

GLOBAL JOURNAL

OF MEDICAL RESEARCH: I

Surgeries and Cardiovascular System

Urethrotomy in Patients

Urethral Stricture at Kilimanjaro

Highlights

Cardiac Rehabilitation Program

Etiological Spectrum of Obstructive

Discovering Thoughts, Inventing Future

VOLUME 15

ISSUE 4

VERSION 1.0



GLOBAL JOURNAL OF MEDICAL RESEARCH: I
SURGERIES AND CARDIOVASCULAR SYSTEM



GLOBAL JOURNAL OF MEDICAL RESEARCH: I
SURGERIES AND CARDIOVASCULAR SYSTEM

VOLUME 15 ISSUE 4 (VER. 1.0)

OPEN ASSOCIATION OF RESEARCH SOCIETY

© Global Journal of Medical Research . 2015.

All rights reserved.

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

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

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

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

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

Engage with the contents herein at your own risk.

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

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

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

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

Global Journals Inc.

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

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

Publisher's Headquarters office

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

Offset Typesetting

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

Packaging & Continental Dispatching

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

Find a correspondence nodal officer near you

To find nodal officer of your country, please
email us at local@globaljournals.org

eContacts

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

Pricing (Including by Air Parcel Charges):

For Authors:

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

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

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

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

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

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

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

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

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

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

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

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

Dr. Bart Lambrecht

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

Dr. Carlos García Pont

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

Dr. Fotini Labropulu

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

Dr. Lynn Lim

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

Dr. Mihaly Mezei

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

Dr. Söhnke M. Bartram

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

Dr. Miguel Angel Ariño

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

Philip G. Moscoso

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

Dr. Sanjay Dixit, M.D.

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

Dr. Han-Xiang Deng

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

Dr. Pina C. Sanelli

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

Dr. Roberto Sanchez

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

Dr. Wen-Yih Sun

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

Dr. Michael R. Rudnick

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

Dr. Bassey Benjamin Esu

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

Dr. Aziz M. Barbar, Ph.D.

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

PRESIDENT EDITOR (HON.)

Dr. George Perry, (Neuroscientist)

Dean and Professor, College of Sciences

Denham Harman Research Award (American Aging Association)

ISI Highly Cited Researcher, Iberoamerican Molecular Biology Organization

AAAS Fellow, Correspondent Member of Spanish Royal Academy of Sciences

University of Texas at San Antonio

Postdoctoral Fellow (Department of Cell Biology)

Baylor College of Medicine

Houston, Texas, United States

CHIEF AUTHOR (HON.)

Dr. R.K. Dixit

M.Sc., Ph.D., FICCT

Chief Author, India

Email: authorind@computerresearch.org

DEAN & EDITOR-IN-CHIEF (HON.)

Vivek Dubey(HON.)

MS (Industrial Engineering),

MS (Mechanical Engineering)

University of Wisconsin, FICCT

Editor-in-Chief, USA

editorusa@computerresearch.org

Sangita Dixit

M.Sc., FICCT

Dean & Chancellor (Asia Pacific)

deanind@computerresearch.org

Suyash Dixit

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

President, Web Administration and

Development , CEO at IOSRD

COO at GAOR & OSS

Er. Suyog Dixit

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

SAP Certified Consultant

CEO at IOSRD, GAOR & OSS

Technical Dean, Global Journals Inc. (US)

Website: www.suyogdixit.com

Email: suyog@suyogdixit.com

Pritesh Rajvaidya

(MS) Computer Science Department

California State University

BE (Computer Science), FICCT

Technical Dean, USA

Email: pritesh@computerresearch.org

Luis Galárraga

J!Research Project Leader

Saarbrücken, Germany

CONTENTS OF THE ISSUE

- i. Copyright Notice
 - ii. Editorial Board Members
 - iii. Chief Author and Dean
 - iv. Contents of the Issue
-
- 1. Etiological Spectrum of Obstructive Jaundice in a Tertiary Care Hospital. **1-5**
 - 2. Late Outcome of Direct Vision Urethrotomy in Patients with Urethral Stricture at Kilimanjaro Christian Medical Center (KCMC), Moshi-Tanzania. **7-14**
 - 3. Long Term Effect of Cardiac Rehabilitation Program on Patients with Percutaneous Coronary Intervention. **15-21**
-
- v. Fellows
 - vi. Auxiliary Memberships
 - vii. Process of Submission of Research Paper
 - viii. Preferred Author Guidelines
 - ix. Index



GLOBAL JOURNAL OF MEDICAL RESEARCH: I
SURGERIES AND CARDIOVASCULAR SYSTEM
Volume 15 Issue 4 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Etiological Spectrum of Obstructive Jaundice in a Tertiary Care Hospital

By Bimal Chandra Roy, Md. Abu Hanifa, Md. Shafiul Alam, Saimun Naher
& Prosannajid Sarkar PhD

Rangpur Medical College Hospital, Bangladesh

Abstract- Background: Jaundice due to biliary obstruction may be caused by a heterogeneous group of diseases that include both benign and malignant conditions. As patients with obstructive jaundice have high morbidity and mortality, early diagnosis of the cause of obstruction is very important especially in malignant cases, as resection is only possible at that stage.

Objectives: To determine the etiological spectrum of obstructive jaundice in a tertiary care hospital.

Methods: Cross sectional observational study was done in this study. A detailed history and thorough physical examination followed by investigations including liver function test, ultrasonography of whole abdomen & in some selective cases CT scan was done. The data had collected in a pre designed data collection sheet.

Keywords: obstructive jaundice, etiological spectrum, tertiary care hospital, morbidity and mortality.

GJMR-I Classification: NLMC Code: WI 703



Strictly as per the compliance and regulations of:



Etiological Spectrum of Obstructive Jaundice in a Tertiary Care Hospital

Bimal Chandra Roy ^α, Md. Abu Hanifa ^σ, Md. Shafiul Alam ^ρ, Saimun Naher ^ω & Prosannajid Sarkar PhD [¥]

Abstract- Background: Jaundice due to biliary obstruction may be caused by a heterogeneous group of diseases that include both benign and malignant conditions. As patients with obstructive jaundice have high morbidity and mortality, early diagnosis of the cause of obstruction is very important especially in malignant cases, as resection is only possible at that stage.

Objectives: To determine the etiological spectrum of obstructive jaundice in a tertiary care hospital.

Methods: Cross sectional observational study was done in this study. A detailed history and thorough physical examination followed by investigations including liver function test, ultrasonography of whole abdomen & in some selective cases CT scan was done. The data had collected in a pre designed data collection sheet.

Results: 29 patients (58%) had malignant obstructive jaundice and 21 patients (42%) had benign causes of obstructive jaundice. Amongst the malignancies, carcinoma head of the pancreas was the commonest, 15 patients (30%) followed by the carcinoma gall bladder 8 patients (16%). Regarding the benign cause's choledocholithiasis was most common cause, 11 patients (22%) followed by 4 patients (8%) stricture of common bile duct. Amongst the common symptoms anorexia, weight loss and clay colored stool were more frequent in patients with malignant disease and abdominal pain and fever were in benign conditions.

Conclusion: Obstructive jaundice in our setting is more prevalent in females and the cause is mostly malignant. Carcinoma head of pancreas is the commonest malignancy while choledocholithiasis is the commonest benign cause.

Keywords: obstructive jaundice, etiological spectrum, tertiary care hospital, morbidity and mortality.

I. INTRODUCTION

Obstructive jaundice is a common surgical problem that occurs when there is an obstruction to the passage of conjugated bilirubin from liver cells to intestine.¹ It is among the most challenging conditions managed by general

surgeons and contributes significantly to high morbidity and mortality.² The management of obstructive jaundice poses diagnostic and therapeutic challenges to general surgeons practicing specially in resource-limited area.² There is huge discrepancy between the recognized causes of obstructive jaundice at various centers and it is mandatory to determine pre-operatively the existence, the nature of obstruction because an ill-chosen procedure can lead to high morbidity and mortality.³

Jaundice due to biliary obstruction may be caused by a heterogeneous group of diseases that include both benign and malignant conditions.⁴ The surgical jaundice can be caused by the obstruction of the bile duct due to some benign causes like as stone in common bile duct, strictures and some malignancy, such as cholangiocarcinoma, periampullary carcinoma, carcinoma gall bladder and carcinoma head of pancreas.⁵

The symptoms of obstructive jaundice include jaundice with or without pain, dark urine, pruritis, pale stools, weight loss and anorexia.⁶

Obstructive jaundice is characterized by the raised levels of serum alkaline phosphatase rather than aspartate transaminase.⁷ There are various investigations which could be carried out for the diagnosis of obstructive jaundice like ultrasonography,⁸ which can pick up stones, dilated intra-extra hepatic channels, any mass in the abdomen and presence of fluid in the peritoneal cavity, but the gold standard is Endoscopic Retrograde Cholangiopancreatography (ERCP).⁹ ERCP can pick up choledocholithiasis, strictures of CBD, any obstruction of the CBD as well as helps in taking the brushing cytology. Another important non-invasive procedure is Magnetic Resonance Cholangiopancreatography (MRCP). Computerized Tomography (CT), Endoscopic ultrasound and Percutaneous Transhepatic Cholangiopancreatography (PTC) can also be used when required.¹⁰ Invasive tests may cause cholangitis and imaging techniques like computed tomography (CT) scan, PTC, ERCP and MRCP are expensive and are not readily available in most centers.¹¹

Surgery in jaundiced patients is associated with a higher risk of postoperative complications compared with surgery in non jaundiced patients.¹² These complications primarily consist of septic complications (cholangitis, abscesses and leakage), hemorrhage, impaired wound healing and renal disorders.¹² Understanding factors responsible for increased

Author α: Associate Professor, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh. e-mail: drbimalroy@gmail.com

Author σ: Registrar, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh. e-mail: drpavel135@gmail.com

Author ρ: Assistant Professor, Department of Medicine, Rangpur Medical College Hospital, Rangpur, Bangladesh. e-mail: shafiulssmc23@gmail.com

Author ω: Registrar, Department of Surgery Rangpur Medical College Hospital, Rangpur, Bangladesh. e-mail: saimunssmc26@gmail.com

Author ¥: Researcher, Dr. Wazed Research Institute Begum Rokeya University, Rangpur. Rangpur-5400, Bangladesh. e-mail: drpsarkarbrur@yahoo.com

morbidity and mortality in these patients will better guide appropriate management.¹³

II. OBJECTIVE OF THE STUDY

The main objective of this study was to determine the etiological spectrum of obstructive jaundice in a tertiary care hospital.

III. MATERIALS AND METHODS

A Cross sectional observational study was done in the Department of Surgery, Rangpur Medical College Hospital, Rangpur, during July-2012 to June-2014. Patients of obstructive jaundice admitted in different surgical wards of Rangpur Medical College Hospital, Rangpur were included in this study. The sample size was 50. Purposive sampling method was used as per inclusion and exclusion criteria. All patients were given an explanation of the study and informed written consent was taken. None of the names were used in the data bases.

After proper counseling a detailed history was taken and a thorough physical examination was done to detect the causes of obstructive jaundice. Routine investigations including ultrasonography of whole abdomen specially hepatobiliary system & pancreas to detect the cause & level of biliary obstruction and liver function test. When cause of biliary obstruction could

not be ascertained by sonographically then CT scan was done with all possible means a pre-operative diagnosis was made. The final diagnosis was based on per-operative findings and histopathological findings of the resected specimen.

Data was collected by pre design data collection sheet. Appropriate statistical analysis of the data was done using computer based SPSS (Statistical Program for Social Science) version-16.0. For comparison of data Chi-square probability test was performed. For each analytical test level of significance was 0.05 and $p < 0.05$ was considered significant. The study was done with existing facilities in Rangpur Medical College Hospital.

IV. RESULTS

The mean age was 50.40 (29-70years), $SD \pm 10.92$. Majority of benign cases was seen in 31-40 years of age, while the malignant cases were more common above 50 years old. Female are more prevalent both in benign and malignant. The male to female ratio for benign jaundice was 1:1.33, while it was 1:1.23 for the malignant obstructive Jaundice. 37 (74%) number of the patients in this study belong low socio-economical conditions. Among them malignant patients are more (42%).

Among distribution of various causes with nature (n=50)

Nature	Causes	No. of patients	Percentage (%)	Total (n=50)
Benign	Choledocolithiasis	11	22	21 42%
	Post cholecystectomy biliary stricture	4	8	
	Post cholecystectomy CBD stone	2	4	
	Worm in CBD	2	4	
	Choledochal cyst	2	4	
Malignant	Carcinoma head of the Pancrease	15	30	29 58%
	Carcinoma GB	8	16	
	Cholangiocarcinoma	3	6	
	Periampullary carcinoma	3	6	

n=number of patient

Benign in 21 (42%) cases, whereas 29 (58%) patients had malignant cause. Choledocholithiasis was the commonest benign cause whereas carcinoma head of the pancreas was commonest in malignant group.

Among distribution of association of symptoms and signs with diagnosis, itching was present in 32 patients (64%). In benign-66.66% and 62.02% in malignant condition which is statistically not significant. Clay coloured stools was present in 35 patients (70%). In benign condition, it was 11patients (52.38%) and in malignant condition 24 patients (82.75%) and statistically significant. Pain abdomen was present in 27 patients (54%). 19 patients (90.47%) with benign and 8 patients (27.58%) with malignant etiology presenting with this symptom. Pain is predominantly present in

case of benign diseases and it was statistically significant. Anorexia was present in 29 patients (58%). In benign condition it was 5 patients (23.80%) and in malignant condition it was 24 patients (82.75%) and statistically significant in case of malignant.

Weight loss was present in 30 patients (60%). In benign condition it was 4 patients (19.04%) and in malignant condition it was 26 patients (89.65%) and statistically significant for a malignant etiology. Fever was present in a total of 27 patients (54%) with benign condition 17 patients (80.95%) and malignant condition 10 patients (34.48%) which was statistically significant for benign disease. Gall bladder was palpable in 14 patients (28%). In patients with benign condition 1 patients (4.76%) and malignant condition 13 patients

(44.82%) which was statistically significant for a malignant etiology.

In evaluation of imaging techniques for diagnosis, all patients underwent USG, 41 patients (82%) revealed cause of obstruction but in case of 9 patients (18%) exact cause of obstruction could not be ascertained and 12 patients underwent CT scan, most of them were malignant cases and detect accurate cause of obstruction in 11 patients (91%). Sensivity of ultrasonogram was 82% but CT scan 91%. Almost all benign cases diagnosed were made correctly pre-operatively but in malignant, some cases confirmed diagnosis made after histopathology.

Regarding treatment, all choledocholithiasis patients were treated by choledocholithotomy and insertion of T-tube. After laparotomy 4 cases of carcinoma gall bladder were found such an advanced stage that only biopsy specimen were taken, other 4 cases of carcinoma gallbladder were treated with extended cholecystectomy, other than this all malignant cases were treated as palliative surgery like double or triple bypass. Maximum palliative surgery done by double bypass procedure in the form of hepaticojejunostomy and jejunojejunostomy.

V. DISCUSSIONS

The mean age of the patients with the benign or malignant etiology of obstructive jaundice was 50.40 (29-70years), $SD \pm 10.92$. Most of the patients with the benign jaundice were between 31–40 years of age while malignant causes were more common in the older patients and were maximally seen >50 years of age. The increased incidence of malignant obstructive jaundice with the increasing age has also been reported by various study.^{6, 14, 15}

In this study, both the benign and malignant obstructive jaundice are found more commonly amongst the females than males. The male to female ratio for benign jaundice was 1:1.33, while it was 1:1.23 for the malignant obstructive Jaundice. The increased incidence of obstructive jaundice amongst the females is due to the fact that gall stones are frequently found in them.^{16,17} Some study support this findings.^{14,16} In case of nature, malignant obstructive jaundice was more common than benign, 58% Vs 42% which is in agreement with other studies reported elsewhere.^{1,16,18-20} but in contrast to Bekele *et al*⁵ in Ethiopia who reported benign obstructive jaundice as the most common cause of obstructive jaundice. Regarding the benign causes choledocholithiasis was most common cause, 11 patients (22%) followed by 4 patients (8%) stricture of common bile duct, 2 patients (4%) post cholecystectomy CBD stone, 2 patients (4%) worm in CBD, 2 patients (4%) choledochal cyst. Choledocholithiasis was also found to be the commonest benign cause in others study.^{14,18-21} Amongst the malignancies,

Carcinoma head of pancreas was the commonest, 15 patients (30%) followed by the carcinoma gall bladder 8 patients (16%), cholangiocarcinoma 4 patients (8%) and periampullary carcinoma 2 patients (4%). Similar incidence of various malignancies in patients of obstructive jaundice has been seen in various studies.^{14,20,21} These observations reflect differences in etiological spectrum from one centre to another. Among the symptoms, pruritis was present in 32 patients (64%) which was near to equally in both the benign 14 patients (66.66%) and 18 patients (62.02%) in malignant cases. Clay coloured stools was present in 35 patients (70%). In benign condition, it was 11 patients (52.38%) and more commonly by patients with the malignant jaundice 24 patients (82.75%).

The pain in the abdomen was present in 27 patients (54%) and it was more frequently seen amongst the benign causes 19 patients (90.47%) and almost always present in every case of choledocholithiasis. While 8 patients (27.58%) with malignancy also had abdominal pain on presentation possibly due to advanced disease.¹⁶

Anorexia was present in 29 patients (58%) and was more frequently seen amongst the patients of malignant jaundice, 24 patients (82.75%) and it was statistically significant. In benign condition it was 5 patients (23.80%). Weight loss was present in 30 patients (60%). In benign condition it was 4 patients (19.04%) and in malignant condition it was 26 patients (89.65%). Fever was present in a total of 27 patients (54%) with benign condition 17 patients (80.95%) and malignant condition 10 patients (34.48%) which statistically significant for benign etiology. Gall bladder was palpable in 14 patients (28%). The palpable gall bladder was appreciated in 13 patients (44.82%) with malignancy thus supporting the 'Courvoisier's law'^{16,22}, and only 1 patients (4.76%) gall bladder palpable in cases benign condition.

Amongst the radiological investigations ultrasonogram was the initial imaging investigation for all cases of obstructive jaundice to diagnose the cause of obstruction. Forty one patients (82%) USG revealed cause of obstruction but in case of 9 patients (18%) exact cause of obstruction could not be ascertained. CT scan has several advantages over USG. CT scan was done in patients mostly suspecting of malignancy in USG. Tumor size, its local, regional and distant spread can more accurately be determined by CT scan. CT scan done in 12 patients and detect accurate cause of obstruction in 11 patients (91%). ERCP cannot performed as because this facility was not available in our hospital. Though ERCP has been defined as a 'Gold Standard' for the diagnosis of obstructive jaundice.²³ The final diagnosis was then made based upon the results of histopathology and then results were drawn.

Justification of treatment modalities in the biliary obstruction depend on the site and nature of

obstruction. All choledocholithiasis patients were treated by choledocholithotomy and insertion of T-tube. In all cases of malignancies surgical resection were try to done but not possible as because malignant patients came to our hospital with advanced stage. This delayed presentation of patient to the physician probably due to social and cultural factors and also nature of the disease itself. So all malignant cases were treated as palliative surgery like double or triple bypass. Maximum palliative surgery done by double bypass procedure in the form of hepaticojejunostomy and jejunojejunostomy.

VI. LIMITATIONS

We have some limitations of this study like, small sample size, as the study was hospital based cross sectional study-it is difficult to generalize the findings to the whole community population and ERCP has been defined as a 'Gold Standard' for the diagnosis of obstructive jaundice but this facility is not available in our hospital.

VII. CONCLUSION

Carcinoma of the head of pancreas is the commonest malignant cause of jaundice whereas stones in the bile duct the commonest benign etiology. Most of patients with malignant obstructive jaundice present late with advanced disease and the only treatment modality for these patients was palliative surgery. In this area latest investigating technology facilities are not available or affordable. Majority of the patients were diagnosed by history, clinical examination, liver function test and ultrasonogram.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

VIII. ACKNOWLEDGMENT

We are grateful to The God, the most merciful and gracious, for giving us the opportunity, strength and patience to carry out and complete this research work. This is a great opportunity on our part to express heartfelt gratitude and indebtedness to our respected teachers Prof. Dr. M. A Quayum MBBS, FCPS (Surgery) and Prof. Dr. Syed Md. Abu Taleb, MBBS, FCPS (Surgery), Professor, Department of Surgery, Rangpur Medical Collage, Rangpur, Bangladesh for their instructions, encouragement, valuable advice, constructive criticism which have rendered this study into its successful completion. We must pay regard to all our study subjects who had given consent without any hesitation to participate in this study without which this study would have been impossible.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Mohamed S, Syed AI. Management of Obstructive Jaundice: Experience in a tertiary care surgical unit. *Pakistan Journal of Surgery* 2007; 23:23-25.
2. Ahmad I, Jan AU, Ahmad R. Obstructive Jaundice. *J Postgrad Med Inst* 2001; 15: 194-8.
3. Nadkarni KM, Jahagirdar RR, Kagzi RS, Pinto AC, Bhalariao RA. Surgical obstructive jaundice. *J Postgrad Med* 1981; 27: 33-9.
4. Roche SP, Kobos R. Jaundice in the adult patient. *American Family Physician* 2004; 69: 299-304.
5. Bekele Z, Yifru A. Obstructive jaundice in adult Ethiopians in a referral hospital. *Ethiop Med J* 2000; 38: 267-75.
6. Aziz M, Ahmad N, Faizullah. Incidence of malignant obstructive jaundice-A study of hundred patients at Nishtar Hospital Multan. *Ann KE Med Coll* 2004;10:71-3
7. Hayat JO, Loew CJ, Asress KN, McIntyre AS, Gorard DA. Contrasting liver function test patterns in obstructive Jaundice due to biliary strictures and stones. *QJM* 2005; 98(1): 35-40.
8. Ghaffar A, Buledi GQ, Imran M. Role of imaging in obstructive jaundice. *J Surg Pakistan* 2004; 9: 24-6.
9. Khurram M, Durrani AA, Hasan Z, Butt AUA, Ashfaq S. Endoscopic retrograde cholangiopancreatographic evaluation of patients with obstructive jaundice. *J Coll Physicians Surg Pak* June 2003; 13 (6): 325-8.
10. Akhtar S, Mufti TS. Diagnostic accuracy of obstructive jaundice on ultrasonography at Ayub Hospital complex. *J Ayub Med Coll Abbottabad* 1999; 11(1):45-6.
11. Cheema KM, Ahmad F, Gondal SH. Evaluation of etiological incidence and diagnostic modalities in obstructive jaundice. *Pak Postgrad Med J* 2001; 12 (4): 160-4.
12. Uslu A, Nart A, Colak T, Aykas A, Yuzbasioglu MF, Hidir K. Predictors of mortality and morbidity in acute obstructive jaundice: implication of preventive measures. *Hepatogastroenterology* 2007; 54 (77): 1331-4.
13. Buckwater JA, Lawton RL, Tidrick RT. Bypass operation for neoplastic biliary tract obstruction. *Am J Surg* 1965; 109: 100-5.
14. Phillipo L Chalya, Emmanuel S Kanumba, Mabula Mchembe. Etiological spectrum and treatment outcome of obstructive jaundice at a University teaching Hospital in northwestern Tanzania: A diagnostic and therapeutic challenges [Internet]. *BMC Research Notes* 2011, 4:147. Available from: <http://www.biomedcentral.com/1756-0500/4/147>
15. Raed Jawad Witwit. Relation between the clinical presentation and etiology of obstructive jaundice. *Kufa Med Journal* 2011; 14 (1): 209-213.

16. Khurram siddique, Qasim Ali, Shirin Mirza, Aiza Jamil, Aisha Ehsan, Sarmad Latif et al. Evaluation of etiological spectrum of obstructive jaundice. J Ayub Med Coll Abbottabad 2008; 20 (4). 62-66.
17. Channa NA, Khand FD, Bhanger MI, Leghari MH. Surgical incidence of Cholelithiasis in Hyderabad and adjoining areas (Pakistan). Pak J Med Sci 2004; 20: 13–7.
18. S Verma, S Sahai, P Gupta, A Munshi, S Verma, P Goyal. Obstructive Jaundice- Etiological Spectrum, Clinical, Biochemical and Radiological Evaluation: At a Tertiary Care Teaching Hospital. The Internet Journal of Tropical Medicine. 2010; 7 (2).
19. Muhammad Saddique, Syed Abdullah Iqbal. Management of Obstructive Jaundice: Experience in a Tertiary Care Surgical Unit. PJS 2007; 23(1): 23-25.
20. Tariq Wahab Khanzada, Abdul Samad, Waseem Memon, Basant Kumar. Etiological Spectrum of Obstructive Jaundice. JPMI. 2008; 22(2): 157-160.
21. Ahmed F, Khan AFA, Ahmed A, Cheema KM. Extra hepatic biliary obstruction: A study o f etiological factors in a teaching hospital. Ann KE Med Coll 1997; 2: 6–8.
22. Russell R.C.G. The Gall Bladder and bile duct. In: Russell R.C.G, Williams N.S, Bulstrode C.J.K. editors. Bailey & Love's Short Practice of Surgery. 24th ed. London. Arnold publishers; 2004. p. 1094–5, 1103–6.
23. Acalovschi M. Cholangiocarcinoma: Risk factors, diagnosis and management. Rom J Intern Med 2004; 42:41–58.

This page is intentionally left blank



GLOBAL JOURNAL OF MEDICAL RESEARCH: I
SURGERIES AND CARDIOVASCULAR SYSTEM
Volume 15 Issue 4 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Late Outcome of Direct Vision Urethrotomy in Patients with Urethral Stricture at Kilimanjaro Christian Medical Center (KCMC), Moshi-Tanzania

By Njiku Kimu, Obadia Venance Nyongole, Bright Frank & Jasper Mbwambo
Muhimbili University of Health and Allied Sciences, Tanzania

Abstract- Background: Dilation and direct vision urethrotomy are the most common procedures used by majority of urologist to manage urethral stricture disease. This includes urologists in both developed world as well as developing world.

Dilation and direct vision urethrotomy are now regarded as neither cost effective nor efficacious as long term strategy for management of urethral stricture disease.

Despite the initial enthusiasm and good results reported by earlier studies, more recent studies have demonstrated a poor long-term success rate for direct vision urethrotomy.

Broad objective: The aim of this study is to document the late outcome of DVU as seen in patients with urethral stricture at KCMC.

Methodology: This is a hospital based retrospective cohort study that involved patients who presented to urology department at KCMC with urethral stricture and underwent direct vision urethrotomy from January 2006 to December 2013.

Keywords: urethral stricture, outcome.

GJMR-I Classification: NLMC Code: WP 175



Strictly as per the compliance and regulations of:



Late Outcome of Direct Vision Urethrotomy in Patients with Urethral Stricture at Kilimanjaro Christian Medical Center (KCMC), Moshi-Tanzania

Njiku Kimu ^α, Obadia Venance Nyongole ^ο, Bright Frank ^ρ & Jasper Mbwapbo ^ω

Abstract- Background: Dilation and direct vision urethrotomy are the most common procedures used by majority of urologist to manage urethral stricture disease. This includes urologists in both developed world as well as developing world.

Dilation and direct vision urethrotomy are now regarded as neither cost effective nor efficacious as long term strategy for management of urethral stricture disease.

Despite the initial enthusiasm and good results reported by earlier studies, more recent studies have demonstrated a poor long-term success rate for direct vision urethrotomy.

Broad objective: The aim of this study is to document the late outcome of DVU as seen in patients with urethral stricture at KCMC.

Methodology: This is a hospital based retrospective cohort study that involved patients who presented to urology department at KCMC with urethral stricture and underwent direct vision urethrotomy from January 2006 to December 2013.

Results: A total of 648 cases of urethral stricture disease were managed at KCMC between January 2006 and December 2013, out of these 365 (56.3%) underwent DVU and 283 (43.7%) underwent urethroplasty. Of the patients who underwent urethroplasty, 191 (67.5%) underwent anastomotic urethroplasty, 64 (22.6%) underwent staged urethroplasty and 28 (9.9%) underwent substitutional urethroplasty. Out of 365 patients who underwent DVU during the study period 227 (62.2%) met the inclusion criteria, and 138 (37.8%) did not meet the inclusion criteria. Eighty six point four percent of participants were 40 years or older. One hundred and three participants (45.4%) had urethral strictures from iatrogenic causes. Most strictures were located in the bulbous part of urethra (63.9%). The majority of participants (66.1%) had strictures 1cm long or shorter. Most participants (90.8%) had a single stricture. Out of the 227 participants, 102 (44.93%) needed a re-operation. Of the 102 patients who required re-operation; 59 (57.84%) required the operation within six months; 18 (17.65%) within one year; 9 (8.82%) within two

years; 12 (11.76%) within five years; and 4 (3.92%) required the operation beyond five years.

Conclusion: DVU is still the commonest treatment option for patients with urethral stricture at KCMC. Most patients (63%) who underwent DVU were 60 years or above.

The overall long term success rate of DVU was 55.07%

The outcome of DVU was good when stricture was single, the length was 1 cm or less and located in the bulbous urethra.

Recurrence of urethral stricture post DVU is significantly high for strictures which are long, multiple and located in other sites apart from bulbous urethra.

Age of the patient and etiology of the urethral stricture have no influence on the outcome of DVU

Keywords: urethral stricture, outcome.

I. BACKGROUND AND LITERATURE REVIEW

Since the introduction of DVU by Sachse in 1974, the wheel has come a full circle. Earlier studies demonstrated excellent outcomes following DVU and poor success of urethroplasty techniques. However the last two decades have witnessed a revolution in techniques of urethroplasty and many state-of-art centers have reported excellent long-term outcome coupled with the expansion of urethroplasty techniques, studies have highlighted extremely poor long-term outcomes for DVU [Lumen et al, 2009].

Dilatation and DVU are the most common procedures used by the majority of urologists in the United States. Recently, several authors analyzed the trends in male urethral stricture management in the United States using the data from the 1992-2001 Medicare claims. These authors concluded that despite the poor overall efficacy of dilation and DVU, urethroplasty rates were the lowest of all treatments [Barbagli et al, 2012].

Optical urethrotomy is a widely accepted treatment in approximately 80% of patients with urethral strictures. Repeated dilatation and open urethroplasty are other treatment procedures for urethral strictures. Optical urethrotomy (OU) has been performed either under general or spinal anesthesia. There are few excellent reports on use of local anesthesia. Generally

Author α: Department of Surgery, Muhimbili National Hospital, P.O.Box 65000, Dar es Salaam, Tanzania. e-mail: knjiku@yahoo.com

Author ο: Department of Surgery, School of Medicine, Muhimbili University of Health and Allied Sciences, P.O.Box 65001, Dar es Salaam, Tanzania. e-mail: onyongole@yahoo.co.uk

Author ρ ω: Institute of urology, Kilimanjaro Christian Medical Center, P.O.Box 3010, Moshi, Tanzania. e-mails: frankbright2001@yahoo.com, jsmbwambo@yahoo.com



optical urethrotomy is considered ideal for short segments (less than 2 cm). However, some authors believe that length is not a limiting factor for urethrotomy of anterior urethral strictures. OU has many advantages including day care procedures, early mobilization, shorter period of indwelling catheter and good short term results. However, significant percentage of patients recurs following OU. Most of these patients require either self-dilatation, dilatation by urologist in clinic, repeat OU or open urethroplasty [Zehri et al, 2009].

In a study done in Dar es Salaam a total of 111 patients with urethral strictures were recruited into the study, all were male with age range of 10 – 97 years with a mean of 52.7 years. DVIU was the most performed procedure accounting for 73 (65.8%) of all patients followed by primary urethroplasty at 31 (27.9%) and multistage urethroplasty at 7 (6.3%) [Nyongole et al, 2013].

In a study done at KCMC DVU was done in 50% of cases of urethral stricture [Mteta et al, 2009].

Visual internal urethrotomy provides a safe first line therapeutic option for pediatric urethral stricture shorter than 1 cm, independent of etiology and location. For patients with more than one recurrence or with strictures longer than one centimeter, who are at high risk for recurrence after internal urethrotomy, open Urethroplasty remains the treatment of choice [Hafez et al, 2005].

The classical DVIU includes a single cut made at 12 o'clock position in the scar tissue, till the scar is incised completely. Concerns have been raised about the correct position of the incision. Some authors advocate multiple radial incisions for better incision of the scar. However, there is no reported difference in the outcome of single versus multiple incisions [Santucci et al, 2010].

Laser urethrotomy using different lasers has been attempted to improve outcomes. One prospective study demonstrated superior outcomes using a neodymium-doped yttrium aluminium garnet laser. In this study, recurrence rates following laser urethrotomy were 30% compared to 65% with DVIU over 12-month follow up. However other studies have reported similar success rates after laser and cold knife incision [Turek et al, 1992; Kamp et al, 2006].

In a double-blind, randomized, placebo-controlled study it was shown that injection of triamcinolone acetonide did not improve significantly the outcome of DVU. [Tavakkoli et al, 2011].

The reported duration following urethrotomy ranges from one day to three months. As yet there is no convincing evidence that extending the duration of catheterization has an impact on the outcome. Contrary to the popularly held belief, leaving the urethral catheter in place for three days or less is associated with lower recurrence rate (34%), compared to leaving it for four to seven days or more than seven days (recurrence rates

of 43% and 65% respectively). Most studies have reported catheterization duration of one to four days [Dubey, 2011].

Various techniques have been employed to follow patients following visual internal urethrotomy. These include urethral calibration with a catheter, uroflowmetry, flexible cystourethroscopy, AUA symptom index, urethrographic studies and the need for a repeat procedure. There is no uniformly accepted method of follow-up. Using a peak flow rate of less than 15 ml/sec, stricture recurrence could be diagnosed in 84% patients who had stricture recurrence [Pandasoro et al, 1996].

A retrospective study done in Detroit, Michigan from January 1994 through March 2009 to assess the success of DVIU in series of 76 patients with simple urethral strictures, in this study Time to Recurrence (TTR) was defined as the time from urethrotomy until first subjective or objective sign of recurrence (if known), or actual date of subsequent repeat urethrotomy. Sign of recurrence included decreased force of stream, incomplete bladder emptying, recurrent urinary tract infections, increased post-void residual urine, obstructive pattern on uroflow study or definitive radiographic or cystoscopic evidence or recurrent stricture [Santucci et al, 2010].

In a study done in Germany including two university hospitals, Mainz university (group 1) and Bonn University (group 2) with a mean follow up of 4.6 years in group 1 and 3.2 years in group 2. The stricture recurrence rate in Group 1 was 26.9%, whereas in Group 2 was 44.6%. Subgroup analysis revealed a higher preponderance of idiopathic stricture in Group 1 and iatrogenic strictures in Group 2. Theses authors concluded that idiopathic strictures have a more favorable prognosis [Albers et al, 1996].

In a study done in Italy, 224 patients were followed for longer than 60 months after optical urethrotomy and a preoperative peak flow of less than 15 millilitres per second. The mean patient age was 62 years. The success rate (peak flow rate of more than 15 millilitres per second) was 32% overall, and 42%, 16% and 11% among patients with bulbar, penile and penile bulbar strictures respectively [Pansadoro et al, 1996].

Stricture recurrence has been shown to be directly proportional to stricture length. It has been shown that recurrence rate is high with strictures longer than 1cm. In a study done in Italy success rate was 71% for strictures shorter than 1cm versus only 18% for longer strictures [Pansadoro et al, 1996].

In a study by Albers et al, 1996 which was done in Germany, stricture length was analyzed by retrograde urethrography. The recurrence was 27.8% for strictures less than 1cm which was less compared to long strictures of which recurrence was 50.5% following internal urethrotomy.

In a study done in Nigeria a total of 23 patients needed a repeat urethrotomy within 48 months of follow up (recurrence of 32.9%) [Ramyil et al, 2007].

In another study by Zehri et al, 2009 it was shown that strictures length more than two centimetres was significantly associated with recurrence following DVU, (P Value 0.0001).

A study by Javier et al, 2014 in patients who underwent urethrotomy, the procedure was performed a mean of 1.32 ± 0.94 times; in 20% of the subjects, the treatment included urethroplasty due to the poor results of the previous endoscopic treatment. Analysis of the studied parameters revealed that the length of the stricture was the only factor that influenced sole treatment or treatment with urethrotomy and subsequent urethroplasty.

In a study by Mandhani et al, 2005 the degree of spongiofibrosis associated with strictures may also predict stricture recurrence. However, spongiofibrosis is difficult to quantify. Percentage narrowing on retrograde urethrography can be used to predict stricture recurrence. From January 1991 to June 2002 patients with primary bulbar urethral strictures who underwent DVU were selected for the study. Patients with a history of intervention, complete block of the urethral lumen and stricture greater than 2 cm were excluded from study. Urethral diameter at the area of maximum stenosis and at the normal distal urethra was measured on RGU with Vernier caliper and percentage narrowing was derived. Patients were followed 3 times monthly with symptoms, calibration and whenever required with RGU. Recurrence of symptoms, failure to self-calibrate and the need for secondary procedure were considered treatment failure. Complete follow up data were available in 105 patients (44 grade 1 and 61 grade 2). Mean bulbar urethral stricture length was 0.86 cm. Inflammation was the cause of stricture in 83 (79%) and trauma the cause in 22 (21%) patients. In the Cox proportional hazards model only grade of narrowing had a significant impact on outcome. There were 41 cases of treatment failure in the total follow up of 46 +/- 9 months. Mean recurrence-free duration +/- SD was 13 +/- 15 and 44.52 +/- 19 months in cases of treatment failure and success, respectively ($p < 0.0001$). Mean percentage narrowing was significantly higher with treatment failure (69.9% +/- 16.1% vs 48.55% +/- 17.3%, $p < 0.0001$). A cutoff of 74% for urethral narrowing was derived to predict the outcome with 78% probability.

In a study done by Albers et al, 1996 in Germany strictures were in bulbous urethra in 52.6% of the cases and multiple in 21.9%. Penile strictures (28.6%) had the highest recurrence rates (42.5%), bulbar strictures had the lowest recurrence rate (34.3%). Location did not significantly influence recurrence rate.

The location of the stricture did not influence outcome of DVU. Among short strictures those in the

bulbar showed lower recurrence rates than, for example, those in the penile urethra, which may be explained by the better vascularization of the proximal urethra. Nonetheless, the process and scarring certainly depend more on aetiology than stricture location [Albers et al, 1996].

In a systematic review by Dubey, some studies have found that iatrogenic strictures had higher recurrence rates than inflammatory or traumatic strictures, whereas another study showed better results for iatrogenic strictures. Inflammatory strictures occurring after long-term catheterization or genital infection were found to be associated with higher chance of recurrence. Others have found no relationship between stricture etiology and risk of recurrence. There is no consensus on whether stricture etiology predicts recurrence, as different studies have proposed different aetiologies as poor responders to DVU.

In a study by Heyns et al, 1998 a single dilatation or a DVU, not followed by restricting at 3 months, the stricture recurrence rate was 55-60% at 24 months and 50-60% at 48 months. After a second DVU for stricture recurrence at 3 months, the stricture-free rate was 30-50% at 24 months and 0-40% at 48 months. After a third dilatation or DVU for stricture recurrence at 3 and 6 months, the stricture-free rate at 24 months was 0. Urethrotomy has no role when stricture recurrence occurs within 3 months of DVU or recurs after a second urethrotomy.

In a study by Pansadoro et al, 1996 only 2 of the 47 patients treated with multiple urethrotomies achieved a good result and a third or fourth urethrotomy always failed. In a study involving 126 patients who underwent internal urethrotomy and got recurrence underwent either a subsequent urethrotomy or urethroplasty. It was demonstrated that repeat urethrotomy was neither cost-effective nor clinically effective.

In a study by Kjaergard et al, 1988 43 patients were randomized to either weekly CISC for one year or no CISC. The stricture recurrence was 68% in those who did not perform CISC versus 19% in those who did, clearly demonstrating the beneficial effects for CISC.

In a study by Bubey, 2011 it was shown that biweekly intermittent self-dilation (ISD) when continued for longer than 12 months, had a much lower rate of stricture recurrence (16%) when compared with the group that performed ISD for 6 months (40%). There is no role for short-term ISD following urethrectomy.

II. METHODS

a) Study design

This was a retrospective hospital based cohort study conducted at KCMC, which is a tertiary referral hospital receiving patients from districts and regional hospitals from the Central and northern zone of Tanzania but also from other zones and neighboring

countries. It involved all patients who had urethral stricture and underwent DVU with a follow of at least six months at KCMC from January 2006 to December 2013.

Patients with incomplete information (incomplete investigation, incomplete surgical operation report) and those who were lost to follow up were excluded from the study.

b) Ethical issues

Ethical clearance was approved by KCMU College Research and Ethics Review Committee for ethical clearance. All patients' information were kept confidential and not to be accessed by people not involved in the study

c) Data processing and analysis

All the collected data were recorded into the extraction form and were checked by the researcher for completeness and consistency. Data from patient record extraction forms were entered into excel spreadsheet and then transferred into SAS (version 9.3) statistical software (SAS Institute, Cary, NC, USA) for

analysis. Proportions were used to describe the basic characteristics of the study participants and the patient long term outcomes. Statistical significance was considered when the respective p value was less than 0.05.

III. RESULTS

A total of 648 cases of urethral stricture disease were managed at KCMC between January 2006 and December 2013, out of these 365 (56.3%) underwent DVU and 283 (43.7%) underwent urethroplasty. One hundred ninety one (67.5%) patients underwent anastomotic urethroplasty, 64 (22.6%) underwent staged urethroplasty and 28 (9.9%) underwent substitutional urethroplasty. Out of 365 patients who underwent DVU during the study period 227 (62.2%) met the inclusion criteria, and 138 (37.8%) did not meet the inclusion criteria. Sixty three percent of participants were aged 60 years or above 60 years as shown in **Figure 1**;

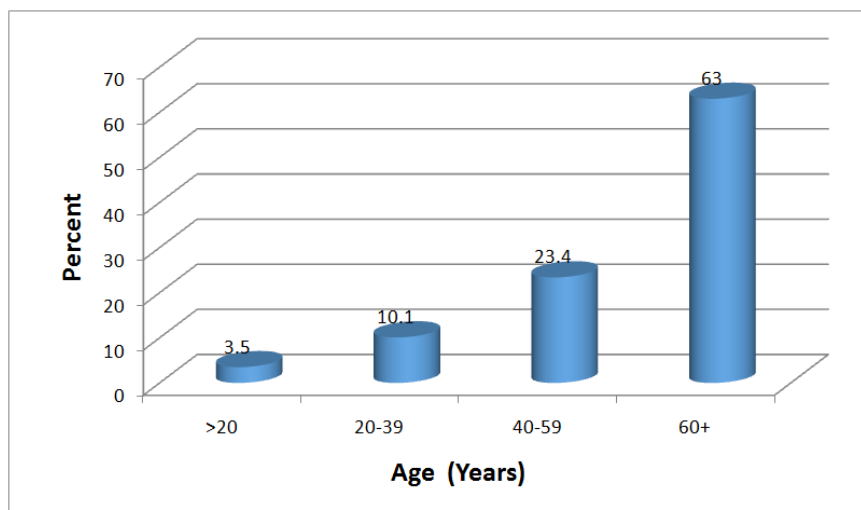


Figure 1: Bar chart showing age distribution of patients who underwent DVU (N=227).

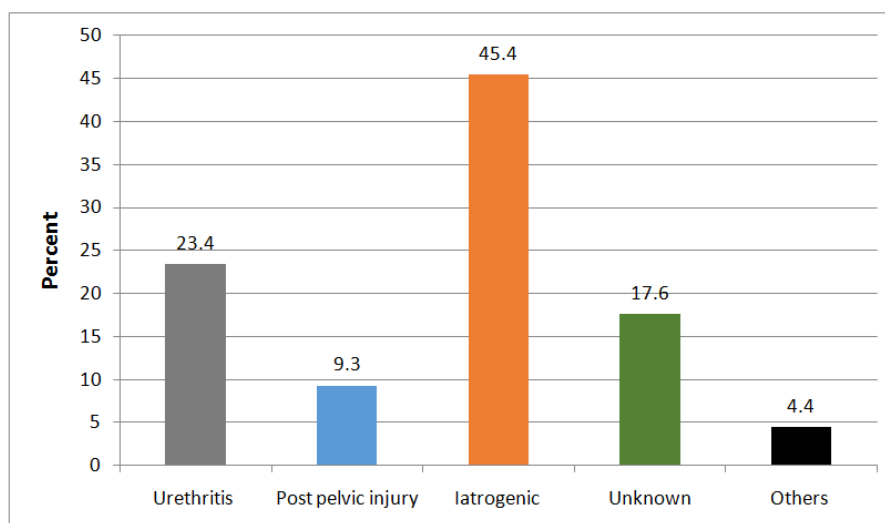


Figure 3 : Aetiologies of urethral stricture in patients who underwent DVU (N=227).

Iatrogenic urethral injuries were found to be the main cause of urethral strictures in 45.4% cases as shown in Figure 3.

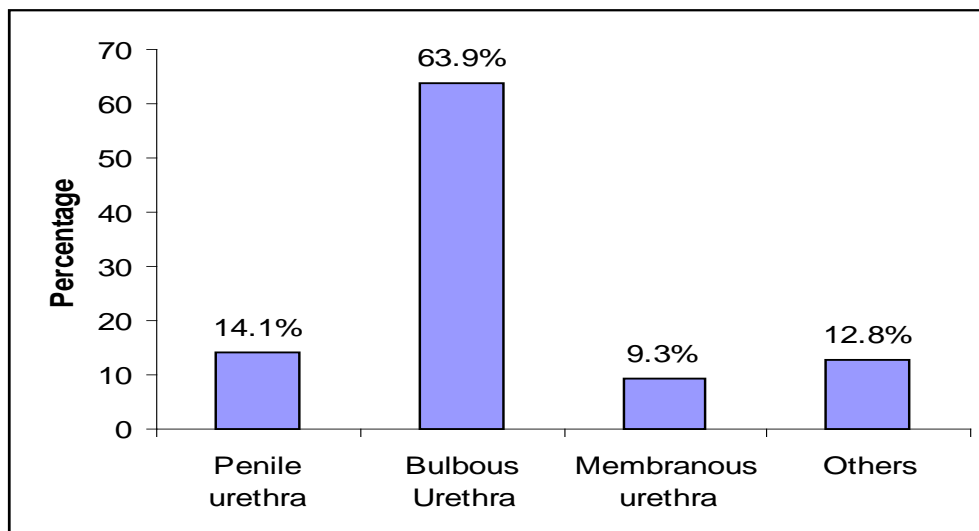


Figure 4 : Site of urethral strictures in patients who underwent DVU (N=227).

One hundred forty five (63.9%) of those who underwent DVU had strictures located at the bulbous part of urethra as shown in figure 4 above.

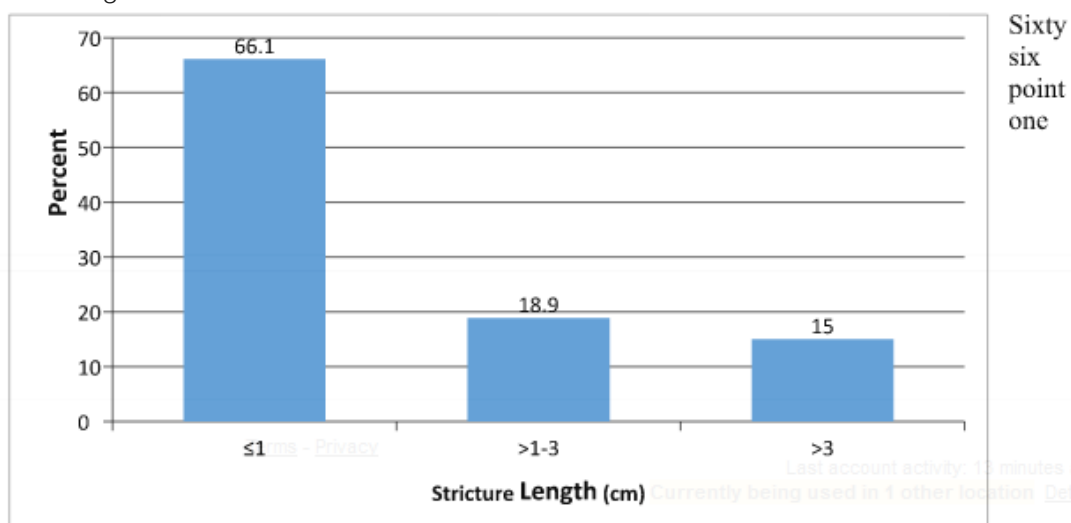


Figure 5 : Length of urethral strictures in patients who underwent DVU (227).

Sixty six point one participants had strictures of 1 cm long or less than 1cm as shown in figure 5 above.

Table 1 : Late DVU outcome among Patients Undergoing DVU at KCMC (227).

	Number	Percent
DVU Outcome		
Need re-operation	102	44.9
No re-operation	125	55.1
Need of re-operation		
Within six months	59	57.8
Within one year	18	17.7
Within two years	9	8.8
Within five years	12	11.8
Beyond five years	4	3.9

Out of the 227 participants, 102 (44.9%) needed a re-operation. Of the 102 patients who required re-operation; 59 (57.8%) required the operation within six months; 18 (17.7%) within one year; 9 (8.8%) within two

years; 12 (11.8%) within five years; and 4 (3.9%) required the operation beyond five years as shown in table 1 above.

Table 2 : Outcome of DVU with age

Age group	Outcome of DVU		
	Recurrence	No Recurrence	Total
<20	5 (62.5%)	3 (37.5%)	8 (3.52%)
20-39	10 (43.48%)	13 (56.52%)	23 (10.13%)
40-59	25 (47.17%)	28 (52.83 %)	53 (23.35%)
≥60	62 (43.36%)	81 (56.64%)	143 (63.00%)
Total	102 (44.93%)	125 (55.07%)	227 (100%)

There was no statistical significant difference in the outcome of DVU in the different age groups (using Fisher's Exact Test P value 0.77)

Table 3 : Outcome of DVU with length of urethral stricture

Length of stricture (cm)	Outcome of DVU		
	No Recurrence	Recurrence	Total
<1	76 (80.00%)	19 (20.00%)	95 (41.85%)
1-3	45 (37.5%)	75 (62.5%)	120 (52.86%)
>3	4 (33.33%)	8 (66.67%)	12 (5.29%)
Total	125 (55.07%)	102 (44.93%)	227 (100%)

The recurrence of stricture following DVU increased proportionally to stricture length. Stricture recurrence rates were 20%, 62.5% and 66.67% for

strictures less than 1 cm, 1 to 3 cm and above 3 cm respectively. The difference was statistically significant. (Chi-Square 41.1251, DF 2, P value < 0.0001)

Table 4 : Outcome of DVU with stricture location

Stricture Location	Outcome of DVU		
	No Recurrence	Recurrence	Total
Bulbous	90 (62.07%)	55 (37.93%)	145 (63.88%)
Others	35 (42.68%)	47 (57.32%)	82 (36.12%)
Total	125 (55.07%)	102 (44.93%)	227 (100%)

Bulbous urethral strictures showed a better outcome compared to strictures at other sites. Recurrence of stricture following DVU for bulbous

stricture was 37.93% while for other sites was 57.32% as shown in Table 4. This difference is statistically significant. (Chi-Square 7.9557, DF 1, P value 0.005)

Table 5 : Outcome of DVU with number of urethral strictures

Number of strictures	Outcome		
	No Recurrence	Recurrence	Total
Single	118 (57.28%)	88 (42.72%)	206 (90.75%)
Multiple	7 (33.33%)	14 (66.67%)	21(9.25%)
Total	125 (55.07%)	102 (44.93%)	227 (100%)

Single strictures had better outcome after DVU compared to multiple strictures. Stricture recurrence was 42.72% for single strictures compared to 66.67% for multiple strictures and the difference is statistically significant. (Chi Square 4.4172, DF 1 P value 0.04)

IV. DISCUSSION

In this study patients with urethral stricture treated by DVU at KCMC had age range from 4 years to 93 years with a mean age of 61.9 years. Age distribution of patients who underwent DVU at KCMC is similar to the findings in most studies done in developed countries (Italy, the mean age of patients was 62 years, range 11 to 90 years, Pansadoro et al, 1996)

The mean age is higher compared to findings in other African countries whereby the mean age was younger. In Nigeria the mean age was 30.6 years [Ramyil et al, 2007] and in Ethiopia the median age was 43 years [Hagos, 2008].

The difference in mean age between this study and the ones done in other African countries could be explained by the etiological factors of urethral strictures, whereby in these other African countries infection was the leading cause of urethral stricture (61.4% in Nigeria and 82.4% in Ethiopia). In this study infection contributed only 23.4% of urethral strictures while majority of urethral strictures were caused by iatrogenic injuries (45.4%). These findings are similar to the ones in

studies done in developed world where iatrogenic causes accounted for 45% of urethral strictures while urethritis accounted for 20% of cases [Tritschler et al, 2013]. In another study done in Europe iatrogenic causes accounted for 45.5% of strictures. In patients younger than 45 years the main causes were idiopathic, hypospadias surgery and pelvic fracture. In patients older than 45 years the main causes were transurethral resection and idiopathic [Lumen et al, 2009].

Most patients in this study had strictures located in bulbous urethra (63.9%) which is higher compared to results found in other studies, (Pansadoro and Emilliozi 49%, Albers 52.6% and Tritschler et al 50%).

In this study it was found that overall stricture recurrence rate was 44.9% which is similar to what was found by a study by Albers et al (44.8%) and Tritschler et al (50%). Other studies had very high stricture recurrence rates of up to 93% to 94%. In a study by Santucci et al stricture free rate (SFR) at five years was 7% and in the one done by Pansadoro et al it was 6%. In both these two studies the sample sizes were small, 76 cases and 47 cases respectively.

The long term outcome of DVU was found to be better for strictures located in bulbous urethra and this difference was statistically significant (P value 0.005). Albers et al found less recurrence with bulbous urethral strictures but without statistical significance. This is explained by more cases of urethral stricture in this study being bulbous and most of them were short compared to other studies and which explains the better results in this site.

In this study length of urethral stricture was associated with recurrence following DVU and this finding was statistically significant (P-Value less than 0.0001). The chance of urethral stricture recurrence is directly proportional to stricture length. This finding is similar to the ones found in other studies [Albers et al, 1996; Pansadoro et al, 1996].

Urethral stricture aetiology was found not to influence the outcome of DVU in this study (P value 0.21), this is similar to what other studies found. Albers et al found that iatrogenic strictures had less recurrence rate with statistical significance.

Patients with multiple strictures who underwent DVU showed poorer outcomes compared to those with a single stricture, this difference was found to be statistically significant (P value 0.04). This is similar to what Pansadoro et al found.

a) Study limitations

Inadequate documentations of patients' case notes especially on the symptoms/ clinical findings at surgery, significant number of patients were lost to follow up post operatively and some of the urethrogram reports were very deficient.

V. CONCLUSION

DVU is still the commonest treatment option for patients with urethral stricture at KCMC. Most patients (63%) who underwent DVU were 60 years or above.

The overall long term success rate of DVU was 55.07%

The outcome of DVU was good when stricture was single; the length was 1 cm or less and located in the bulbous urethra.

Recurrence of urethral stricture post DVU is significantly high for strictures which are long, multiple and located in other sites apart from bulbous urethra.

Age of the patient and etiology of the urethral stricture have no influence on the outcome of DVU

VI. RECOMMENDATION

DVU should be the first line treatment only for short urethral strictures, single and located in the bulbous urethra.

Prospective studies are needed to assess the long term outcome post DVU in patients with urethral stricture including validation of a tool for outcome measure.

Competing interests

The authors declare no competing interests.

VII. ACKNOWLEDGEMENT

Thanks to all the staffs of the urology department who us in the preparation of this work.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Albers P, Fichtner J, Bruhl P, Muller SC. **Long-term results of internal urethrotomy.** J Urol. 1996; 156:1611-14.
2. Barbagli G, Guazzoni G, Sansalone S, Romano G, Lazzeri M. **The Role of Dilation and Internal Urethrotomy as a Risk Factor of Failure in Patients Who Undergoing One-Stage Bulbar Oral Graft Urethroplasty.** Urological Open Access Journal, 2012, 2, 16-19.
3. Chilton CP, Shah PJR, Fowler CG, Tiptaft RC, Blandy JP. **The impact of optical urethrotomy on the management of urethral strictures.** Br J Urol. 1983; 55:705-10.
4. Dubey D. **The current role of direct vision internal urethrotomy and self-catheterization for anterior urethral strictures.** Indian J Urol. 2011 Jul-Sep; 27(3): 392-396.
5. Gaches CGC, Ashken MH, Dunn M, Hammonds JC, Jenkins IL, Smith PJB. **The role of selective internal urethrotomy in the management of urethral stricture: A multicentre evaluation.** Br J Urol. 1979; 51:579-83.

6. Greenwell TJ, Castle C, Andrich DE, MacDonald JT, Nicol DL, Mundy AR. **Repeat urethrotomy and dilation for the treatment of urethral stricture are neither clinically effective nor cost-effective.** J Urol. 2004; 172:275-7.
7. Hafez AT, El-Assmy A, Dawaba MS, Sarhan O, Bazeed M. **Long-term outcome of visual internal urethrotomy for the management of pediatric urethral strictures.** J Urol. 2005 Feb; 173(2):595-7.
8. Hagos M. **The endoscopic treatment of urethral strictures in Mekelle, Ethiopia.** Ethiop Med J. 2008 Oct; 46(4):397-400.
9. Heyns CF, Steenkamp JW, De Kock ML, Whitaker P. **Treatment of male urethral strictures: Is repeated dilatation or urethrotomy useful.** J Urol. 1998; 160:356-8.
10. Heyns CF, Marais DC. **Prospective evaluation of the American Urological Association symptom index and peak urinary flow rate for the follow-up of men with known urethral stricture disease.** J Urol. 2002;2051-4.
11. Javier T, Miguel A.A, Sergio M. Mercedes N, Victor ML, et al. **Outcome of urethral strictures treated by endoscopic urethrotomy and urethroplasty.** Can Urol Assoc J. 2014 Jan-Feb; 8(1-2).
12. Jordan GH, McCammon. **Surgery of the penis and urethra.** In: Campbell-Walsh Urology 10th Ed. Philadelphia: Elsevier Inc; 2012. P.967-73
13. Kamp S, Knoll T, Osman MM, Kohrmann KU, Michel MS, Alken P. **Low-power holmium: YAG laser urethrotomy for treatment of urethral strictures: Functional outcome and quality of life.** J Endourol. 2006; 20:38-41.
14. Kjaeergard B, Walter S, Bartholin J, Andersen JT, Nøhr S, Beck H. **Prevention of urethral stricture recurrence using clean intermittent self-catheterization.** Jr J Urol. 1994; 73:692-5.
15. Lumen M, Hoebeke P, Troyer BD, Ysebaert B, Oosterlinck W. **Perineal anastomotic urethroplasty for posttraumatic urethral stricture with or without previous urethral manipulations: A review of 61 cases with long-term follow up.** J Urol. 2009; 181:1196-200.
16. Mandhani A, Chaudhury H, Kapoor R, Srivastava A, Dubey D, Kumar A. **Can outcome of internal urethrotomy for short segment bulbar urethral stricture be predicted?** J Urol. 2005; 173:1595-7.
17. Mteta KA, Musau PM, Kategile AM, Kaali S. **The profile and Management of urethral strictures at Kilimanjaro Christian Medical Center (K.C.M.C), Moshi, Tanzania.** BJUI.2009; 934(5): 73
18. Mundy AR. **Management of urethral strictures.** Postgrad Med J. 2006 Aug; 82(970): 489-493.
19. Nyongole OV, Akoko LO, Mwanga AH, Mkony C. **Treatment Options and Outcomes of Urethral Stricture in Dar Es Salaam, Tanzania. Have we utilized all the Options?** East and Central African Journal of Surgery. November/December 2013; 18(3):29-33
20. Pansadoro V, Emilliozi P. **Internal urethrotomy in the management of anterior urethral strictures: Long term follow-up.** J Urol. 1996; 156:73-5.
21. Ramyil V.M, Dakum N.K, Liman U.S, Udeh EJ. **Visual internal urethrotomy in the management of anterior urethral stricture.** African Journal of Urology 2007 Nov; 13(4):267-272.
22. Santucci RA, Eisenberg L. **Urethrotomy has a much lower success rate than previously reported.** J Urol. 2010; 183:1859-62.
23. Smith PJB, Dunn M, Dounis A. **The early results of treatment of stricture of the male urethral using the Sachse optical urethrotome.** Br J Urol. 1979; 51:224-28.
24. Smith P, Dunn M, Sachse DA. **Optical urethrotome in management of urethral stricture in the male: preliminary communication.** Journal of the Royal Society of Medicine 1978; 71:596-599.
25. Tritschler S, Roosen A, Füllhase, C; Stief, C G; Rübber, H. **Urethral strictures: Etiology, investigation and treatments.** Dtsch Arztebl Int 2013; 110(13): 220-6
26. Turek PJ, Cendron M, Malloy TR, Carpinello VL, Wein AJ. **KTP-532 laser ablation of urethral strictures.** Urology. 1992; 40:330-34.
27. Zehri AA, Ather MH, Afshan Q. **Predictors of recurrence of urethral stricture disease following optical urethrotomy.** Int J Surg. 2009; 7:361-4.



GLOBAL JOURNAL OF MEDICAL RESEARCH: I
SURGERIES AND CARDIOVASCULAR SYSTEM
Volume 15 Issue 4 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Long Term Effect of Cardiac Rehabilitation Program on Patients with Percutaneous Coronary Intervention

By Ali Mohammed Hassan, Prof. Dr. Zahra Mohammed Hassan Serry,
Prof. Dr. Neseren Ghareeb El Nahas & Prof. Dr. Osama Al Sayed Abd El Moneem

Cairo University, Egypt

Abstract- Background: Cardiovascular disease (CVD) is a major health problem worldwide. Cardiac rehabilitation (CR) is mainly involved with secondary prevention which relies on early detection of the disease process and application of interventions to prevent the progression of disease. These interventions include education; counseling and behavioral strategies to promote lifestyle change and modify risk factors. The aim of this study was to determine the long term effect of CR on patients with percutaneous coronary intervention (PCI).

Subjects and Methods: Sixty patients of both sexes (41 men and 19 women) had been recruited from National Heart Institute, Cairo. All patients underwent PCI. They were randomly assigned to two equal groups in number.

Keywords: *percutaneous coronary intervention, cardiac rehabilitation, functional capacity, cardiovascular risk factors, quality of life.*

GJMR-I Classification: NLMC Code: WG 205



Strictly as per the compliance and regulations of:



Long Term Effect of Cardiac Rehabilitation Program on Patients with Percutaneous Coronary Intervention

Ali Mohammed Hassan ^α, Prof. Dr. Zahra Mohammed Hassan Serry ^σ,
Prof. Dr. Neseren Ghareeb El Nahas ^ρ & Prof. Dr. Osama Al Sayed Abd El Moneem ^ω

Abstract- Background: Cardiovascular disease (CVD) is a major health problem worldwide. Cardiac rehabilitation (CR) is mainly involved with secondary prevention which relies on early detection of the disease process and application of interventions to prevent the progression of disease. These interventions include education; counseling and behavioral strategies to promote lifestyle change and modify risk factors. The aim of this study was to determine the long term effect of CR on patients with percutaneous coronary intervention (PCI).

Subjects and Methods: Sixty patients of both sexes (41 men and 19 women) had been recruited from National Heart Institute, Cairo. All patients underwent PCI. They were randomly assigned to two equal groups in number. Study group was 30 patients (21 men and 9 women, mean age was 52.6 ± 5 years) that had been received aerobic mild to moderate intensity exercise training on bicycle ergometer for 50 minutes, 3 times/week, for 6 months and educational program of secondary prevention, and was followed up after one year, while control group was 30 patients (20 men and 10 women, mean age was 53.8 ± 5 years) that had been received instructions about risk factors after PCI once and followed up after one year. Functional capacity was evaluated by 6-minutes walking test (6MWT), quality of life (QoL) was assessed by 36-Item Short- Form Health Survey (SF-36) and different risk factors e.g. smoking status, body mass index(BMI), fasting blood glucose, blood pressure, blood lipid levels, were assessed before and after the CR for both groups.

Results: After CR, a significant increase was observed in 6 MWT ($P < 0.05$), significant improve in cardiovascular risk factors(smoking status, body mass index, fasting blood glucose, blood pressure, blood lipid levels) and QoL were increased in the study group ($P < 0.05$) compared to control group.

Conclusion: Cardiac rehabilitation significantly improves functional capacity and cardiovascular risk factors and QoL after percutaneous coronary intervention. It is recommended not to miss referral to rehabilitation units.

Keywords: percutaneous coronary intervention, cardiac rehabilitation, functional capacity, cardiovascular risk factors, quality of life.

Author α: Physiotherapist, National Heart Institute, Cairo, Egypt.
e-mail: ali311pt@yahoo.com

Author σ ρ: Assistant Professor of Physical Therapy Department of Cardiopulmonary/Respiratory Disorders and Geriatrics, Faculty of Physical Therapy, Cairo University, Egypt.

Author ω: Consultant of Cardiothoracic Surgery, National Heart Institute, Cairo, Egypt.

I. INTRODUCTION

Coronary artery disease (CAD) is the main cause of death worldwide. (1) It is potentially fatal disease with high lifetime prevalence. In terms of mortality it represents the most important disease in the group of all CVD, which, in turn, are responsible for most of the deaths in developing and in industrialized countries. (2) In Egypt, and Similar to other Arab countries, ischemic heart disease and stroke are the second and fourth common cause of death in 1990 but in 2010 they shifted to be the first and second cause respectively. CAD mortality accounts for 46% of total deaths, all ages and both sexes, according to WHO (2014). Trends in CAD mortality in the last few years show a minor reduction due to preventive efforts especially against smoking, an operational action plan to reduce the burden of tobacco use. (3)The development of CAD is multicausal and is related to a variety of risk factors, many of them strongly influenced by individual behavior, such as smoking, exercise, diet, diabetes mellitus, hypertension and hypercholesterolemia. (4) It has been suggested that modification of these modifiable risk factors could reduce the burden of CAD by approximately 90%. These risk factors, however, also strongly influence the prognosis of patients with established CAD. In addition to the well established pharmacological management of patients with CAD, behavioral changes to modify these lifestyle factors in affected individuals are therefore recommended to form the basis of all secondary prevention strategies of CAD. (2)

Cardiac rehabilitation programs have become an integral part of the standard of care in modern cardiology. Their scope has shifted from the emphasis on exercise therapy to comprehensive secondary prevention strategies managing risk factors, nutritional, psychological, behavioral and social factors that can affect patient outcomes. While the importance of primary prevention measures aimed at delaying or preventing the onset of cardiovascular disease is obvious and cannot be emphasized enough, CR is mainly involved with secondary prevention which relies on early detection of the disease process and application of

interventions to prevent the progression of disease. These interventions include education, counseling and behavioral strategies to promote lifestyle change and modify risk factors. Clinical trials have proven that strategies for the detection and the modification of risk factors can slow, stabilize or even modestly reverse the progression of atherosclerosis and reduce cardiovascular events. In most current guidelines of cardiovascular societies worldwide, CR is a class I recommendation. (5)

The American Heart Association (AHA) defined CR as a "medically supervised program to help heart patients recover quickly and improve their overall physical and mental functioning". (6) Goals for CR include improving aerobic endurance and muscular strength, and modifying cardiovascular risk factors, including losing weight, lowering cholesterol, improving blood glucose, controlling blood pressure, and smoking cessation. (7) Recent research has shown that people who have experienced cardiac events can handle more frequent and intense exercise than originally thought. (8) (9)

Quality of life reflects the functional effect of an illness and its therapy from the patient's point of view. Poor QoL has been associated with poorer outcomes, such as lower survival rates, increases in the number of hospitalizations, decreased capacity to perform activities of daily living, and decreased compliance with treatments in other populations like cardiac patients. (10) This study was conducted to find out the long term effect of CR on patients with PCI, and the potential effect CR to improve functional status, cardiovascular risk factors presented with these patients, and its effect to improve their QoL.

II. PATIENTS AND METHODS

This study was conducted in physiotherapy department of National Heart Institute (NHI). 60 Patients of both sexes, their age was 40-60 years old, within the first year after PCI, their mean BMI was $\leq 35\text{Kg/m}^2$, were selected and assigned to two equal groups in number. The study group (30 patients, 21 men and 9 women) that had been received aerobic mild to moderate exercise training and educational program of secondary prevention, while the control group (30 patients, 20 men and 10 women) that had been received instructions about risk factors after PCI once and were followed up after one year.

Exclusion criteria were patients with renal failure, chronic liver disease, Patients with arrhythmia, Chest disease, and patient who could not fulfill the questionnaire or cooperate through the performed procedures.

Before starting the study, a meeting was done for all patients to record demographic data and risk factors (smoking status, BMI, fasting blood glucose,

systolic and diastolic blood pressure, and blood lipid levels) presented with each patient. In that stage a face to face instructions and administration of SF- 36 questionnaire to all participants was given. 6-MWT was introduced to each patient along the 20 m straight corridor of the physiotherapy department of NHI. All patients were taking their medications normally. Participants in the CR program were requested to attend their exercise program three times/week for a period of six months.

Mild to moderate intensity exercise is prescribed based on Borg's rating of perceived exertion (RPE) scale. The scale is comprised of 15 points where a rating of 6 means no exertion and a rating of 20 means maximal exertion. Patients were encouraged to achieve a rating between 11 (fairly light) and 14 (hard), as many cardiac patients may use beta blockers in their treatment medications, that work to reduce resting and maximal heart rate. (11) For participants in the CR program involved in this study, each exercise session is comprised of a 5 - 10 minute warming up, 5-10 minutes cooling down, and approximately 30 minutes of aerobic exercise. Aerobic exercise was the dominant mode of exercise which implemented using bicycle ergometer in the CR program 3 times/week for 6 month. Patients were given an idea about risk factors control and secondary prevention according to AHA guidelines for secondary prevention 2011. (12) After one year, risk factors were measured, and also SF- 36 and 6 MWT were measured again.

Data were analyzed with SPSS software version 17. Parametric data was analyzed using the student t-test. Non parametric data was analyzed using McNemar test for the same group, and Mann-whitney test to compare between both groups. The level of significance was set at $P < 0.05$. Paired t-test was applied for each group to compare pre and post values within the same group. Unpaired t-test was applied to compare pre and post values between both groups of the study.

III. RESULTS

Base line measurements had shown no statistical significant differences between both groups ($P > 0.05$). The baseline and final values of each group (Table 1) had shown highly significant differences in 6MWT, smoking cessation rate, BMI, TC, HDL and LDL ($P < 0.001$), FBG and TG had improved significantly ($P < 0.05$), SBP and DBP did not improve significantly in the study group ($P > 0.05$). The control group had shown significant improves in 6MWT and BMI, other parameters did not change significantly ($P > 0.05$).

All risk factors were improved significantly in the study group when compared with the control group after the program ($P < 0.05$). The increase in 6MWT was highly significant ($P < 0.001$).

As shown in (table 2) the 8 domains of SF-36 of the study group had increased highly significantly ($P<0.001$). The control group had shown highly significant increase in PF and GH ($P<0.001$), and significant increase in E/F ($P<0.05$), other parameters did not increase significantly ($P>0.05$).

All domains of SF-36 were improved significantly in the study group when compared with the control group after the program ($P<0.05$), and EW increased highly significantly ($P<0.001$).

Table (1) : Changes of risk factors from baseline to the end of the program within each group and between groups

Variables	Study group			Control group			P value for both groups after program
	Pre program	Post program	P Value	Pre program	Post program	P Value	
	Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD		
6MWT (m)	414.8±57.4	↑489±54.8	0.000*	419±50.2	↑430.5±47.3	0.01*	0.000*
Smoking	67%	↓17%	0.000*	63.3%	↓50%	0.13	0.007*
BMI (Kg/m²)	30.8±1.9	↓28.2±2.6	0.000*	30.2±1.7	↓29.6±2.1	0.03*	0.03*
FBG (mg/dl)	131.7±47.3	↓106.8±36.5	0.01*	128.5±54.5	↓127±38.3	0.86	0.04*
SBP (mm/Hg)	129.2±18.7	↓123.8±13.5	0.22	128.5±16.6	↑131.2±14.6	0.47	0.05*
DBP (mm/Hg)	81.3±8.8	↓79.2±7.8	0.31	82.8±9.2	↑84.6±8.2	0.38	0.01*
TC (mg/dl)	199.1±48.9	↓176.3±42.1	0.000*	198.8±41.7	↓197.3±39.4	0.71	0.05*
TG (mg/dl)	148.2±34.2	↓132.1±28.8	0.01*	151.1±32.5	↓149.8±35.1	0.65	0.04*
HDL (mg/dl)	35.6±8.5	↑37.5±8.8	0.001*	33.3±7.8	↓32.1±7.4	0.72	0.01*
LDL (mg/dl)	134±49.1	↓112.1±44.6	0.000*	135.2±45.3	↑136±41.5	0.88	0.04*

SD=Standard Deviation, 6MWT= 6 minutes walking test, BMI=Body mass index, FBG=Fasting blood glucose, SBP= Systolic blood pressure, DBP= Diastolic blood pressure, TC=Total cholesterol, TG=triglyceride, HDL=High density lipoprotein, LDL=Low density lipoprotein, Significant level: $P<0.05$.*

Table (2) : Changes of 8 domains of SF-36 from baseline to the end of the program within each group and between groups

Variables	Study group			Control group			P value for both groups after program
	Pre program	Post program	P Value	Pre program	Post program	P Value	
	Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD		
PF	64.3±7.1	↑83.5±6.5	0.000*	63.2±6.9	↑76.7±10.6	0.000*	0.01*
RLPH	35±24.2	↑62.5±23.4	0.000*	40.8±23.2	↑50.8±20.2	0.11	0.04*
RLEP	34.1±23.7	↑61.1±21.6	0.000*	41.8±21.1	↑49.9±19.1	0.09	0.04*
E/F	51.7±7.8	↑66±11.1	0.000*	51.3±7.9	↑57.7±11.7	0.01*	0.01*
EW	61.3±6.2	↑69.5±2.6	0.000*	59.1±6.1	↑61.5±7.5	0.18	0.000*
SF	50.9±10.5	↑67.5±19	0.000*	51.7±10.9	↑56.3±16.3	0.23	0.02*
P	65.2±9.7	↑79.6±18.4	0.000*	62.7±10.2	↑67.9±15.9	0.07	0.01*
GH	28.2±5	↑43±7.9	0.000*	27.3±4.8	↑38.5±8.8	0.000*	0.04*

SD=Standard Deviation, PF=Physical functioning, RLPH=Role limitations due to physical health, RLEP=Role limitations due to emotional problems, E/F=Energy/ fatigue, EW=Emotional wellbeing, SF=Social functioning, P=Pain, GH=General health. Significant level: $P<0.05$.*

IV. DISCUSSION

The benefits of exercise-based CR on cardiovascular risk factors, QoL, exercise tolerance, cardiac morbidity and mortality have been widely

established in CAD patients. (1) The aim of this study was to determine the long term effect of CR on patients with PCI, and its potential effect on risk factors control and the subsequent improvement in their QoL. The results of the current study showed significant

improvement of functional status, risk factors of CVD and QoL in the study group. The following is a detailed discussion of the different variables of the study.

About smoking, percent of reduction were 75% ↓ and 21% ↓ in the study and control groups respectively. Reduction in the study group was statistically significant and also, comparison between both groups after CR. The results were supported by Wood et al. The proportions of patients with CHD who quit smoking at 1 year were significantly higher in the study group than in usual-care group. In the intervention group, 58% of the volunteers were not smokers at 1 year compared with 47% in the usual-care group. (13) Along with the same results Redfern et al. had reported significant reductions in smoking behaviors in the study group compared to the control group. (14) Although Judith et al. had reported a non significant difference between intervention and control groups at one year about smoking cessation, he reported a significant improvement results at two and three years. (15)

In current study the patients of study group revealed highly significant increase in their functional capacity, and control group increased significantly, Percent of change was (18% ↑ and 3% ↑) respectively, when measured by 6-MWT, that was reflected in improvement of the physical functioning score section of SF-36 for both groups (Percent of change was 29.8% ↑ and 21.4% ↑) respectively. Changes in control group reflected the positive effects of PCI on physical function of the patients. Comparison of both groups revealed highly significant increase in the study group at the end of the program, which, in turn reflect the more beneficial effect of CR on patient when added to PCI effect. Supporting the study results Fatimah et al. revealed an increase in functional capacity after the CR program measured by 6-MWT and no significant differences were seen in their control group and mean distance walked was increased 19.3% in the study group. (16) Raymond et al. had shown significant improvement in exercise capacity after CR including low risk individual, exercise capacity parameters such as 6MWT and treadmill exercise test were statistically significant after the program. (17) In a study by Viviane et al. both aerobic interval training and continuous training equally improved aerobic exercise capacity in patients with CAD and self perceived QoL increased significantly ($P < 0.05$) and to a similar extent after both types of training. (1)

Consequently, the results was coincided with results achieved by Yu et al. who showed significant improvement in the frequency, duration of physical activities and total score of self efficacy scale in the experimental group, which can effectively improve the patients exercise compliance, promote the willingness of physical exercise and help the patients establish healthy behaviors. (18) As a result, promoting the recovery of cardiac function. Consistent with the results, Judith et al. who reported significant improvements in the study

group compared to the control group in maximal workload. (15)

In current study, following CR program, study group achieved positive reduction in weight and BMI. BMI was decreased highly significantly in the study group, also control group decreased significantly. Comparing two groups showed four times reduction in study group more than control group, Percent of reduction was (8.4 % ↓ and 2% ↓) for study and control groups respectively. Masoumeh et al. showed that obese patients in the study group had greater improvement in weight reduction and subsequent BMI that was statistically significant when compared with control group. (19) Another study by Manzoni et al. showed the positive effects of short term CR program on weight reduction and functional capacity in obese patients with CAD. (20) In contrast, results of Kiat et al. suggested CR program didn't had effect on weight reduction, while it is useful in increasing levels of functional capacity. (21) Pantaleo et al. estimated that at baseline, there was no significant difference in BMI between the study and usual care groups, at 6months, it increased by 0.7% in the study group and 0.9% in the usual care group, there was a 0.2% lower increase in BMI in the study group. At the end of his study, BMI increased by 1.7% and 2.1% in the study and usual care groups, respectively, a difference that was statistically significant. (22)

Fasting blood glucose was highly significantly reduced in the study group after the program, without significant change in the control group. Percent of reduction was (18.8 % ↓ and 1.2% ↓) for study and control groups respectively; comparison of both groups had showed significant decrease in the study group after program.

Both SBP and DBP changed to levels that were statistically significant when comparing both groups after the program, although changes in both groups separately were not significant. Percent of change in SBP was (4.2 % ↓ and 2.1% ↑) and DBP was (2.6% ↓ and 2.3% ↑) for study and control groups respectively. Improvement of study group and deterioration of control group showed the positive effect of CR program. Diabetes mellitus is a chronic condition with devastating cardiovascular complications, the prevalence of diabetes was reported as 13.5% in Egypt and it is closely associated with a concomitant rise in obesity rates. (23) (24) Going with the same effects of CR on FBG and blood pressure control Bestehorn et al. mentioned that at discharge FBG values decreased to 104 mg/dl (108 mg/dl at entry), mean SBP and DBP decreased also to 122/73 mmHg (131/77 mmHg at entry) which were statistically significant. (25) Again Redfern et al. had concluded significant difference in SBP among study group compared to control group patients at three months and 12 months. (14) Fatemeh et al. results showed that CR to have significant effects

on hemodynamic responses such as resting and maximum systolic and diastolic blood pressure. (16) In a systemic review by Judith et al. significant improvements in SBP and DBP in study group patients compared to control groups, at one, two, and three years were seen. (15)

The results of this study indicated that exercise and educating patients of PCI during CR program could improve lipid profile levels. The patients of the study group had achieved significant reductions in TC, TG and LDL levels and significant increase in HDL levels, no significant changes were seen in control group. Significant improvements were seen in the study group when compared to the control group after the program. Percents of changes were (11.5% ↓ and 0.75% ↓ for TC, 10.9% ↓ and 0.86% ↓ for TG, 5.3% ↑ and 3.6% ↓ for HDL, and 16.3% ↓ and 0.44% ↑ for LDL) for study and control groups respectively. Both groups were taking lipid lowering drug therapy as prescribed by the physicians, which explains the effect of exercise training and awareness program on lipid profile for the study group. The greater effect of exercise and education on the study group suggests a possible additional effect on adherence to physical activity, prescribed medications and healthy life style. Masoumeh et al. presented significant improvements in all lipid profiles in non obese patients, and in obese patients, this positive improvement was only perceived in TC. (19) Results of the current study were more supported by Viviane et al. that found that both aerobic interval training and continuous training improved HDL levels significantly in both groups. (1)

Bassem et al. mentioned affection in the QoL in patients with CAD in the form of presence of symptoms limiting their activity, such as chest pain due to angina attacks, shortness of breath, palpitation. Also, the daily activities may be limited in usual daily activities as moderate activities. Lifting or carrying groceries, climbing several flights of stairs, climbing one flight of stairs, bending, kneeling, stooping, walking for a bus station distance, bathing or dressing himself, and sexual dysfunction, and recurrent sick leaves due to his or her heart condition. (26)

The results obtained in the present study revealed statistical significant increases in SF-36 variables. Percent of changes were (29.8% ↑ and 21.4% ↑ for PF, 78.6% ↑ and 24.5% ↑ for RLPH, 79.2% ↑ and 19.4% ↑ for RLEP, and 27.9% ↑ and 12.5% ↑ for E/F, 13.4% ↑ and 4.1% ↑ for EW, 32.6% ↑ and 8.9% ↑ for SF, 22.1% ↑ and 8.3% ↑ for P, and 52.5% ↑ and 41% ↑ for GH) for study and control groups respectively. CR has large effects on improving different domains of SF-36 as presented in results of study group, although some domains like PF, E/F and GH had increased significantly in the control group reflecting the positive effect of PCI, they were not as large as improvements of study group. Supporting current results, Marzieh et al. had shown that

scores of all physical domains of the SF-36 were significantly improved in all patients compared to the baseline. Patients with age < 65 years had greater improvements in mental health and social function than patients with age ≥ 65 years. Women had greater improvement in PF, vitality and mental health compared to men. Furthermore he concluded from his results that CR can improve QoL in cardiac patients especially in women. Elderly patients get benefit the same as other patients in physical domains. On the other hand, increasing exercise capacity improves patients' ability for daily living activities, work and leisure activities, which in turn results in improving QoL. (27) A systematic review article Taylor et al. indicated that home based CR and center based CR both improve QoL. CR can decrease psychological stress of cardiovascular diseases and improve QoL in cardiac patients. (28) Marzieh et al. pointed out that 12 months CR improves physical index and QoL of cardiac patients. (27)

Roberto et al. published the results of a study designed to compare the effect on QoL of CR programs shorter than 6 months, longer than 6 months, or no CR. Nine months after completion of the different programs, QoL was significantly higher among patients who had undergone CR, regardless of duration, and there were no significantly different effects between CR programs of more than or less than 6 months, also he note that the increased patient compliance observed in the shorter programs. (29) Yohannes et al. results demonstrated the benefits of CR in improving QoL and physical activity, and in reducing anxiety and depression. Furthermore, these benefits were maintained at 12 month follow up. (30)

There is a significant and positive relationship between changes in secondary prevention and changes in QoL. Patients started the study with low level of QoL scores and had shown significant increases in QoL scores following the CR programme. Also, the ability of patients to exercise had increased significantly. As the physical abilities of patients increased, they reported feeling less pain, more energy and better emotional state. Increased physical ability was associated with a brighter outlook on current and expected future health status.

V. CONCLUSION

It was concluded that long term CR program and secondary prevention according to the guidelines of AHA has a positive effects in improving risk factors in PCI patients who presented with uncontrolled cardiovascular risk factors, also QoL was improved, further more CR is a good method that improve adherence to healthy life style, orientation and ability of the patient to cope with the disease.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Viviane C., Nele P., Catherine De. et al: Aerobic interval training and continuous training equally improve aerobic exercise capacity in patients with coronary artery disease, *International Journal of Cardiology*, vol. 179, 203-210, 2015.
2. Falk M., Charlotte M., Kathrin D. et al.: Effectiveness of nonpharmacological secondary prevention of coronary heart disease. *European Journal of Cardiovascular Prevention & Rehabilitation*, vol. 17, 688-700, 2010.
3. Abdul Rahim H., Sibai A., Khader Y. et al.: Health in the Arab world: a view from within 2 Noncommunicable diseases in the Arab world and *The Lancet*, January, 34-45, 2014.
4. Graham I., Atar D., Borch K. et al.: European guidelines on cardiovascular disease prevention in clinical practice. *Eur J Cardiovasc Prev Rehabil*, vol. 14 (Suppl 2): E 1-40, 2007.
5. Warner M.: Cardiac rehabilitation past, present and future: an overview, *Cardiovasc Diagn Ther.* vol. 2(1), 38-49, 2012.
6. Keteyian S., Pina I., Hibner B. et al.: Clinical role of exercise training in the management of patients with chronic heart failure. *Journal of Cardiopulmonary Rehabilitation and Prevention*, vol. 30, 67-76, 2010.
7. Christensen K. & Jordan M.: Pumping up cardiac rehab, exercise guidelines for post-heart surgery clients. *American Fitness*, vol. 26, 58-63, 2008.
8. Kemi J. & Wisloff U.: High-intensity aerobic exercise training improves the heart in health and disease. *Journal of Cardiopulmonary Rehabilitation and Prevention*, vol. 30, 2-11, 2010.
9. Munkvik M., Rehn T., Slettalokken G. et al.: Training effects on skeletal muscle calcium handling in human chronic heart failure. *Medicine & Science in Sports & Exercise*, vol. 42, 847-855, 2010.
10. Havik O., Sivertsen B., Relbo A. et al.: Depressive symptoms and all-cause mortality after heart transplantation. *Transplantation*, vol. 84, 97-103, 2007.
11. Borg G., & Linderholm H.: Perceived exertion and pulse rate during graded exercise in various age groups. *Acta Medica Scandinavia*, vol. 181 (472), 194-206, 1967.
12. Smith S., Emelia B., Robert B., Lynne T., Mark A., Barry A., Raymond J., Scott M., Loren F., Daniel W., Donald M., Margo M. Lori M., Eric D., Ralph L., John S., James H. and Kathryn A.: AHA/ACCF Secondary prevention and risk reduction therapy for patients with coronary and other atherosclerotic vascular disease: 2011 update. *J. Am. Coll. Cardiol* vol. 58, 2432-2446, 2011.
13. Wood D., Kotseva K., Connolly S. et al.: Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease. *Lancet*, vol. 371, 1999-2012, 2008.
14. Redfern J., Briffa T., Ellis E. et al.: Choice of secondary prevention improves risk factors after acute coronary syndrome: 1-year follow-up of the CHOICE (Choice of Health Options in prevention of Cardiovascular Events). *Heart*, vol. 95, no. 6: 468-475, 2009.
15. Judith A., Susan M., Nigel H. et al: Systematic review of the effect of diet and exercise lifestyle interventions in the secondary prevention of coronary heart disease, *Cardiology Research and Practice*, vol. 2011 (2011), Article ID 232351, 25 pages, 2011.
16. Fatemeh E., Masoumeh S., Seyed M. et al.: Exercise-based cardiac rehabilitation improves hemodynamic responses after coronary artery bypass graft surgery, *ARYA Atherosclerosis Journal*, vol. 7, Issue 4, 151-156, 2012.
17. Raymond C., Leonard L., Linda L. et al.: Predictors of Improvement in Exercise Tolerance after Cardiac Rehabilitation in Patients with Acute ST Elevation Myocardial Infarction Received Primary Percutaneous Coronary Intervention in Hong Kong, *JACC*, vol. 63, Issue 12, abstract, 2014.
18. Yu L., Gu Y., Feng X. et al.: The application of the transtheoretical model in patients rehabilitative exercise after percutaneous coronary intervention, *JACC*, vol. 64/16/Suppl C, Abstracts, 2014.
19. Masoumeh S., Fatemeh G., Katayoun R. et al.: Does significant weight reduction in men with coronary artery disease manage risk factors after cardiac rehabilitation program? *J Res Med Sci.* vol. 18, 956-960, 2013.
20. Manzoni G., Villa V., Compare A. et al.: Short-term effects of a multidisciplinary cardiac rehabilitation programme on psychological well-being exercise capacity and weight in a sample of obese in-patients with coronary heart disease: A practice-level study. *Psychol Health Med.* vol. 16, 178-189, 2011.
21. Kiat A., Cook E., Kiat H.: Weight loss and fitness in patients with coronary artery disease through cardiac rehabilitation – A long term follow-up. *Internet J Cardiovas Res.* vol. 7, number 1, 2008.
22. Pantaleo G., Pier T., Roberto M. et al.: Global secondary prevention strategies to limit event recurrence after myocardial infarction. *Arch Intern Med.* vol. 168, 2194-2204, 2008.
23. Tarik A.: The rising menace of diabetes in the Middle East: time for action. *Saudi J Health Sci* vol. 1(1), 44-45, 2012.
24. Hany Y., Tamer R., Khaled E. et al.: Impact of gender difference on PCI outcome in Egyptian diabetic patients: Prospective two center registry

- study, The Egyptian Heart Journal vol. 67, 55-61, 2015.
25. Bestehorn K., Christina J., Martin H. et al.: Current state of cardiac rehabilitation in Germany: patient characteristics, risk factor management and control status, by education level, Vascular Health and Risk Management, vol. 7, 639-647, 2011.
 26. Bassem W., Sameh S. and Emad N.: Quality of life assessment after coronary artery revascularization using coronary revascularization outcome questionnaire in ischemic Egyptian patients, Med. J. Cairo Univ., vol. 81, 1-5, 2013.
 27. Saeidi M., Mostafavi M., Heidari H. and Masoudi S.: Effects of a comprehensive cardiac rehabilitation program on quality of life in patients with coronary artery disease, ARYA Atheroscler, vol. 9 (3), 179-185, 2013.
 28. Taylor R., Dalal H., Jolly K. et al.: Home-based versus centre-based cardiac rehabilitation. Cochrane Database Syst Rev and (1): CD007130, 2010.
 29. Roberto C., Isabel M. and Joaquin J.: Cardiac rehabilitation programs and health-related quality of life. State of the Art. Rev Esp Cardiol. vol. 65(1):72-79, 2012.
 30. Yohannes A., Doherty P., Bundy C. et al. :The long-term benefits of cardiac rehabilitation on depression, anxiety, physical activity and quality of life. J Clin Nurs. vol. 19, 2806-2813, 2010.

GLOBAL JOURNALS INC. (US) GUIDELINES HANDBOOK 2015

WWW.GLOBALJOURNALS.ORG

FELLOWS

FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (FARSM)

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



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

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

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



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

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



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

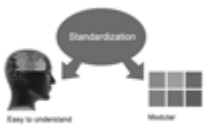
We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.





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

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



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

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



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



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





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

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



MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (MARSM)

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

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



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

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



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

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





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

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



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

It is mandatory to read all terms and conditions carefully.



AUXILIARY MEMBERSHIPS

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

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

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



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

The Institute will be entitled to following benefits:



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

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

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



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

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



Journals Research
inducing researches

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



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



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

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

The following entitlements are applicable to individual Fellows:

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



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

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



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

Other:

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

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



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

Note :

//

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

//



PROCESS OF SUBMISSION OF RESEARCH PAPER

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

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

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

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

(II) Choose corresponding Journal.

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

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

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

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



PREFERRED AUTHOR GUIDELINES

MANUSCRIPT STYLE INSTRUCTION (Must be strictly followed)

Page Size: 8.27" X 11"

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

You can use your own standard format also.

Author Guidelines:

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

1. GENERAL

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

Scope

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

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

2. ETHICAL GUIDELINES

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

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

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

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

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

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

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

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

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

Please mention proper reference and appropriate acknowledgements wherever expected.

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

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

3. SUBMISSION OF MANUSCRIPTS

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

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



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

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

4. MANUSCRIPT'S CATEGORY

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

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

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

Research articles: These are handled with small investigation and applications

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

5. STRUCTURE AND FORMAT OF MANUSCRIPT

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

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

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

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



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

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

Format

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

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

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

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

Structure

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

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

Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

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

Key Words

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

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

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

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



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

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

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

Acknowledgements: Please make these as concise as possible.

References

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

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

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

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

Tables, Figures and Figure Legends

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

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

Preparation of Electronic Figures for Publication

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

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



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

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

6. AFTER ACCEPTANCE

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

6.1 Proof Corrections

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

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

(Free of charge) from the following website:

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

Proofs must be returned to the dean at dean@globaljournals.org within three days of receipt.

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

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

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

6.3 Author Services

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

6.4 Author Material Archive Policy

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

6.5 Offprint and Extra Copies

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



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

TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

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

Final Points:

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

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



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

General style:

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

To make a paper clear

- Adhere to recommended page limits

Mistakes to evade

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

In every sections of your document

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

Title Page:

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



Abstract:

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

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

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

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

Approach:

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

Introduction:

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

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

Approach:

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



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

Procedures (Methods and Materials):

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

Materials:

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

Methods:

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

Approach:

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

What to keep away from

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

Results:

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

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



Content

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

What to stay away from

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

Approach

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

Figures and tables

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

Discussion:

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

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

Approach:

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



THE ADMINISTRATION RULES

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

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

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



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

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

Topics	Grades		
	A-B	C-D	E-F
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

B

Bekele · 5, 8

C

Choledocholithiasis · 1, 2, 5, 6, 7
Cystourethroscopy · 16

H

Hepatobiliary · 3

J

Jaundice · 1, 2, 3, 5, 7, 8, 9, 11

K

Kilimanjaro · 13, 15, 17, 19, 21, 23, 25, 27

P

Pantaleo · 34, 38
Pruritis · 2, 6

Q

Quayum · 7

S

Spongiofibrosis · 17

T

Tritschler · 25, 28

U

Urethrotomy · 13, 15, 17, 18, 19, 21, 23, 25, 26, 27, 28



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