments in mesencymal (MSC) cells up to a concentration of 30%.

V. Conclusion

A useful alternative to fetal bovine serum in the medium for animal cell culture as a growth-promoting factor could be achieved by using:

1. 5% & 6% up to 10%- (GS) in MDBK and Vero cells respectively.
2. (GS) % could be decreased when 0.5-1% Equine Platelet lysate (EPL) added to growth medium.
3. 7-10% newly born calf serum.
4. Up to 7 -10 % (EPL) alone Perspective not only economic view that produced in large amounts at relatively low cost but also hygienic serum-free medium for cell cultures to avoid the risk of transmitting bovine infections.

Acknowledgements

The authors would like a great thank to Pro. M. A. Saad, a director of VET. Serum & Vaccine Research Institute for his valuable guide and help.

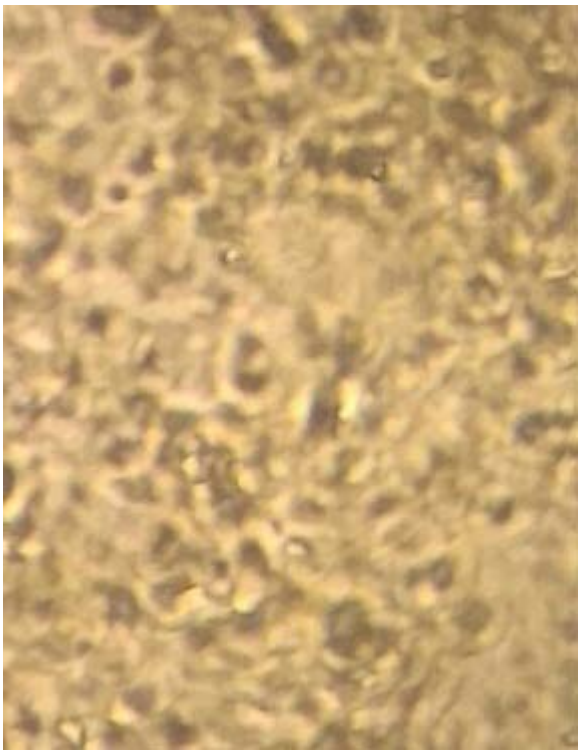


Photo 1: MDBK cells cultured in 10% EP (10x)



Photo 2: MDBK cells cultured in 10% EP (4x)

© 2019 Global Journals

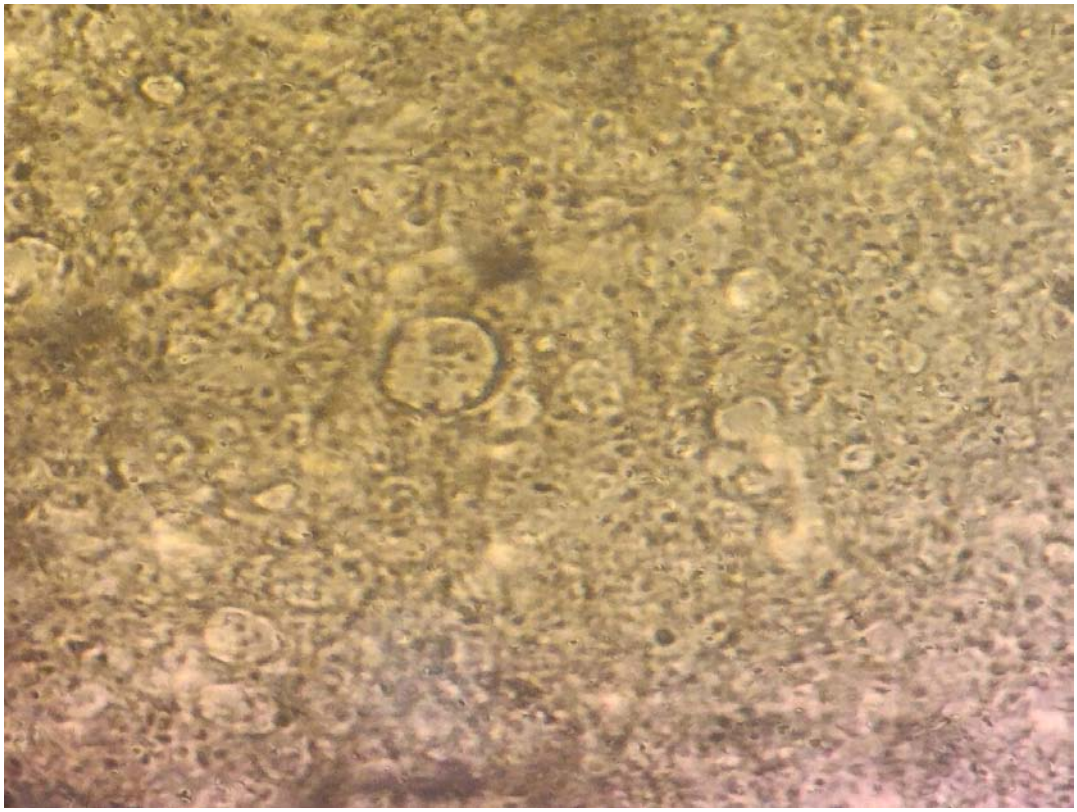


Photo 3: MDBK cell line cultured in 5% growth-promoting factor (10x)

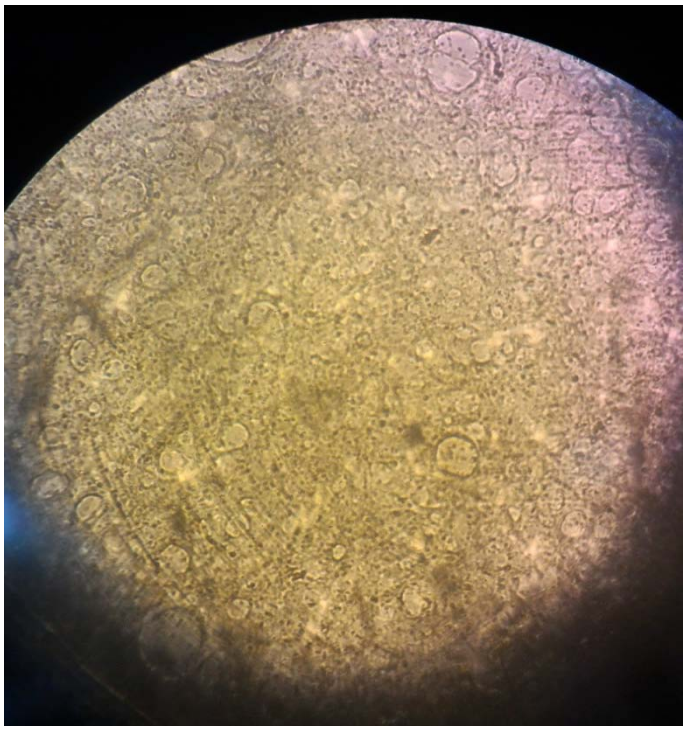


Photo 4: MDBK cell line cultured in 5% growth-promoting factor (4x)

© 2019 Global Journals

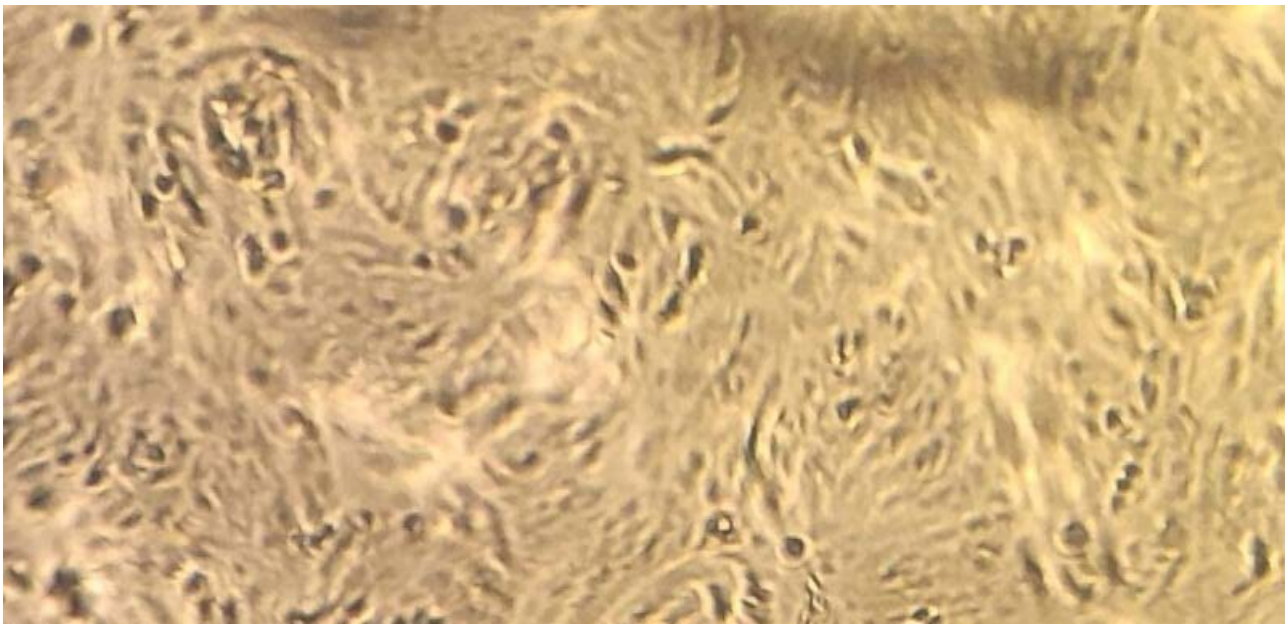


Photo 5: Vero cell line cultured in 10% growth-promoting factor 10x

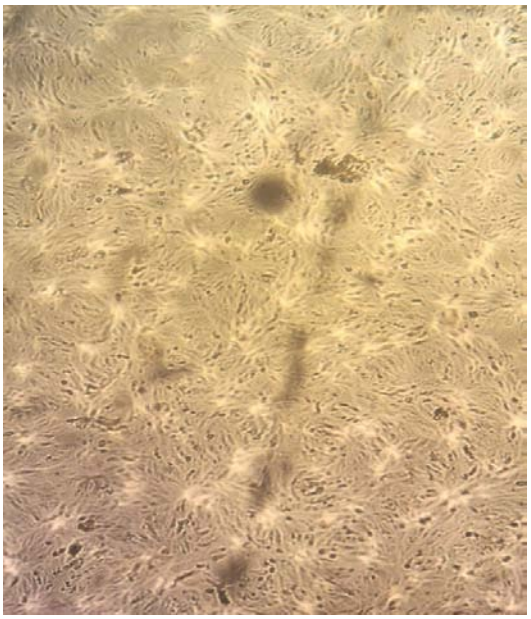


Photo 6: Vero cell line cultured in 5% growth promoting factors

References Références Referencias

1. Bieback, K. (2013).Platelet lysate as replacement for fetal bovine serum in mesenchymal stromal cell cultures. Transfus. Med. Hemother. 40.
2. Brindley, D. A., Davie, N. L., Culme-Seymour, E. J., Mason, C., Smith, D.W.and Rowley, J. A. (2012): Peak serum: implications of serum supply for cell therapy manufacturing. Regen. Med. 7, 7-13. 326-335.
3. Doucet, C., Ernou, I., Zhang,Y., Llense, J. R., Begot, L., Holy, X. and Lataillade, J. J. (2005). Platelet lysates promote mesenchymal stem cell expansion: a safety substitute for animal serum in cell-based therapy applications. J. Cell. Physiol. 205, 228-236.
4. Griffiths, S., Baraniak, P. R., Copland, I. B., Nerem, R. M. & McDevitt, T. C. (2013). Human platelet lysate stimulates high-passage and senescent human multipotentmesenchymal stromal cell growth and rejuvenation *in vitro*. *Cytotherapy*15, 1469–83.
5. Fernandez-Rebollo E., Birgit Mentrup, Regina Ebert, Julia Franzen, Giulio Abagnale, Torsten Siebe, Alina Ostrowska, Per Hoffmann , Pierre-François Roux, BjörnRath, Michele Goodhardt, Jean-Marc Lemaitre, Oliver Bischof, Franz Jakob & Wolfgang Wagner (2017). Human Platelet Lysate *versus* Fetal Calf Serum: These Supplements Do Not Select for Different Mesenchymal Stromal Cells. Scientific Reports|7: *5132*|DOI: 10.1038/s41598-017-0520 7-12.
6. Fukimizu H. and Grinell F. (1990). Spatial organization of extracellular matrix and fibroblast activity: effects of serum, transforming growth factor, and fibronectin. Exp. Cell Res. 190: 276–282.
7. Hodgson J. (1995). To treat or not to treat: that is the question for Serum. Biotechnology 13(4): 333–334.
8. Horn, P., Bokermann, G., Cholewa, D., Bork, S., Walenda, T., Koch, C., Drescher, W., Hutsch-enreuther, G., Zenke, M., Ho, A.D. and --Wagner, W. (2010) Impact of individual platelet lysates on isolation and growth of humanmesenchymal stromal cells. Cytotherapy 12, 888-898.
9. Liselott Johansson, JeannaKlinth, Olov Holmqvist and Sten Ohlson (2003). Platelet lysate: a replacement for fetal bovine serum in animal cell culture? Cytotechnology 42: 67–74.

© 2019 Global Journals

10. Parap, P. B. (1995).Anti- insulin hybridoma retains functional characterstics in Goat serum soya bean lipids. In vitro Cell Biol., 31.
11. Paranjape, S. (2004). Goat serum: An alternative to fetal serum in medical research. Rev. Article. Indian J. Exp. Biol., Vol., 42, pp.26-35.
12. Paranjape, S. P. & Cadam, V. D. (1985). Effect of arginin on mammalian cell metabolism & replication of Toga viruses. Biol. Memoris, 151.
13. Ross R. and Raines E.W. (1990). Platelet-derived growth factor and cell proliferation. In: Sara V. R. (ed.) Growth Factors: From Genes to Applications, Raven Press, New York, pp. 193–200.
14. Savant, S. V, (1987).Development of killed Japanese encephalitis vaccine from T.C. source: preparation of primary chicken embryo cultures. PhD thesis, Univ. of Pune, pp. 62, Raven Press, New York, pp. 193–200.
15. Russell, K. A. and Koch, T. G. (2015). Equine platelet lysate as an alternative to fetal bovine serum in equine mesenchymal stromal cell. 4 Equine Veterinary Journal 0 (2015) 1–4 © 2015 EVJ Ltdculture – too much of a good thing? Equine Veterinary Journal ISSN 0425-1644 DOI: 10.1111/ evj.12440.
16. Schallmoser, K. and Strunk, D. (2013).Generation of a pool of human platelet lysate and efficient use in cell culture. Methods Mol. Biol. (Clifton, NJ) 946, 349-362.
17. Sharma, G, Sharma, R. D. & Nichani, R. K, (1998). Successful long term in vitro cultivation of thieleriaanulataschisonts in media supplemented with homologous & heterologous sera. Vet. Parasitol., 79, 135.
18. Tezel, T. H. and Priore, L.V.D. (1998). Serum-free media for culturing and serial-passaging of adult human retinal pigment epithelium. Exp. Eye Res. 66(6): 807–815.

© 2019 Global Journals

Global Journal of Medical Research: E
Gynecology and Obstetrics
Volume 19 Issue 3 Version 1.0 Year 2019
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Reproductive Health Education Package to Reduce Risky Sexual Behaviors among Undergraduates in Selected State Universities in Sri Lanka: A Controlled Trial

By Upuli Amaranganie Pushpakumari Perera & Chrishantha Abeysena
University of Colombo

Abstract- *Objective:* To assess the effectiveness of a reproductive health educational package to reduce RSB among undergraduates in selected state universities in Sri Lanka.

Methods: A quasi-randomized controlled trial was conducted among undergraduates in 2014. Two universities were selected randomly either to the intervention or as the control group. From each of the selected universities, 10 clusters of students were selected randomly. A reproductive educational package was developed with reference to a curriculum by Centre for Disease Control, adjusted locally. The intervention group (n=309) received two health educational sessions with a gap of one week while the control group (n=431) did not receive any. The primary outcome was the reduction of RSBs while the secondary outcomes were the improvement of overall knowledge and overall attitudes on reproductive health at three months after the intervention. Intention to treat analysis was performed. Baseline imbalances were controlled by applying logistic regression. Results were expressed as adjusted odds ratios (AOR) and 95% confidence interval (CI).

Keywords: *health education, randomization, reproduction, sexual behaviors, undergraduates.*

GJMR-E Classification: *NLMC Code: W 84*

REPRODUCTIVEHEALTHEDUCATIONPACKAGETOREDUCERISKYSEXUALBEHAVIORSAMONGUNDERGRADUATESINSELECTEDSTATEUNIVERSITIESINSRILANKAACONTROLLEDTRIAL

Strictly as per the compliance and regulations of:

© 2019. Upuli Amaranganie Pushpakumari Perera & Chrishantha Abeysena. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Reproductive Health Education Package to Reduce Risky Sexual Behaviors among Undergraduates in Selected State Universities in Sri Lanka: A Controlled Trial

Upuli Amaranganie Pushpakumari Perera [α] & Chrishantha Abeysena [σ]

Abstract- Objective: To assess the effectiveness of a reproductive health educational package to reduce RSB among undergraduates in selected state universities in Sri Lanka.

Methods: A quasi-randomized controlled trial was conducted among undergraduates in 2014. Two universities were selected randomly either to the intervention or as the control group. From each of the selected universities, 10 clusters of students were selected randomly. A reproductive educational package was developed with reference to a curriculum by Centre for Disease Control, adjusted locally. The intervention group (n=309) received two health educational sessions with a gap of one week while the control group (n=431) did not receive any. The primary outcome was the reduction of RSBs while the secondary outcomes were the improvement of overall knowledge and overall attitudes on reproductive health at three months after the intervention. Intention to treat analysis was performed. Baseline imbalances were controlled by applying logistic regression. Results were expressed as adjusted odds ratios (AOR) and 95% confidence interval (CI).

Results: The reproductive health package reduces the RSB at three months of follow up after the intervention although it was not statistically significant (AOR=0.80: 95% CI 0.28- 2.31). Further, the package significantly improves the knowledge (AOR=11.75; 95% CI 7.04- 19.63) and desirable attitudes towards reproductive health (AOR=6.13; 95% CI 3.64- 10.32).

Conclusions: The educational intervention may reduce RSB after three months. It was effective for the improvement of good knowledge and desirable attitudes on reproductive health.

Keywords: health education, randomization, reproduction, sexual behaviors, undergraduates.

I. Plain English Summary

Risky sexual behaviors are behaviors leading to unwanted pregnancies and sexually transmitted infections. This research was done to assess the success of the developed package to lessen the risky sexual behaviors. A health education package was developed with the help of available packages from other countries to suit for young adults in Sri Lanka. Then the package was introduced to a group of selected undergraduates in two universities in the Western province of Sri Lanka. Before the introduction of the package, their level of risky sexual behavior has been assessed with a paper of questions. After three months of the introduction of the package, the risk level was assessed again. The results revealed that the educational intervention may reduce risky sexual behaviors. It also revealed the improvement of the knowledge and positive attitudes on risk behaviors and reproductive health.

II. Introduction

Risky sexual behaviors (RSB) are behaviors leading to unintended pregnancies and sexually transmitted infections (STI) as defined as Centre for Disease Control (CDC) [1]. Three studies reported that the prevalence of risk behavior was higher than the level expected by parents and teachers [2, 3, 4]. Being in the age groups of adolescents and young adults, undergraduates may not be spared in practicing RSBs. Adolescents and young adults need different kinds of programs to prevent RSB. There is inconsistency among youth with respect to cognitive and social maturity and sexual experience. Therefore, interventions need to be tailor-made to meet the different requirements of different youth groups [5]. One review showed that determinants of safer sex behaviors among college students were alcohol usage, religiosity, barriers to condom use and perceived social norms. [6] Sexuality education has often concentrated on the risks associated with sexual behavior such as unintended pregnancies and STIs. Interventions for young people are usually implemented in schools, through peer educators, as community activities, and as mass media campaigns.

Several studies were performed to aim the reduction of RSB among adolescents. Two quasi-experimental studies have proven that educational interventions were effective in improving knowledge in

Author α: MBBS, MSc, MD, Senior Registrar, Postgraduate Institute of Medicine, University of Colombo, Address: 36/1, Naiwala, Essalla, Veyangoda, Sri Lanka. e-mail: tauapp100@gmail.com
Author σ: MBBS, MSc, MD, Professor, Department of Public Health, Faculty of Medicine, University of Kelaniya.
e-mail: chrishanthaabeysena@yahoo.com

© 2019 Global Journals

reproductive health (RH) in youth [7, 8]. Another trial, which was conducted among adolescent girls between 15 to 19 years of age in India, revealed significant improvement of knowledge at one month after implementation of a RH package. [9]. Another quasi-experimental intervention targeted for adolescents of schools in China showed that an educational intervention is effective for increasing knowledge and improving attitude, not the behavior [10]. Similarly, a cluster randomized trial which was carried out to assess theoretically based sex education programme conducted by teachers revealed that the intervention did not reduce sexual risk taking in school going adolescents [11]. In contrast, another cluster randomized trial reported that in addition to sex education, skills building and motivational intervention was effective for reducing RSB among African-American male adolescents [12]. A review reported that sexual health education programs based on a comprehensive curriculum are able to improve knowledge and lessen the RSB [13]. It further reported that sex education programs do not increase sexual activity among adolescents and young people. Results from a Cochrane review showed that a combination of educational and contraceptive-promoting interventions showed the reduced the risk of unintended pregnancies among adolescents [14]. A study carried out to assess the relationship between condom availability and RSB among adolescents in high schools in Massachusetts revealed the success of programmes in human immunodeficiency virus (HIV) prevention [15].

Promoting Sexual Health is a comprehensive curriculum designed to provide information and build skills that reduce unintended pregnancies, reduce the transmission of STI including HIV and improve the quality of sexual experience [16]. The curriculum was designed for young adults in ages 18–24 years who are or to be sexually active to promote sexual health by addressing several aspects of sexuality such as the positive side of sexuality, pleasure, and satisfaction. Further, it is based on a logic model that specifies the important goals, particular behaviors that will lead to those health goals, and cognitive, sexual, psychosocial factors that affect those behaviors. Several authors have used similar contents within their interventions to reduce RSB [8, 9, 10, 11, 15, 17].

There is a dearth of published literature on interventions for risky sexual behavior in Sri Lanka. Hettiarachchi has developed and successfully delivered a new educational intervention for teachers to increase the knowledge and attitude in sexual and RH among school children and teachers in Sri Lanka [18]. There are cultural taboos that have made it difficult for parents, teachers, and community leaders to openly discuss sexual issues among themselves or with adolescents [19]. The same cultural taboos that have hampered even marketing campaigns to promote greater use of contraceptives including condoms. This emphasizes the need for culturally sensitive reproductive education package for reducing RSB. Only those students who perform well in advance level examination are selected for state universities in Sri Lanka. Most of the university students stay away from their families. They are young adults and have more independent than school going adolescents. Therefore the university students are more vulnerable than the school children. Findings of this study are intended to inform the relevant authorities to design and deliver risk behavior reducing program for the youth in universities. Therefore, the objective was to assess the effectiveness of an educational intervention to reduce RSB among undergraduates in the selected state universities in Sri Lanka.

III. Materials and Methods

A quasi-randomized controlled trial was conducted among the second and third year undergraduates in the University of Kelaniya and the University of Sri Jayewardenepura in 2014.

The exclusion criteria were undergraduates from foreign countries due to their different socio-cultural background and clergymen undergraduates due to the sensitive nature of the selected subject.

The intervention was a health education intervention conducted by four medical officers. It consisted of two-day interactive sessions of three and a half hours, conducted one week apart. No educational sessions were conducted to the control group. The intervention was designed using the curriculum on 'Promoting Sexual Health' [16]. Expert opinion was sought from the National STD/AIDS control programme and Health Education Bureau (HEB) for adapting the curriculum. The component which aim to improve the quality of sexual experience were removed. Case studies were changed according to local culture. The baseline information on knowledge, attitudes, and behaviors on reproductive health from previous national survey was utilized for the modification of the intervention. The available 'information, education and communication' (IEC) materials on family planning, STI and RSB were used with the expert opinion for the development of new materials. The developed intervention covered relevant topics in the prevention of STIs and unintended pregnancies. It included facts on contraceptive methods, i.e. effectiveness, side effects and ways of overcoming barriers. Furthermore, it described STIs with possible consequences and informs about places for testing. Dual protection given from condom was highlighted and condom demonstration was included emphasizing the problems in use. Multiple and overlapping partners' role in STIs was discussed. A mutual monogamous relationship was encouraged and the importance of the ability to insist on condom

© 2019 Global Journals

use was emphasized. In addition developed self-efficacy and skills to express or refuse sex. Almost all aspects in the prevention of STI and unintended pregnancies were covered by the developed intervention. The developed intervention was pretested among a group of 20 undergraduates outside the study population to test the feasibility, accessibility, co-operation and other logistical aspects of the designed intervention. Necessary changes were made to the intervention accordingly.

The primary outcome was the reduction of RSB among undergraduates during the three months of post-intervention period. The secondary outcomes were overall knowledge and attitudes on RH among undergraduates at three months after the intervention. RSB is defined as a practice of one or more following behavior/s, having more than one sexual partner, alcohol use with sexual activities, inability to use condoms to prevent STI with commercial sex workers or non-commercial partners and inability to use contraceptives in sexual activities with commercial sex workers or non-commercial partners. The overall knowledge on reproductive health was based on the knowledge on unsafe abortions (7 statements), contraceptives (10 statements), condoms (7 statements), STIs (28 statements) and HIV/AIDS (13 statements). One mark was given for each correct answer and zero marks was given for incorrect and do not know answers. A composite score on knowledge ranged from 0 to 65 and expressed as percentages. Equal or more than 75% was categorized as good knowledge and less than 75% as average knowledge for data analysis. The overall attitudes were based on attitude towards the use of contraceptives (5 statements), condoms (8 statements) and HIV/AIDS (9 statements). Each statement comprised of five responses as strongly agree, agree, neutral, disagree, strongly disagree. One mark was allocated for desirable attitudes while minus one mark for undesirable attitudes and zero marks for neutral responses. The range was from (-22) to +22. To make the values positive, +22 was added. The composite score ranged from 0 to 44. Cutoff marks were given for desirable and undesirable attitudes according to the inter quartile range. Those who scored 75th centile or above were taken as desirable attitudes and those who scored below 75% were taken as undesirable attitudes.

The University of Kelaniya and the University of Sri Jayewardenepura were selected as the intervention group and the control group respectively by tossing a coin. Ten clusters were selected randomly from all the clusters in each university. A cluster was defined as a tutorial group or a whole batch according to the structure of the selected undergraduate's group. We expected that the intervention will reduce the RSB from 13% to 6% among undergraduates [4]. Therefore, the calculated sample size was 301 for each group considering power as 80% and a false positive rate of 5%.

The developed intervention was introduced with IEC materials and all sections were discussed in detail. The opportunities were given to clarify any doubts. The intervention was conducted in the lecture halls for ten groups of undergraduates. Informed written consent was taken from the participants. A pre-tested self-administered questionnaire was used to assess pre and post-intervention data. The questionnaire comprised of five sections, the section I on socio-demographic and economic characteristics of the undergraduates, section II on other risk behaviors including alcohol, smoking and illicit narcotic drugs, section III on knowledge in selected aspects of RH, section IV on attitudes in selected aspects of RH, and section V on sexual behavior. The validity of the questionnaire was ensured by assessing the face, content and consensual validity. Content validity was assessed by checking whether or not all aspects of measures were covered using literature review and expert opinion. Consensual validity was determined by assessing the agreement of the experts on whether or not the conceptual definition has been used appropriately in the tool. A multi-disciplinary panel of experts in the fields of public health and reproductive health was used for assessment of validity. On the data collection day, the selected undergraduates (the tutorial group or batch which was identified) were taken to a separate lecture hall. The participants were seated with appropriate gaps from each other to maintain confidentiality. An envelope was given to each participant to hand over the filled questionnaire.

Baseline data between the intervention and the control groups were analyzed using the chi-square test. The effectiveness of the intervention was assessed by comparing post-interventional data between intervention and control groups, the results were expressed as odds ratios (OR) and its 95% confidence intervals (CI). Baseline imbalances were controlled by applying multiple logistic regression. Sensitivity analysis was performed assuming that all participants who did not complete the follow-up data in the intervention group had high risk of RSB, average knowledge and undesirable attitudes, and those who were in the control group had a low risk of RSB, good knowledge and desirable attitudes.

IV. Results

Of 309 undergraduates who were eligible and invited, only 300 post-interventional data could be collected from the intervention group. Of 427 undergraduates who were eligible and invited in the control group, 297 participated in the post-interventional assessment.

© 2019 Global Journals

There were no statistically significant differences in the intervention and the control groups with respect to sex, ethnicity, religion, age and marital status (Table 1).

The proportion of undergraduates staying at boarding places were higher among the control group than the intervention group (p<0.001). The control group had more undergraduates with family income ≤50,000 rupees per month than the intervention group (p=0.014). There were more undergraduates in Bio-Science stream in the intervention group (35.9%) than the control group (7.0%) (p<0.001). With regard to school type, the control group consisted of 35.9% from mixed schools (both girls and boys) compared to 44.6% in the intervention group (p=0.04). There were no differences with regard to the importance of religion and participating in religious activities between intervention and control groups. With regard to the availability of relatives and friends to discuss sexually related issues, there was no difference between the groups.

Significant differences were observed between the intervention and the control groups with regard to some risk behaviors before the intervention. Attended nightclub ever in life, usually going to cinema halls, taken alcohol ever and using internet >2 hours per day showed significant differences between the two groups. (Table 2)

The undergraduates in the intervention group reported a higher percentage of good knowledge on contraceptives (p<0.001) than the control group (Table 3).

Knowledge on condoms, knowledge on HIV/AIDS, knowledge on STIs and overall knowledge on RH did not show significant differences between the two groups. There were no differences with regard to attitudes in contraceptives, condoms, HIV/AIDS or overall attitudes in RH among undergraduates between the intervention and the control groups (Table 3 and 4). There was no significant difference of RSB within last three months between the intervention and the control group before the intervention (Table 4).

There was no significant difference observed between the intervention and the control group after three months of intervention with related to RSB (OR=1.39, 95% CI 0.81-2.39) (Table 4). However the adjusted OR was 0.8 (95% CI 0.28-2.31) which indicate a lower risk of RSB of the intervention group even though it was not statistically significant.

Overall good knowledge on reproductive health was higher (52.2%) among the intervention group compared to the control group (12.8%) at three months after the intervention (OR=7.48, 95% CI 4.97 -11.26) (Table 4). Even after adjustment for baseline imbalances, it remained higher (adjusted OR=11.75; 95% CI 7.04-19.63). The overall positive attitudes towards RH among undergraduates was higher in the intervention group (50.7%) compared to the control group (26.9%). The difference was significant statistically (OR=2.79, 95% CI 1.98 -3.92) (Table 4). Even after adjustment for baseline imbalances it was higher (adjusted OR = 6.13; 95% CI 3.64-10.32). The sensitivity analysis has not changed the direction of the association with any outcome (Supplementary Table 1).

Table 1: Socio-demographic, economics and other basic characteristics among intervention group and control group

Variable		Intervention N=309 n (%)	Control N=427 n (%)	χ2 p value
Sex	Male	87 (28.2)	127 (29.7)	0.22
	Female	222 (71.8)	300 (70.3)	0.64
Ethnicity	Sinhalese	306 (99.0)	399 (93.4)	13.9
	Muslim	3 (1.0)	28 (6.6)	<0.001
Religion	Buddhist	290 (93.9)	388 (90.9)	2.2
	Non Buddhist	19 (6.1)	39 (9.1)	0.14
Resident [1]	Boarding place	197 (63.8)	332 (77.9)	17.8
	Home/Relative	112 (36.2)	94 (22.1)	<0.001
Age[2]	≤ 22 years	99 (32.1)	125 (29.5)	0.59
	≥ 23 years	209 (67.9)	299 (70.5)	0.44
Marital status[1]	Unmarried	305 (98.7)	418 (97.9)	0.68
	Ever married	4 (1.3)	9 (2.1)	0.41
Family income (Rs.)[3]	<50000	242 (84.3)	363 (90.5)	6.1
	>50000	45 (15.7)	38 (9.5)	0.014
Financial assistance (Rs.)[4]	<3000	200 (92.2)	343 (93.0)	0.12
	>3000	17 (7.8)	26 (7.0)	0.72
Academic year	Second	192 (62.1)	241 (56.4)	2.4
	Third	117 (37.9)	186 (43.6)	0.12
Study stream	Non-Biology	199 (64.4)	397 (93.0)	95.0
	Biology	110 (35.6)	30 (7.0)	<0.001

© 2019 Global Journals

School type [5]	Non-mixed	104 (44.6)	112 (35.9)	4.26
	Mixed	129 (55.4)	200 (64.1)	0.04
Importance of religion	Very important	257 (83.2)	350 (82.0)	0.18
	Not very important	52 (16.8)	77 (18.0)	0.67
Participating religious activities[6]	Weekly or more	141 (45.9)	205 (48.6)	0.50
	Less than weekly	166 (54.1)	217 (51.4)	0.48
Access to a relative to talk in sexual issues	Yes	238 (77.0)	315 (73.8)	1.02
	No	71 (23.0)	112 (26.2)	0.31
Access to a friend to talk in sexual issues	Yes	266 (86.1)	384 (89.9)	2.57
	No	43 (13.9)	43 (10.1)	0.11

[1]missing data= 1, [2] missing data= 4 [3]missing data =48, [4]missing data=150 [5]missing data=191 [6]missing data=7

Table 2: Baseline risk behaviors among undergraduates by the intervention Group and the control group

Variable	Intervention N=309 n (%)	Control N=427 n (%)	$\chi 2$ p value
Attend night clubs*			
Yes	12 (3.9)	4 (0.9)	7.25
No	297 (96.1)	420 (99.1)	0.007
Attend nightclubs in previous one month			
Yes	6 (1.9)	3 (0.7)	2.28
No	303 (98.1)	424 (99.3)	0.13
Using Internet facilities			
Yes	290 (93.9)	378 (88.5)	6.07
No	19 (6.1)	49 (11.5)	0.014
Using Internet facilities >2 hours per day			
Yes	105 (34.0)	95 (22.2)	12.46
No	204 (66.0)	332 (77.8)	<0.001
Going to cinema halls*			
Yes	187 (60.5)	219 (51.5)	5.85
No	122 (39.5)	206 (48.5)	0.02
Going to cinema halls in last month			
Yes	30 (9.7)	27 (6.3)	2.88
No	279 (90.3)	400 (93.7)	0.09
Had taken alcohol ever			
Yes	85 (27.5)	76 (17.8)	9.89
No	224 (72.5)	351 (82.2)	0.002
Had taken alcohol in last three months			
Yes	48 (15.5)	42 (9.8)	5.42
No	261 (84.5)	385 (90.2)	0.02
Had smoked ever			
Yes	33 (10.7)	30 (7.0)	3.06
No	276 (89.3)	397 (93.0)	0.08
Had smoked in last three months			
Yes	18 (5.8)	19 (4.4)	0.71
No	291 (94.2)	408 (95.6)	0.39
Had taken Cannabis ever			
Yes	15 (4.9)	13 (3.0)	1.61
No	294 (95.1)	408 (95.6)	0.21
Had taken Cannabis in last three months			
Yes	4 (1.3)	5 (1.2)	0.02
No	305 (98.7)	422 (98.8)	0.88
Had physical fighting in last year			
Yes	14 (4.5)	16 (3.7)	0.28
No	295 (95.5)	411 (96.3)	0.59
Had physical fighting in university life			
Yes	18 (5.8)	21 (4.9)	0.29
No	291 (94.2)	406 (95.1)	0.59

*missing data=3 **missing data=2

© 2019 Global Journals

Table 3: Baseline knowledge and attitude on reproductive health among the undergraduates by the intervention and the control Group

Knowledge/Attitude	Intervention N=309 n (%)	Control N=427 n (%)	$\chi 2$ p value
Contraceptives			
Good knowledge	112 (36.2)	88 (20.6)	22.15
Average Knowledge	197 (63.8)	339 (79.4)	<0.001
Condoms			
Good knowledge	126 (40.8)	156 (37.2)	0.95
Average Knowledge	183 (59.2)	268 (62.8)	0.33
STI			
Good knowledge	42 (13.6)	62 (14.5)	0.13
Average Knowledge	267 (86.4)	365 (85.5)	0.72
HIV/AIDS			
Good knowledge	172 (56.2)	244 (57.4)	0.10
Average Knowledge	134 (43.8)	181 (42.6)	0.75
Contraceptives			
Desirable attitude	85 (27.5)	113 (26.5)	0.10
Undesirable attitude	224 (72.5)	314 (73.5)	0.75
Condoms			
Desirable attitude	92 (29.9)	140 (32.8)	0.71
Undesirable attitude	216 (70.1)	287 (67.2)	0.40
HIV/AIDS			
Desirable attitude	127 (41.1)	174 (40.9)	0.002
Undesirable attitude	182 (58.9)	251 (59.1)	0.96

[1]missing data=5, [2]missing data=1, [3]missing data=2

Table 4: Risky sexual behavior, knowledge and attitude on reproductive health among undergraduates' pre and post-intervention

Outcomes	Pre-intervention			Post-intervention			
	Intervention group N=309	Control group N=427	OR 95 % CI p value	Intervention group N=300	Control group N=297	OR 95 % CI p value	AOR 95 % CI p value
Risky sexual behavior			1.36 (0.89-2.1) 0.16			1.39 0.81-2.39 0.23	0.8 * 0.28-2.31 0.68
Yes	48 (15.5)	51 (11.9)		34 (11.3)	25 (8.4)		
No	261 (84.5)	376 (88.1)		266 (88.7)	272 (91.6)		
Overall knowledge on reproductive health			2.02 1.34- 3.0 <0.001			7.48 4.97- 11.26 <0.001	11.75 ** 7.04-19.63 <0.001
Good knowledge	63 (20.4)	48 (11.2)		157 (52.3)	38 (12.8)		
Average knowledge	246 (79.6)	379 (88.8)		143 (47.7)	259 (87.2)		
Overall attitudes in reproductive health			1.04 0.74-1.46 0.82			2.79 1.98-3.92 <0.001	6.13 *** 3.64-10.32 <0.001
Desirable attitudes	79 (25.6)	106 (24.8)		152 (50.7)	80 (26.9)		
Undesirable attitudes	230 (74.4)	321 (75.2)		148 (49.3)	217(73.1)		

OR odds ratio, AOR adjusted odds ratio

* Adjusted for pre-intervention RSB, attended night club in last one month, reside outside the home and bio-science stream.

** Adjusted for pre-intervention knowledge on reproductive health, reside outside the home and bio-science stream.

*** Adjusted for pre-intervention attitudes on reproductive health, pre-intervention knowledge on reproductive health and bio-science stream.

V. Discussion

The intervention was not effective for reducing RSB at three months after the intervention. The overall knowledge and desirable attitudes on RH had been improved significantly in the intervention group when compared to the control group after three months of the intervention.

The two groups were allocated to the intervention and control group randomly to minimize selection bias. Contamination effect was minimized by selecting two separate universities for the intervention

© 2019 Global Journals

and control groups. There are only four universities in the western province, therefore considering a university as a cluster is not adequate for a cluster randomized trial. We randomly selected 10 clusters from each university. Even though we did not consider cluster effect for the calculation of sample size and statistical analysis. It was not feasible to conduct a cluster randomized trial within a university due to a risk of contamination. Some of the published results from RH interventions based on quasi-experimental studies [7, 8, 9, 10]. It is natural to have a higher rate of loss to follow up among the control group as they were not intended for any benefits. The selection of three months of follow up period was done according to available literature and considering the feasibility of the collection of post-interventional data [12]. However, one study reported that the time period of three months may not be adequate to detect a significant reduction of RSB [9]. Further, the undergraduates in our study were a low-risk cohort and therefore the usefulness of the intervention is limited. However, the intervention maybe effective for more vulnerable adolescents who have fallen out of the education system. The impact of the un-blindness of the investigators did not affect the outcome assessments as the use of a self-administered questionnaire. Further, the blindness of the participants was not feasible for health educational intervention. After controlling the baseline imbalance between the intervention and the control group, changed the effect of the intervention from harmful effect to a protective effect for RSB. However, it was not statistically or practically significant.

In contrast to our findings, a similar type of health education intervention carried out among male adolescents in America has improved RSB among them [12]. Even though the follow-up period was similar they have used different IEC materials such as videos, games, exercises and role-playing. The observed difference of results in the present study could be due to methodological variations, the difference in intervention curriculum and the baseline characteristics of the study population. A review of sexual education interventions to assess the impact on sexual behaviors revealed that sex education programmes were effective at reducing RSB among adolescents and young people [13]. The review revealed the effectiveness of reducing the number of sexual partners, increasing condom usage and increasing contraceptive usage.

Reproductive health-related information can be delivered successfully by health education interventions in various academic institutions through various channels. Knowledge and attitudes were improved among school-going adolescents by delivering a health educational intervention directed at school teachers in a district of Sri Lanka [18]. It represented a different study population; school children in Grade nine were educated through their teachers. Knowledge and attitude improvement were observed among them and their evidence supports the findings of the present study. Another health educational intervention among female students between 15 to 19 years of age carried out in India, reported improvement of knowledge in reproductive health after one month of post-intervention [9].

VI. Conclusions

The educational intervention may reduce RSB after three months. It was effective for the improvement of good knowledge and desirable attitudes on reproductive health. Our study shows that educated youth improved their knowledge and attitudes about reproductive health, which is not surprising with their educational backgrounds. The intervention can be applied even for youths in working places without many alterations. However further research is needed to assess whether RSB for this group is improved in the long term follow them up.

VII. Limitations

Follow up period after the intervention was three months period which may be inadequate to see significant changes in behavior. Even though it was unfeasible, unblinding of the participants might underreport of their self-assessed RSB.

Declaration

Ethics approval and consent to participate: Ethical clearance was taken from the Ethical Review Committee, Faculty of Medicine, University of Kelaniya. Administrative clearance was obtained from the Vice Chancellors and Deans of the selected faculties. Informed written consent was obtained from the participants.

Consent for publication: Not applicable.

Availability of data and material: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

Clinical Trial registry: SLCTR/2014/003, registered on 1st of Feb 2014

Funding: The Medical Research Institute of the Ministry of Health, Sri Lanka funded for the data collection of the study.

Authors' contributions: Both authors have contributed equally to the design the study. UP and CA analyzed and interpreted the data. UP was responsible for the conduct of the literature review and implementation of study and a major contributor in writing the manuscript. All authors read and approved the final manuscript.

© 2019 Global Journals

Acknowledgements

All the undergraduates who participated for the study and the staff of the Universities, data collectors and the members of the Board of Study in Community Medicine, Postgraduate Institution of Medicine.

List of Abbreviations

CDC: center for disease control.
CI: Confidence intervals.
HIV: Human immunodeficiency virus.
OR: Odds ratio.
RH: reproductive health.
RSB: Risky sexual behavior.
STI: sexually transmitted infections.

References Références Referencias

1. Brener N D, Kann L, Kinchen S A, Grunbaum J A, Whalen L, Eaton D, Hawkins J, Ross J. G. Methodology of the Youth Risk Behavior Surveillance System *Morbidity and Mortality Weekly Report.2004;* 53 (RR-12).
2. Fernando N S. Sexual behavior and substance abuse among youth in the coastal region in Galle district. *Thesis (MD in Community medicine, Postgraduate Institute of Medicine, University of Colombo.2009.*
3. Thalagala N, Rajapaksha L. UNICEF National survey on emerging issues among adolescents in SriLanka. 2004/
4. Perera B, Reece M. Sexual behavior of young adults in SriLanka: Implications for HIV prevention, *AIDS Care.2006; 18(5): 497–500.*
5. Pedlow C T, Carey M P. Developmentally-Appropriate Sexual Risk Reduction Interventions for Adolescents: Rationale, Review of Interventions, and Recommendations for Research and Practice, *Annal of Behavioral Medicine.2004*; 27(3): 172–184.
6. Kanekar A, Sharma M. Determinants of safer sex behaviors among college students. Acta Didactica Napocensia. 2010; 3(1): 27-38.
7. Ajuwon A J, Brieger W R. Evaluation of a school-based Reproductive Health Education Program in rural South Western, Nigeria *African Journal of Reproductive Health.2007*; 11[2]: 47-59.
8. Manjula R, Kashinakunti S V, Geethalakshmi R G, Sangam D K. An educational intervention study on adolescent reproductive health among pre-university girls in Davangere district, South India. *Annals of tropical medicine and public health.2012; 5(3): 185-189.*
9. Parwej S, Kumar R, Waleela I, Aggarwal A K. Reproductive health education intervention trial, *Indian journal of Paediatrics.2005;* 72(4): 287-291
10. Li X, Zhang L, Mao R, Zhao Q, Stanton B. Effect of social cognitive theory-based HIV education prevention program among high school students in Nanjing, China, *Health Education Research.2011; 26(3): 419–43.1.*
11. Wight D, Raab G M, Henderson M, Abraham C, Buston K, Har G, Scott S. Limits of teacher delivered sex education: interim behavioral outcomes from randomized trial, *British Medical Journal.2002; 324(15.)*
12. Jemmott J B, Jemmott L S, Fong G T, Morales K H. Effectiveness of an HIV/STD Risk-Reduction Intervention for Adolescents When Implemented by Community-Based Organizations: A Cluster-Randomized Controlled Trial, *American Journal of Public Health.2010; 100(4); 720-726.*
13. Kirby D. The impact of sex education on the sexual behavior of young people, Population Division Expert Paper No. 2011/12, United Nations New York.2011.
14. Oringanje C, Meremikwu M M, Eko H, Esu E, Meremikwu A, Ehiri J E. Interventions for preventing unintended pregnancies among adolescents. Cochrane Database of Systematic Reviews 2016; 2. Art. No.: CD005215. DOI: 10.1002/14651858.CD005215.pub3.
15. Blake S M, Ledsky R, Goodenow C, Sawyer R, Lohrmann D, Windsor R. Condom availability programs in Massachusetts high schools: relationships with condom use and sexual behavior. Am J Public Health. 2003; 93(6): 955-62.
16. Charles V, Kirby D, Lepore G, Walker J, Coyle K. Promoting Sexual Health: A Curriculum to Reduce Unintended Pregnancy, Prevent Sexually Transmitted Infection and Improve Sexual Experience, ETR Associates, California. 2011.
17. Coyle, K K, Kirby D B, Marín B V, Gómez C A, Gregorich S E. Draw the Line/Respect the Line: A Randomized Trial of a Middle School Intervention to Reduce Sexual Risk Behaviors. *American Journal of Public Health.2004; 94(5).*
18. Hettiarachchi R, Sivayogan S, Gnanissara SAP. Effectiveness of an educational intervention on sexual and reproductive health education directed at school teachers in the Kalutara district. Sri Lanka Journal of Social Sciences.2008; 31/32 (1& 2) 17.
19. De Silva W I, Somanathan A, Eriyagama V. Adolescent and youth reproductive health in Sri Lanka. Institute of policy studies in Sri Lanka, Colombo. Dental Education. 2003; 75(4): 574-581.

© 2019 Global Journals

Global Journals Guidelines Handbook 2019

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.

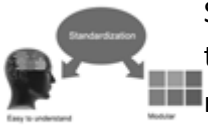


© Copyright by Global Journals | Guidelines Handbook

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 addres with 100 GB of space e.g. 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 you 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.

© Copyright by Global Journals | Guidelines Handbook



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. Afterbecoming 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 benefitscan 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 willbe given a renowned, secure and free professional email address with 30 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.



© Copyright by Global Journals | Guidelines Handbook



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.

© Copyright by Global Journals | Guidelines Handbook

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.



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.

© Copyright by Global Journals | Guidelines Handbook

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.

"

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of 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.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
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.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

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



Format Structure

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

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative 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) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

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

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning 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 a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be 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. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). 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: Authors are advised 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. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. 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.

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

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



© Copyright by Global Journals | Guidelines Handbook

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

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

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. 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 for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

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

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon 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 though which your research is going to be in print for 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 of 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 criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to 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 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.



© Copyright by Global Journals | Guidelines Handbook

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

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

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite 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 approaches 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. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a 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 limit the initial two items to no more than one line each.

Reason for writing the article—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 for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity 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 of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets 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 for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory 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 soundly written procedures segment allows a capable scientist to replicate 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 to give the least amount of information that would permit another capable scientist to replicate 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 section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show 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:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the 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—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and 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.



© Copyright by Global Journals | Guidelines Handbook

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as 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. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give 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 manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit 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 section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an 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 implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully 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 the prospect, and let it drop at that. Make a decision as to whether each premise is supported or 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 an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of 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 other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

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.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	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
Introduction	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
Methods and Procedures	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
Result	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
Discussion	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
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

A

Adipogenic · 9
Asphyxia · 2, 5, 6

C

Cervix · 1, 2

D

Dystocia · 1

E

Eclampsia · 7

H

Hybridomas · 13

I

Immunoglobulins · 9
Intrauterine · 2

M

Macrophages · 9
Mesencymal · 13
Myelomas · 13

O

Oligohydramnios · 7, 8
Osteogenic · 9

P

Primigravida · 3, 8

S

Synthetase · 7

T

Thromboembolism · 5

U

Uteroplacental · 7

X

Xenogeneic · 9

save our planet



Global Journal of Medical Research

Visit us on the Web at www.GlobalJournals.org | www.MedicalResearchJournal.org
or email us at helpdesk@globaljournals.org

ISSN 9755896

© Global Journals