Online ISSN: 2249-4618
Print ISSN: 0975-5888

Global Journal of Medical Research: D

Radiology, Diagnostic Imaging and Instrumentation

Highlights

- Lumen Balloon Microcatheter
- Gastrointestinal Stromal Tumors
- Onyx Embolization, Anchoring
- Academic & Clinical Radiographers

Discovering Thoughts, Inventing Future

VOLUME 15 ISSUE 2 VERSION 1.0

© 2001-2015 by Global Journal of Medical Research , USA

Global Journal of Medical Research: D
Radiology, Diagnostic, Imaging and Instrumentation

Global Journal of Medical Research: D
Radiology, Diagnostic, Imaging and Instrumentation

Volume 15 Issue 2 (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 Quinnipiac
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 FinanceProfessor 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 ReginaPh.D., M.Sc. in Mathematics
B.A. (Honors) in Mathematics
University of Windso

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., Etvs Lornd University
Postdoctoral Training,
New York University

Dr. Söhnke M. Bartram
Department of Accounting and FinanceLancaster University Management SchoolPh.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 NeuroscienceNorthwestern 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. Gastrointestinal Stromal Tumors: Response Evaluation Criteria of CHOI through Computed Tomography. *1-5*
2. Peripheral uses of a Double Lumen Balloon Microcatheter: Onyx Embolization, Anchoring and other Techniques. *7-13*
3. Assessment of Job Satisfaction among Academic and Clinical Radiographers in Public Institutions in Northern Nigeria. *15-20*

v. Fellows and Auxiliary Memberships
vi. Process of Submission of Research Paper
vii. Preferred Author Guidelines
viii. Index

Global Journal of Medical Research: D
Radiology, Diagnostic Imaging and Instrumentation
Volume 15 Issue 2 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

Gastrointestinal Stromal Tumors: Response Evaluation Criteria of CHOI through Computed Tomography

By Elizabeth Blanco Sixtos-Elizabeth, Benjamin Conde-Castro, Adriana Cacho-González, Blanca María Jaime-Suárez & Jazmin Lizeth Martínez-Sánchez

Oncology Siglo XXI Hospital, Mexico

Abstract- A CT scan is a tool that has been demonstrated to be optimal for response evaluation in gastrointestinal stroma tumors that undergo targeted therapy. In this study, response and evaluation of gastrointestinal stroma tumors were compared with the use of targeted therapy according to CHOI criteria in Oncology Siglo XXI Hospital patients.

Materials and Methods: A retrospective study from January 2009 to January 2014 in patients with a confirmed diagnosis with access to CT scan; a response to the treatment was observed according to CHOI criteria.

Results: A total of 31 patients were enrolled in this study, 61% received targeted therapy with Imatinib and 38% received second-line Imatinib and Sunitinib treatment, with a minimum follow up of 6 months and a maximum of one year. According to CHOI criteria, 45.2% of the patients reached CR, 19.4% had SD, 19.4% reached PR, and 16.1% had PD.

Keywords: GIST (gastrointestinal stromal tumor), RECIST 1.1, response evaluation choi criteria, computed tomography.

GJMR-D Classification : NLMC Code: WG 141.5.T6, WN 206

Strictly as per the compliance and regulations of:

© 2015. Elizabeth Blanco Sixtos-Elizabeth, Benjamin Conde-Castro, Adriana Cacho-González, Blanca María Jaime-Suárez & Jazmin Lizeth Martínez-Sánchez. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Gastrointestinal Stromal Tumors: Response Evaluation Criteria of CHOI through Computed Tomography

Elizabeth Blanco Sixtos-Elizabeth [α], Benjamin Conde-Castro [σ], Adriana Cacho-González [ρ], Blanca María Jaime-Suárez [ω] & Jazmin Lizeth Martínez-Sánchez [¥]

Abstract- A CT scan is a tool that has been demonstrated to be optimal for response evaluation in gastrointestinal stroma tumors that undergo targeted therapy. In this study, response and evaluation of gastrointestinal stroma tumors were compared with the use of targeted therapy according to CHOI criteria in Oncology Siglo XXI Hospital patients.

Materials and Methods: A retrospective study from January 2009 to January 2014 in patients with a confirmed diagnosis with access to CT scan; a response to the treatment was observed according to CHOI criteria.

Results: A total of 31 patients were enrolled in this study, 61% received targeted therapy with Imatinib and 38% received second-line Imatinib and Sunitinib treatment, with a minimum follow up of 6 months and a maximum of one year. According to CHOI criteria, 45.2% of the patients reached CR, 19.4% had SD, 19.4% reached PR, and 16.1% had PD.

Conclusions: Tumor response assessment according to CHOI criteria was useful for the evaluation of molecular targeted therapy in patients with GIST tumor.

Keywords: GIST (gastrointestinal stromal tumor), RECIST 1.1, response evaluation choi criteria, computed tomography.

I. Introduction

Treatment responses for the assesment of tumors performed with CT scans were initially assesed only according to RECIST criteria; however, it was not useful for the evaluation of gastrointestinal stroma tumors because the size of the tumor was not the only characteristic.

The biggest correlation in response is based on a reduction in density measured in Housfield units. This measurement is correlated with the tumoral necrosis and cistic or myxoid deterioration. [1]

Initially, Choi et. al proposed a response criteria, in which size and density were the elements for assessing the responses to treatment. In some cases, the size of the tumor can increase due to a side effect of the development of an intratumoral hemorrhage or myxoid deterioration. [2,3]

II. Targeted Therapies

Selective inhibitor tyrosine kinase agents are employed for the treatment of GIST (molecular targeted therapy) that specifically acts in biomolecular changes that onset the disease and that exclusively targets the tumural cells. The use of this treatment has allowed a 5 year increase in up to 43% of the patients with this metastatic disease. [4,5]

The protocol for GIST treatment at IMSS (Mexican Social Security Institute) UMAE CMN Siglo XXI is based on the histological grading of malignancy according to its mitotic index. The first-line medication treatment used post-surgery is Imatinib Mesylate, which acts through specific inhibition of the ennzyme tyrosine kinase. A 400mg to 800mg dose is administered; depending in the histological grade, there is a one year follow-up for mild cases and up to three years for severe cases. If there are any indications of progression of the disease observed through imaging methods, or clinically observed side effects due to the medication, second-line Sunitinib is then administered.

III. Assesment through Imaging

Computed tomography (CT), is the imaging method of choice for the diagnosis, staging, monitoring and assessment to treatment response of the GIST; 5 cm tumors are identified as large tumors, well-defined, heterogeneous, and exophytic component or with a polypoid intraluminal. . The central portion may contain tumor areas of lower attenuation secondary to necrosis, hemorrhage and cystic degeneration; the presence of calcifications is unusual. [6,7,8]

Malignant GISTs are large and well defined (86 %), with heterogeneous soft tissue of low density and necrotic center. They frequently come from the wall of the stomach or small intestine. The attenuation by liquid or central necrosis occurs in approximately 67% of the cases.[9,10]

The period for follow-up in patients who have GIST may be modified by variables such as if received surgical treatment (neoadjuvant or adjuvant),[11]

Author α σ: Radiologist M.D., subspecialty in Oncology. Appointed to Tomography services at the Oncology Siglo XXI Hospital.
e-mail: elizabeth.blanco.2605@gmail.com
Author ρ ω: Radiologist M.D., certification in Oncology. Appointed to Tomography services at the Oncology Siglo XXI Hospital.
Author ¥: Epidemiologist M.D..Division chief of the Epidemiology department UMAE Siglo XXI. Oncology Hospital. Oncology Hospital Siglo XXI. Imaging Department. Tomography services.

© 2015 Global Journals Inc. (US)

presences of metastatic disease (liver, peritoneum and other sites) and changes in treatment (for adverse effects to the medication or the progression of the disease). High-risk patients are evaluated from 1 to 2 years at the end of the adjuvant therapy and low-risk patients can have greater intervals of evaluation.[12] The group of sarcomas in Europe suggested to routinely assess every 3-6 months during adjuvant therapy in the first year and on an annual basis in the following 5 years. Patients with GIST of low risk can be evaluated every 6-12 months by for a period of five years.[13]

Table 1 : Comparative table between RECIST and CHOI criteria

Criteria	CHOI	RESIST 1.1
Complete Response	Disappearance of all target lesions No new lesions	Disappearance of all target lesions No new lesions
Partial Response	Decrease ≥10% in the sumof the LD or shrinkage ≥15% in Hounsfield Units (tumoral density). No evidence of new lesions	Decrease ≥ 30% in the sum of the LD of target lesions
Stable Disease	Neither sufficient shrinkage to qualify for PR nor sufficient Increase to qualify for PD	Neither PRnor PD
Progressive Disease	Increase in size≥10% with no criteria in Partial Response of the tumor density Appearance of new lesions, intramural nodules, increase in existing nodules or tiissue increase in a hypodense lesion	Increase ≥ 20% in the sum of the LD of target lesions

There are no studies reported in the literature on the experience of the Oncology Hospital Siglo XXI that include criteria CHOI as a basis for monitoring response to molecular targeted therapy. Some authors include in their studies specific criteria such as tumor size, histological grade and track interval once white therapy has begun.

It is therefore important for the Medical Oncologist to know the significance of the tomographic reportfor follow-up of patients with gastrointestinal tumors. The objective of this study was to describe with CTs the response to the treatment of GIST in patients from the Oncology Hospital of twenty-first century, using the criteria of CHOI.

IV. Materials and Methods

A retrospective study from January 2009 to January 2014. The patients included in the study had to have a confirmed diagnosis of GIST by histopathology; a CT scan performed in the oncology service at the IMSS, with realization of three-phase protocol (arterial, venous and portal); treatment of white therapy (Imatinib or Sunitinib) and a baseline and follow-up CT. Simple frequency and dispersion measurements were taken through the program SPSS.

V. Results

From 2009 to 2014 31 cases were obtained with the inclusion criteria mentioned, of whom 54.8 % were women and 45.2 % were men with a median age of 57 years (range 36 to 84 years); all with a study of abdominal computed tomography. The organs affected by GIST were 51.6 % (16) stomach, 22.6 % (7) jejunum, 12.9 % (4) rectum, 6.5 % (2) duodenum, 3.2 % (1) peritoneum and 3.2 % (1) retroperitoneum (Table 2). 32.3 % (10) of the patients were surgically treated before starting with Imatinib. 67.7 % received first-line molecular targeted therapy with Imatinib, and 32.3 % received second line with Sunitinib. We assessed the response to treatment with a CT scan in an average of 1 to 24 months. According to the criteria of CHOI, we observed 45.2 % (14) complete response, 19.4 (5) stable disease, 19.4 (6) partial response and 16.1 % (5) disease progression (Table 3) Figures 1,2, 3. During that time, metastatic activity was observed in 14 patients representing a 45.1 %, with predominant involvement in the liver with a percentage of 35.5 % of the total (Table 4) Figure 4.

Table 2 : Organs affected by GIST

Affected Organ	Number of Patients	Percentage
Stomach	16	51.6
Jejunum	7	22.6
Rectum	4	12.9
Duodenum	2	6.5
Peritoneum	1	3.2
Retroperitoneum	1	3.2
Total	31	100%

© 2015 Global Journals Inc. (US)

Table 3 : Patient responses to targeted therapy treatment in patients with GIST according to CHOI criteria

Responses according to CHOI criteria	Number of Patients	Percentage
SD	6	19.4
PD	5	16.1
PR	6	19.4
CR	14	45.2
Total	31	100 %

Table 4 : Follow-up of GIST patients with metastasis treated with targeted therapy SD (Stable Disease). PD (Progressive Disease). PR (Partial Response). CR (Complete Response)

Site of metastases	Number	Percentage
Peritoneum	1	3.2
Liver	11	35.5
Retroperitoneum	1	3.2
Uterus	1	3.2
Total	14	45.1

Figure 1: Partial Response to treatment. 2a. Retroperitoneal tumor with density of 49 UH, predominantly hypodense aspect. 2b. Control tomographic study with decrease in greatest diameter to 10% in maximum diameters, heterogeneous density, peripheral enhancement. 2c. 6 month follow-up with decrease greater than 10 % of diameters, increased vascular enhancement not more than 15 % at 2 years of treatment with an interval of 6 months between the assessments.

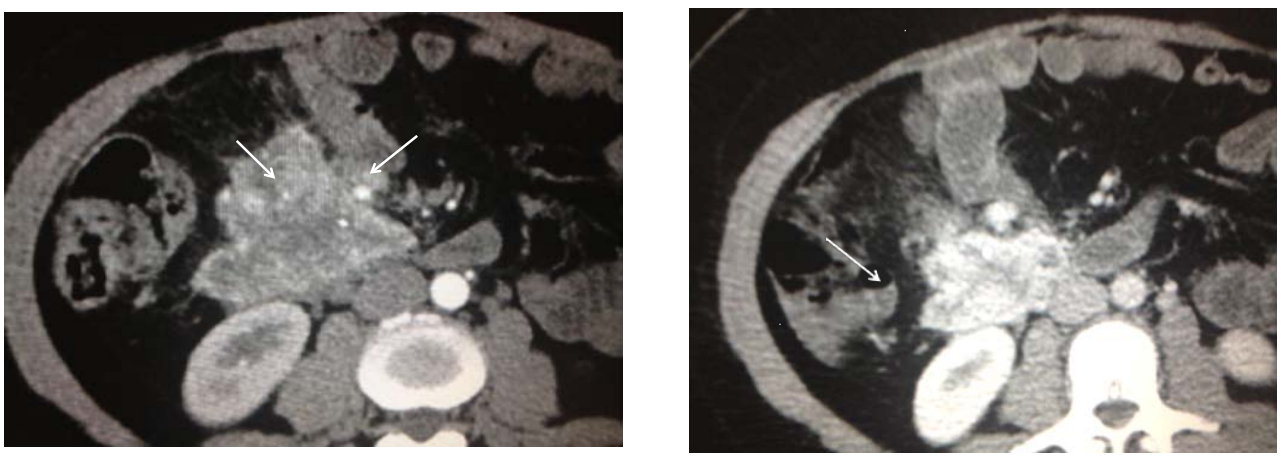

Figure 2 : Progression of the disease. 3a. Peritoneal implants and nodular ascites fluid. 3b. Ascites fluid in peritoneal cavity.

© 2015 Global Journals Inc. (US)

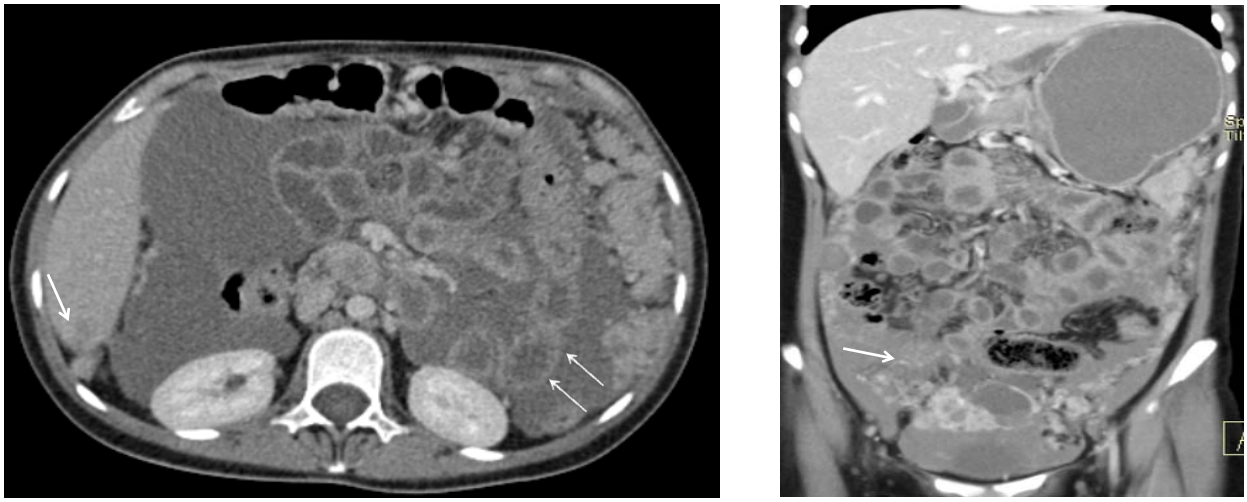

Figure 3 : Total Response to treatment.4a. GIST tumor in greater curvature aspect of hypodense, extraluminal, lobed, before the surgery. 4b. Postsurgical control where no lesions in the gastric wall are observed.

Figure 4 : Liver metastases.1a. Hepatic metastases by gastric GIST. Hypodense aspect, without enhancement after contrast administration. 1b. Liver metastasis of heterogeneous aspect, with peripheral vascular enhancement and focal zones hypodense probably linked to necrosis. 1c. Hypodense hepatic metastases in simple and arterial phase.

VI. Discussion

Neither the time of survival nor the histologic grade of malignancy was considered in our review as Toyokawa et al recommends.[12] A prospective study would consider the survival. In recent publications the partial answer is the predominant result when evaluating with criteria of CHOI, which does not differ with the gains of the study. [12,13.]

The length of time of follow-up was from 6 months. In patients undergoing surgery, the period of follow-up was one year. It was noted that the progression of the disease was determined by the stage at the time of diagnosis and the location that made the unresectable tumor. The molecular targeted therapy in patients with liver hypovascular metastases areas remained as stable disease or partial response to treatment, with a similar percentage to what is reported in the literature. The follow-up every 4-6 months the first two years and annual the following years were a period of time made on average.

The organy most frequently affected (stomach) and the most frequent metastatic disease (liver) is similar to that reported in the literature.

VII. Conclusions

It is necessary as radiologists to become familiar with the existence of white therapies and criteria for evaluation of response, to achieve the appropriate integration in the multidisciplinary management. CT scans allows us to evaluate the response to white therapy in patients with GIST using the criteria of CHOI. It also allows us to identify the primary tumor, stage of the disease and detect metastatic diseases. The criteria of CHOI reported by CT help the clinician with the patient management, decision for surgical treatment, grant white therapy, to change white therapy line and prognosis. GIST requires a tomographic assessment using criteria of CHOI, with a period of time as a minimum of 6 months.

References Références Referencias

1. Medrano G, Torres V, González R, Características clínicas de los tumores del estroma gastrointestinal. Cirujano general Vol. 30. Suplemento 1-2008.
2. Muñoz TC, Sabah TS, Navarro RA y cols. Tumores del estroma gastrointestinal (GIST): Revisión de la

© 2015 Global Journals Inc. (US)

literatura. Gastroenterología Latinoamericana 2006; 17(1):43-51.
3. Bensimhon D, Soyer P, Boudiaf M y cols. Imaging Of Gastrointestinal Stromal Tumors. Journal de Radiologie 2009;90(4):469-480.
4. Druker BJ, Lydon NB. Lessons learned from the development of an Abl tyrosine kinase inhibitor for chronic myelogenous leukemia. J Clin Invest 2000;105:3-7
5. Hui C, Yun Z, Ming W, Dan-ping SH, et al. Pronosticanalysis of patients with gastrointestinal stromal tumors: a single unit experience with surgical treatment of primary disease. Chinese Medical Journal 2010;132(2):131-136.
6. Rabin I, Chikman B, Lavy R, et al. Gastrointestinal Stromal Tumors: A 19 Year Experience. IMAJ 2009;12(11):98-102.
7. Corless CL, Heinrich MC: Molecular pathobiology of gastrointestinal stromal sarcomas. Annu Rev Pathol 3: 557-86, 2008
8. Levy AD, Remotti HE, Thompson WM, Sobin LH, Miettinen M. From the Archives of the AFIP Gastrointestinal Stromal Tumors: Radiologic Features with Pathologic Correlation. RadioGraphics 2003;23:283-304.
9. Nowain A, Bhakta H, Pais S, et al.: Gastrointestinal stromal tumors: clinical profile, pathogenesis, treatment strategies and prognosis. J Gastroenterol Hepatol 20 (6): 818-24, 2005.
10. Pérez-Morales AG, Ruiz-Juárez IZ, Roesch DF y cols. Tumores del estroma gastrointestinal. Presentación de una serie de tres casos de localización gástrica. Cirujano General 2007; 29 (1): 50-53.
11. Choi H, Charnsangavej C, Faria SC et al. Correlation of computed tomography and positron emission tomography in patients with metastatic gastrointestinal stromal tumor treated at a single institution with imatinib mesylate: proposal of new computed tomography response criteria. J Clin Oncol 2007; 25:1753–1759.
12. Toyokawa T, Yamashita Y, Yamamoto A, et al. Clinical experience of Imatinib mesylate for metastatic or recurrente gastrointestinal stromal tumor.2014 Jan; 41 (1): 55-8. Japanese.
13. Haesun Choi et al. Correlation of Computed Tomography and Positron Emission Tomography in Patients With Metastatic Gastrointestinal Stromal Tumor Treated at a Single Institution With Imatinib Mesylate: Proposal of New Computed Tomography Response Criteria. Journal of clinical Oncology May 1, 2007 vol. 25 no. 131753-1759.

Certificate of Translation

I, Carla Moreno, state under penalty of perjury that I am familiar with the English and Spanish language and am competent to make translations and that I have made the above translation into English of the document entitled or pertaining to

Gastrointestinal stromal tumors

and that it is a complete and accurate translation thereof.

Dated: Carla Moreno

Signed: Carla Moreno (Electronic Signature)

Print Name and Address:
Carla Moreno
The Language Spot
P.O. BOX 982
Pasco, WA 99301

© 2015 Global Journals Inc. (US)

This page is intentionally left blank

© 2015 Global Journals Inc. (US)

Global Journal of Medical Research: D
Radiology, Diagnostic Imaging and Instrumentation
Volume 15 Issue 2 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

Peripheral uses of a Double Lumen Balloon Microcatheter: Onyx Embolization, Anchoring and other Techniques

By Mario Martinez-Galdamez, Ernesto Santos Martin & Eduardo Crespo Vallejo

Hospital Principe de Asturias, Spain

Abstract- Purpose: To evaluate the technical feasibility and safety of dual lumen balloon microcatheter Onyx embolization in peripheral interventions.

Material and methods: Between January 2013 and September 2014, seven patients underwent Onyx embolization through a double lumen balloon microcatheter. Onyx was injected as solely agent in three patients with chronic hemoptysis, two patients with life threatening organ bleeding and one with a rejected kidney graft. In one patient with a liver arterioportal fistula, a combination of coils and onyx was used through the same system. In addition to this technical implementation, we also describe three cases where an anchoring tecnhique were used in tortuous arterial anatomies in order to place micro and guide catheters in a stable position.

Results: All the Onyx embolizations were completed and well tolerated. During the Onyx embolization, no reflux was noted and inmediate forward flow was identified. Technical success was 100%. The clinical outcome of the patients was satisfactory with no (peri/postprocedural) complications.

Conclusion: Double-lumen balloon microcatheter Onyx embolization is feasible and safe in peripheral interventions, lowering the potential complications related to reflux or Onyx migration.

GJMR-D Classification : NLMC Code: WU 300

PERIPHERALUSESOFADOUBLELUMENBALLOONMICROCATHETERONYXEMBOLIZATIONANCHORINGANDOTHERTECHNIQUES

Strictly as per the compliance and regulations of:

© 2015. Mario Martinez-Galdamez, Ernesto Santos Martin & Eduardo Crespo Vallejo. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peripheral uses of a Double Lumen Balloon Microcatheter: Onyx Embolization, Anchoring and other Techniques

Mario Martinez-Galdamez [α], Ernesto Santos Martin [σ] & Eduardo Crespo Vallejo [ρ]

Abstract- Purpose: To evaluate the technical feasibility and safety of dual lumen balloon microcatheter Onyx embolization in peripheral interventions.

Material and methods: Between January 2013 and September 2014, seven patients underwent Onyx embolization through a double lumen balloon microcatheter. Onyx was injected as solely agent in three patients with chronic hemoptysis, two patients with life threatening organ bleeding and one with a rejected kidney graft. In one patient with a liver arterioportal fistula, a combination of coils and onyx was used through the same system. In addition to this technical implementation, we also describe three cases where an anchoring tecnhique were used in tortuous arterial anatomies in order to place micro and guide catheters in a stable position.

Results: All the Onyx embolizations were completed and well tolerated. During the Onyx embolization, no reflux was noted and inmediate forward flow was identified. Technical success was 100%. The clinical outcome of the patients was satisfactory with no (peri/postprocedural) complications.

Conclusion: Double-lumen balloon microcatheter Onyx embolization is feasible and safe in peripheral interventions, lowering the potential complications related to reflux or Onyx migration.

I. Introduction

Ethylene vinyl alcohol copolymer, otherwise known as Onyx (ev3,Irvine, California) is a popular liquid widely used in neurointerventional procedures (1,2) and since 2012 distributed specifically for peripheral use (3,4).

In the present report we present our initial experience with transarterial Onyx injections through a coaxial dual-lumen balloon microcatheter (Ascent, Codman Neurovascular, Raynham, Massachusetts, USA). This compliant, Onyx-compatible balloon 2,3 Fr microcatheter has 2 lumens, one for balloon inflation and the other acting as a regular microcatheter for microwire insertion, infusion of liquid embolic agents, contrast medium or coils deployment. This microcatheter is compatible with 0.014" or smaller guidewires and there is a 0.017" inner diameter. The balloon increases the proximal resistance in the feeder, encouraging Onyx to penetrate more distally into the lesion (5).

Also, the anchoring technique basically consists on the inflation of a compliant ballon in a distal vessel in order to advance coaxially a larger catheter [6]. The Ascent microcatheter balloon came in handy in a critical scenario and was perfectly suitable for its perfomance.

Our objective was to assess the safety and feasibility of double lumen balloon microcatheters in peripheral embolizations.

II. Material and Methods

We retrospectively analyzed our database of all vascular peripheral interventional radiology procedures for cases in which Onyx was administered through the Ascent coaxial dual-lumen balloon microcatheter between January 2013 and September 2014. Our institutional review board approved this analysis and all the patients gave informed consent.

A group of seven separate embolization sessions were performed on seven patients by using this technique (Table). Three of these patients had hemoptysis secondary to lung infections, one had a bleeding renal angiomyolipoma, one patient suffered hypovolemic shock due to a liver mass biopsy, one patient was scheduled to undergo a HCC chemoembolization and a severe hepatoportal shunting was identified and finally, the last patient needed embolization of a kidney graft due to rejection.

Author α: Interventional Vascular Unit. Radiology Department, Hospital Principe de Asturias, Alcala de Henares, Madrid (Spain).
e-mail: mariomgaldamez@gmail.com
Author σ: Vascular and Interventional Section. Radiology Department. UPMC (Pensylvania, USA). e-mail: ernestosantos@gmail.com,
Author ρ: Interventional Neuroradiology Unit. Radiology Department, Hospital Clinico Universitario de Valladolid, Valladolid (Spain).
e-mail: dreduardocrespo@gmail.com

© 2015 Global Journals Inc. (US)

Table : Details of patients's pathology and procedures.

Pt. No.	Age(y)/Sex	Pathology	Indication	Amount of Onyx (ml)	Onyx injection duration	Technical procedure
1	48/F	Renal Angiomyolipoma	Spontaneous rupture	3	3 min	Onyx injection
2	79/M	Renal transplant	Rejection	6	5 min	Onyx injection
3	57/M	Tuberculosis	Hemoptysis	2	2 min	Onyx injection
4	60/M	Necrotizing pneumonia	Hemoptysis	2	2 min	Onyx injection Anchoring
5	80/M	Post-Biopsy hepatic bleeding	Hipovolemic shock	2	2 min	Onyx injection
6	61/M	Actynomycosis	Hemoptysis	2	1 min	Onyx injection Anchoring
7	62/M	Arterioportal fistula Hepatocellular carcinoma	Chemoembolization	0,6	6 sec	Onyx and coils embolization

Our criteria to choose this technique instead of conventional approaches were: difficult distal navigation due to proximal elongation, proximity to main non-target arteries and high flow fistula.

a) Procedure Technique

The procedure was carried out in the vascular angiography room under deep sedation or general anesthesia. In all cases, vascular access was established in the common femoral artery with a 6-Fr sheath. A 6Fr-guiding catheter and/or a 5 Fr diagnostic catheter (which is the minimum recommmended catheter size needed to accommodate the balloon microcatheter) was then positioned within afferent artery from which the pathology arose. Due to the diameter and tortusity of the afferent artery, we thought that the conventional Onyx (ethylene vinyl alcohol copolymer; ev3-covidien) embolization technique with a single microcatheter involved the risk of reflux into non target arteries as the creation of a 'plug' would be difficult and could cause retention of it. Thereafter, a compliant Ascent balloon 4x7 mm (Codman Neurovascular, Raynham, Massachusetts, USA), which is a dual lumen balloon, dimethly sulfoxide compatible, with a deadspace of 0.4 ml, was prepared with a mixture of 30% saline solution and 70% Visipaque 320 (GEHealthcare, Princeton, NewJersey).

The balloon microcatheter was then introduced into the guide catheter, and navigated over a 0.014-inch microwire (Traxcess, Terumo) into the arterial feeder vessel until its tip was as close as possible to the site of embolization. Pre and postinflation superselective runs were then performed through the balloon microcatheter, and changes in flow rate with balloon inflation were evaluated. Onyx18 was chosen as the embolic agent in six of the seven cases because the objetive was an embolization as distal as possible. Onyx34 was employed in a high flow hepatic arterioportal fistula considering that closure of the fistula point was our aim. The balloon was then deflated and the dead space of the balloon catheter (0.4 mL) was filled with dimethyl sulfoxide (DMSO). Injection of Onyx18 or 34 was then initiated in roder to fill the dead space during 1 minute. Then, the balloon was reinflated and Onyx injection was continued. The balloon was not deflated during the procedure, as reflux of Onyx can occur at any time following initial antegrade flow. The speed rate for injection of Onyx was much faster than with typical embolizations performed without balloon microcatheter considering that a safe plug is already performed. After Onyx injection, the balloon was deflated and withdrawn slowly under fluoroscopy.

Anchoring technique was performed in three of the procedures in order to ahieve a more stable position of the guiding catheter. First, the balloon was navigated beyond the tortuous anatomy over a 0.014-inch microwire with a distal J configuration. This microwire–microcatheter navigation through the tortuous segment creates significantly less stress on the vessel wall than a 0.035-inch wire. These smaller wires are far less likely to create any kind of traumatic injury or vasospasm, even in the setting of severe tortuosity or dysplasia. Next, when the balloon is inflated, it creates friction against the vessel wall distally, providing a distal anchor for the entire guiding catheter system. Advancing the guiding catheter system while applying gentle counter tension to the balloon catheter functions to add a distal 'pulling' force to the proximal 'pushing' force. The counter tension also functions to center the guiding catheter system within the parent artery, pulling it away from the outer curvature of the vessel and eliminating or diminishing the forces applied by the guiding catheter

© 2015 Global Journals Inc. (US)

system to the vessel wall. During this maneuver, no inner transitional catheter is used.

In one patient, case 7, additional coils embolization was performed so that a high flow fistula could be sealed without risk. The Ascent ballon was kept inflated and two 0,010" coils (Axium, Covidien) plus 0,06 ml of Onyx34 were introduced sequentially through the main lumen.

III. Representative Cases

a) Case 1

A 48-year-old female patient had a sudden rupture of a 6 cm-angiomyolipoma within her right kidney. A large retroperitoneal hematoma was identified in the contrast CT. In the emergent angiography we identified the vascularized tumor as well as the bleeding point. Due to reflux and non-target embolization risk a double lumen microcatheter was used for the Onyx embolization from the only arterial feeder vessel (Fig.1). After embolization, there was a complete devascularization of the vascular bed without non-target embolization.

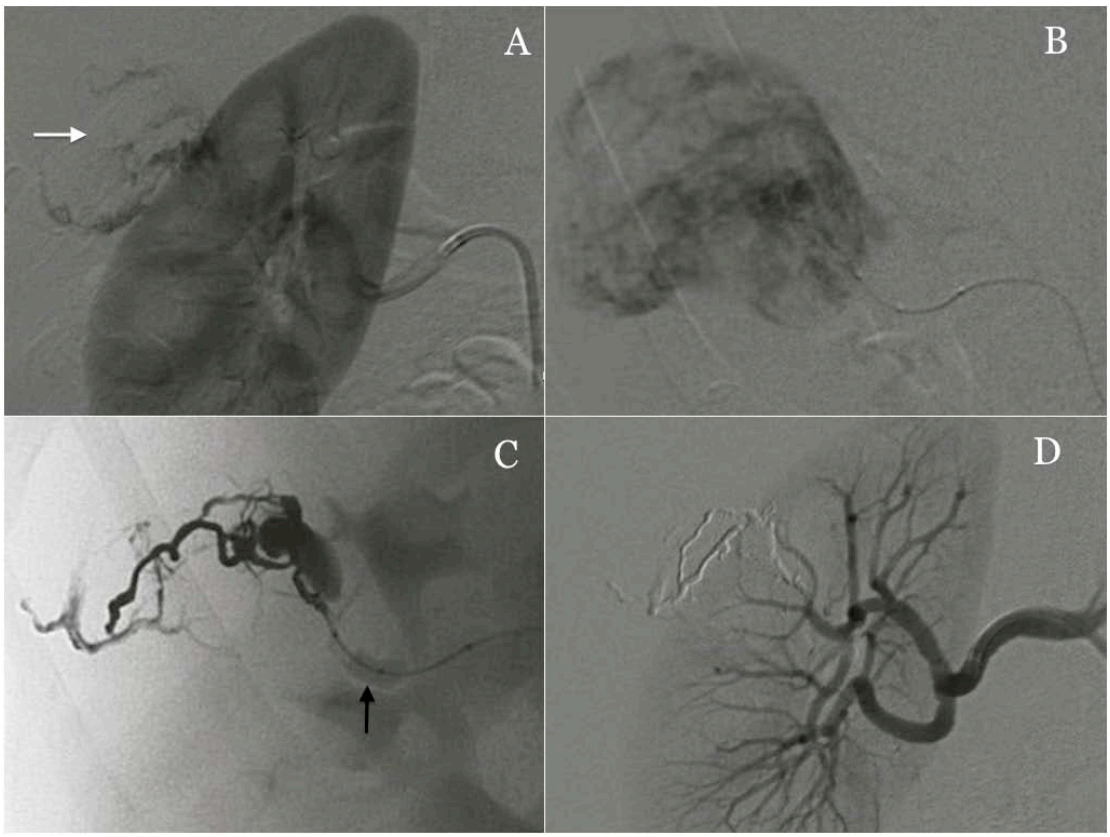

Figure 1 : A-D. Patient 1. A. Selective right renal artery angiogram demonstrates a vascularized round shaped renal tumor corresponding to a bleeding angiomyolipoma (arrow). B. Distal superselective injection through the Ascent microcatheter shows tumor vascularization. C Inflation of the ballon (black arrow) and Onyx progresion without reflux. D Final run showing normal renal vasculature and no tumor blush.

b) Case 2

A 79-year-old male patient had a rejection of a kidney graft transplanted 6 years before. Embolization was requested from nephrologists. Complete devascularization of the graft vascular bed was demanded and Onyx injection through a double lumen microcatheter was thought to associate good result. No reflux was noted and distal stuffing of the vessels was achieved (Fig.2). Additionally we embolized with a mixture of coils plus Onyx a superficial circumflex artery also involved in the graft arterial vascularization.

© 2015 Global Journals Inc. (US)

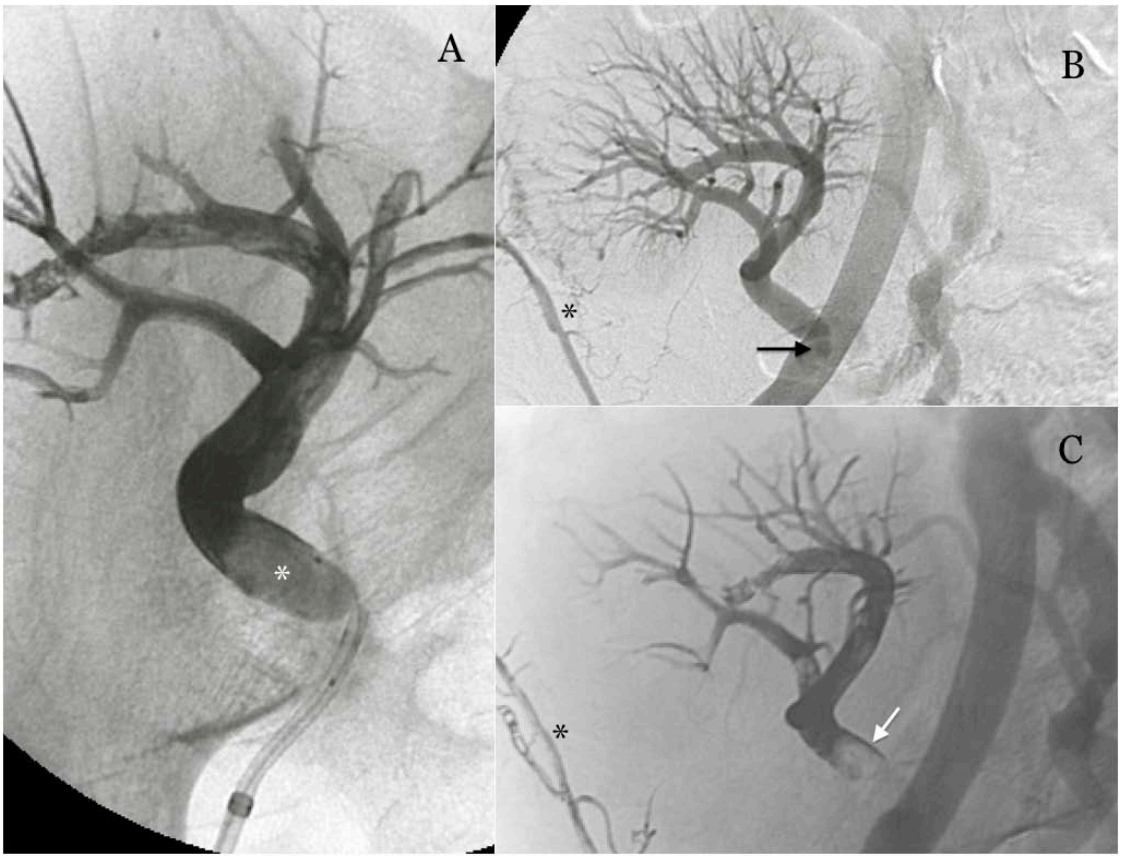

Figure 2 : Patient 2. A. Proximal Onyx injection through a double lumen balloon microcatheter during inflation (white asterisk) in a renal graft. Extreme distal reach of the liquid agent without reflux. B. The goal in the present case was to avoid reflux into external iliac artery (arrow) as well as distal embolization. Vascularization from cicumflex iliac artery is also seen (asterisk). C Withdrawal of the balloon microcatheter showing minimal reflux around the distal part of the balloon (arrow) and non-target embolization. Posteriously, we occluded the circumflex iliac artery as well (black asterisk)

c) Case 4

A 60-year-old male patient with an intense hemoptysis episode (1000 ml/24 h) was consulted to IR unit. Angio CT identifed an enlarged single right bronchial artery (4 mm) in addition to aneurysm like formations in the lower right lobe, findings in relation to necrotizing pneumonia.

In one hand, the Ascent ballon microcatheter was employed to help us to achieve a more stable position of the diagnostic catheter. For that reason, the dual lumen ballon catheter with the microwire were tracked into the bronchial artery, a gently inflation of the ballon allowed us to advance the diagnostic catheter over the system, achieving a more stable position (Fig.3).

© 2015 Global Journals Inc. (US)

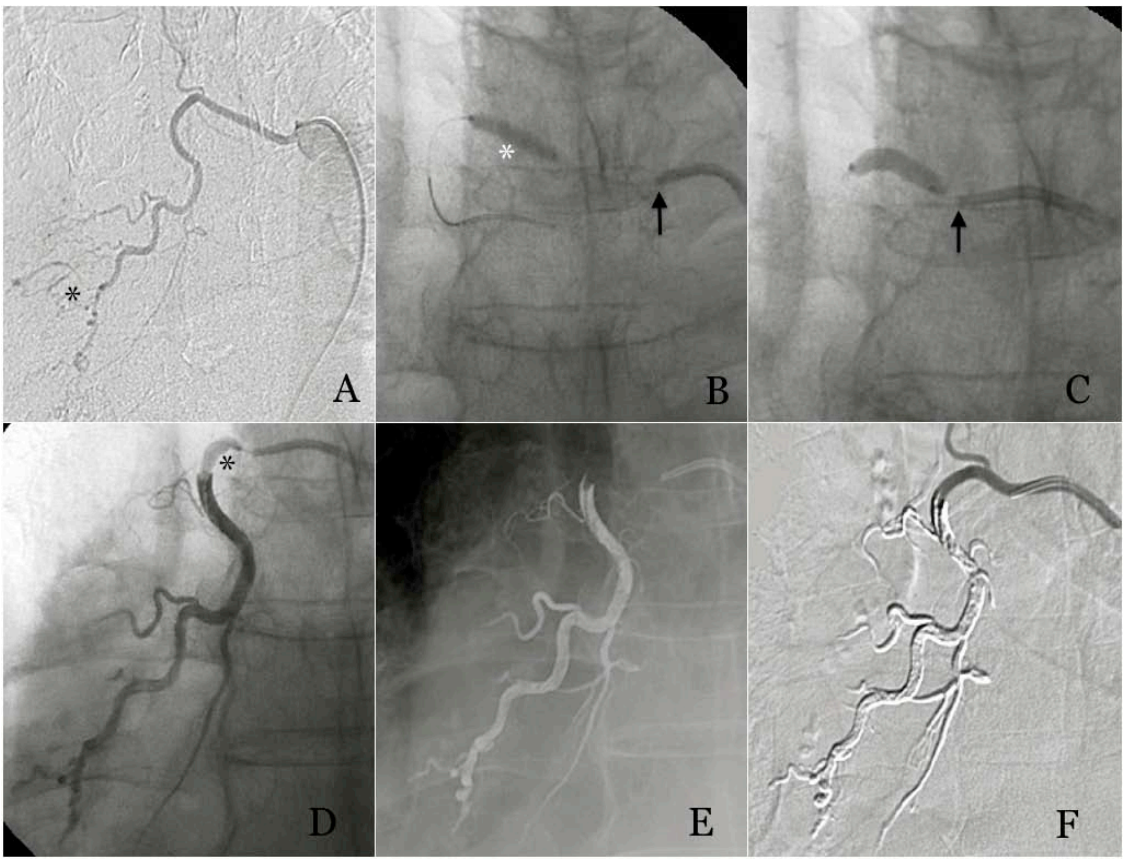

Figure 3 : A-F. Patient 4. A. DSA, selective injection from an enlarged right bronchial artery showing aneurysms-like formations in lower lobe (asterisk). B-C. Anchoring technique: Despite the passage of the glidewire to the artery not enough stability was achieved in the diagnostic catheter (arrow). Gentle inflation of the Ascent ballon (asterisk) in the bronchial artery allowed advancement of the 5Fr catheter over the system. D. Inflation of the ballon created a mechanical plug (asterisk) and Onyx injections was done sucessfully. E. After balloon deflation neither reflux nor adherence of Onyx to the catheter was noted. F. Final angiography showing complete occlusion of the artery and Onyx cast.

On the other hand, inflation of a proximal balloon created a 'mechanical plug', allowing for immediate forward flow of Onyx, reaching the more pathological vessels. No complications were noted.

d) Case 7

A 62-year-old male patient with a 6 cm right lobe hepatocellular carcinoma was scheduled to undergo a transarterial chemoembolization (TACE). During the initial angiography a high flow arterioportal fistula was identified and therfore the procedure was contraindicated. After multidisplinary discussion, an attempt to close the fistula and subsequent TACE was decided. For this purpose, the Ascent ballon was kept inflated in the arterial feeder and two 0,010" coils (Axium, Covidien) plus 0,6 ml of Onyx34 were introduced sequentially through its main lumen (Fig.4). In the final run no fistula was identified and the procedure was preformed as usually. No complications were noted and during a second TACE three months later the arterioportal fistula was still closed.

© 2015 Global Journals Inc. (US)

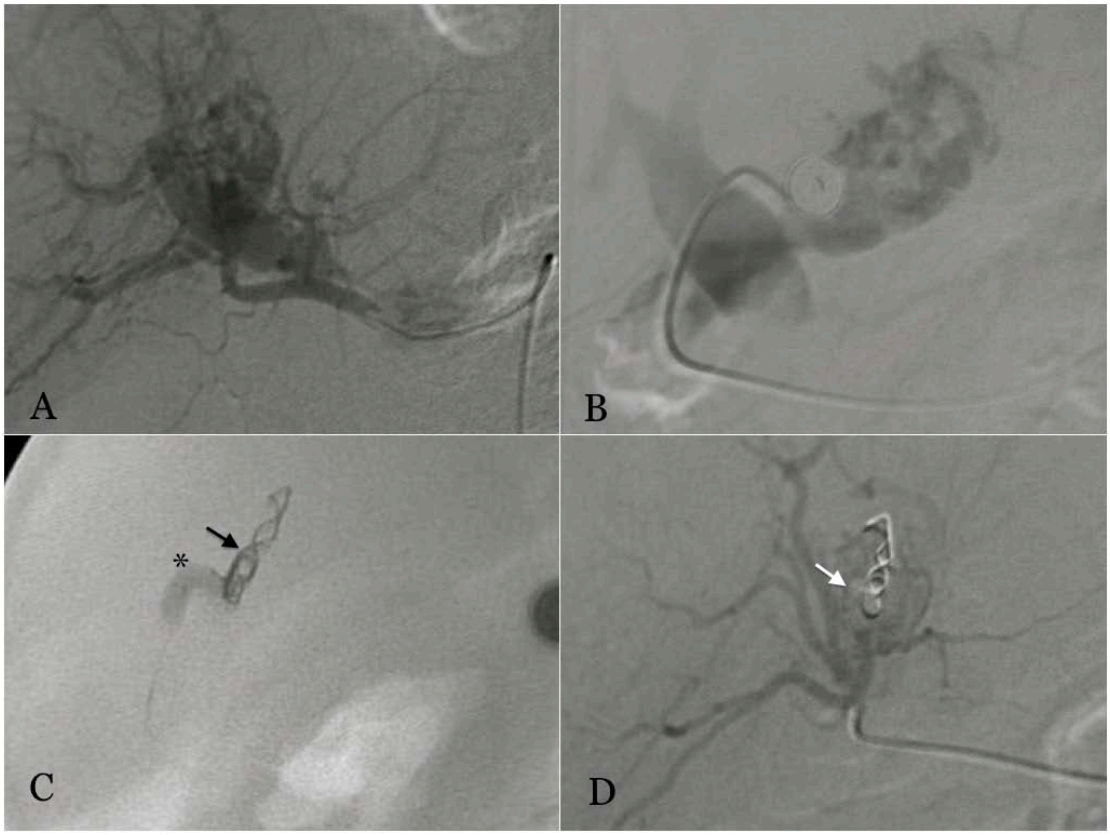

Figure 4 : A-D. Patient 7. A-B. Angiography identified a high-flow arterioportal fistula. A 3mm branch of the right hepatic artery was the single feeder. C-D. Inflation of the double lumen ballon (asterisk) at the fistula point, allows the combination of coils deployment (black arrow) and Onyx (white arrow) injection through the same lumen, decreasing the risk of Onyx migration.

IV. Discussion

Althought Ascent ballon was designed originally for ballon assisted coiling embolization of intracranial aneurysm; DMSO compatibility and Onyx injection through it have been described in the literature (5,7).

Inflation of a proximal balloon creates a 'plug', allowing for immediate forward flow of Onyx. Additionally, the balloon increases the proximal resistance in the feeder, encouraging Onyx to penetrate more distally into the lesion.

The drawbacks of Onyx embolization include the time needed to create a proximal plug that allows forward flow of the agent into the lesion (2) and proximal reflux of Onyx, which can compromise the normal vasculature and cause non-target embolizations and/or retention of the microcatheter. To obviate some of the risks associated with reflux of Onyx, the injection of Onyx through a dual-lumen balloon microcatheter has been described in the management of neurovacular procedures (7,8). In the present small series of embolizations performed by using this technique, there was immediate antegrade flow of Onyx into the pathologic vessel without the need for the initial formation of a plug. The inflated balloon essentially served as the plug, and embolization was achieved without catheter entrapment.

The present case series demonstrates the usefulness of the anchoring technique, a technique designed to allow the efficient and atraumatic positioning of a distal access-guiding catheter in patients with a tortuous anatomy. Hypercompliant balloon catheters can be reliably used to facilitate safe and rapid distal positioning of flexible guiding catheters beyond severe vascular tortuosity or in challenging arterial ostium (6).

Also, Onyx injections can be long, increasing the fluoroscopy times and radiation exposure. As seen in our series, because the use of the dual lumen balloon microcatheter precludes the need for creation of the Onyx plug, facilitates continuous Onyx injection, and there are no delays in microcatheter removal/extraction, the use of these devices may shorten the procedure times and, therefore, reduce radiation exposure.

There are several limitations to the present report. The present case series is small, and a much larger series of cases will be needed to fully document the safety of this technique, particularly in view of risks of vessel rupture during balloon inflation, arterio spasm, and balloon-induced intimal injury or thrombosis of arteries. Our results were also not compared with those in a control group of patients treated by using conventional embolization techniques. Finally, an

© 2015 Global Journals Inc. (US)

important potential limitation of this technique may be related to difficulties in navigating the balloon microcatheter to very small distal arterial feeder vessel.

V. Conclusion

Double lumen Ballon Onyx embolization is feasible and safe. The described embolizations techniques can be used in peripheral interventions for avoiding complications related to reflux or complex anatomies.

References Références Referencias

1. Hu, Y. C., Newman, C. B., Dashti, S. R., Albuquerque, F. C., & McDougall, C. G. (2011). Cranial dural arteriovenous fistula: transarterial Onyx embolization experience and technical nuances. J NeuroIntervent Surg, 3(1), 5-13.
2. Weber, W., Kis, B., Siekmann, R., & Kuehne, D. (2007). Endovascular treatment of intracranial arteriovenous malformations with onyx: technical aspects. AJNR, 28(2), 371-377.
3. Vanninen, R. L., & Manninen, I. (2007). Onyx, a new liquid embolic material for peripheral interventions: preliminary experience in aneurysm, pseudoaneurysm, and pulmonary arteriovenous malformation embolization. Cardiovasc Intervent Radiol, 30(2), 196-200.
4. Jagadeesan, B. D., Mortazavi, S., Hunter, D. W., Duran-Castro, O. L., Snyder, G. B., Siedel, G. F., & Golzarian, J. (2014). Endovascular Balloon-Assisted Embolization of High-Flow Peripheral Vascular Lesions Using Dual-Lumen Coaxial Balloon Microcatheter and Onyx: Initial Experience. J Vasc Interv Radiol, 25(4), 587-592.
5. Martínez-Galdámez, M., Rodriguez-Arias, C. A., Utiel, E., Arreba, E., Gonzalo, M., & Arenillas, J. F. (2014). Paraspinal arteriovenous malformation Onyx embolization via an Ascent balloon. J NeuroInterv Surg, 6(3), e19-e19.
6. Peeling, L., & Fiorella, D. (2014). Balloon-assisted guide catheter positioning to overcome extreme cervical carotid tortuosity: technique and case experience. J NeuroInterv Surg, 6(2), 129-133.
7. Dabus, G., Linfante, I., & Martínez-Galdámez, M. (2014). Endovascular treatment of dural arteriovenous fistulas using dual lumen balloon microcatheter: Technical aspects and results. Clinical neurology and neurosurgery, 117, 22-27.
8. Jagadeesan, B. D., Grigoryan, M., Hassan, A. E., Grande, A. W., & Tummala, R. P. (2013). Endovascular Balloon-Assisted Embolization of Intracranial and Cervical Arteriovenous Malformations Using Dual-Lumen Coaxial Balloon Microcatheters and Onyx: Initial Experience. Neurosurg, 73, ons238-ons243.

© 2015 Global Journals Inc. (US)

This page is intentionally left blank

© 2015 Global Journals Inc. (US)

Global Journal of Medical Research: D
Radiology, Diagnostic Imaging and Instrumentation
Volume 15 Issue 2 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

Assessment of Job Satisfaction among Academic and Clinical Radiographers in Public Institutions in Northern Nigeria

By Prince Ameh Ogenyi, Luntsi Geoffery & Dauda Maikudi

University of Maiduguri, Nigeria

Abstract- Objectives: To determine the level of job satisfaction among academic and clinical radiographers and possibly identify areas that requires improvements in the hospitals and radiography teaching institutions.

Methods: A prospective cross-sectional study of 48 radiographers working in tertiary healthcare institutions and universities in northern Nigeria. Semi-structured questionnaires were used to obtain vital information about the working conditions of radiographers and degree of satisfaction they derive from their job.

Data Analysis: Descriptive statistics such as mean, percentages and frequencies were generated using statistical package for social sciences (SPSS) 19.0 and inferential statistics was used to compare the level of job satisfaction of academic and clinical radiographers.

Results: A total of 60 semi-structured questionnaires were distributed among radiographers across northern Nigeria and 48 were retrieved representing a response rate of 80%. There were 33 males (68.8%) and 15 females (31.2%). The age of radiographers ranges from 25-50 years with a mean age of 29 years.

Keywords: academic radiographer, burnout, clinical radiographer, job satisfaction, workload.

GJMR-D Classification : NLMC Code: WG 500

ASSESSMENTOFJOBSATISFACTIONAMONGACADEMICANDCLINICALRADIOGRAPHERSINPUBLICINSTITUTIONSINNORTHERNNIGERIA

Strictly as per the compliance and regulations of:

© 2015. Prince Ameh Ogenyi, Luntsi Geoffery & Dauda Maikudi. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Assessment of Job Satisfaction among Academic and Clinical Radiographers in Public Institutions in Northern Nigeria

Prince Ameh Ogenyi [α], Luntsi Geoffery [σ] & Dauda Maikudi [ρ]

Abstract- Objectives: To determine the level of job satisfaction among academic and clinical radiographers and possibly identify areas that requires improvements in the hospitals and radiography teaching institutions.

Methods: A prospective cross-sectional study of 48 radiographers working in tertiary healthcare institutions and universities in northern Nigeria. Semi-structured questionnaires were used to obtain vital information about the working conditions of radiographers and degree of satisfaction they derive from their job.

Data Analysis: Descriptive statistics such as mean, percentages and frequencies were generated using statistical package for social sciences (SPSS) 19.0 and inferential statistics was used to compare the level of job satisfaction of academic and clinical radiographers.

Results: A total of 60 semi-structured questionnaires were distributed among radiographers across northern Nigeria and 48 were retrieved representing a response rate of 80%. There were 33 males (68.8%) and 15 females (31.2%). The age of radiographers ranges from 25-50 years with a mean age of 29 years. About 35 clinical and 13 academic radiographers participated in the study out of which 22 radiographers (48.8%) recorded high rate of job satisfaction, 13 (31.3%) had optimal satisfaction and 11 radiographers (22.9%) were dissatisfied with their job.

Conclusion: The study has shown that radiographers working in the northern part of Nigeria either as academics or clinicians are satisfied with their jobs on a general note and there is no significant difference between the level of job satisfaction among clinical and academic radiographers.

Advances in Knowledge: This research paper has identified lack of training/advancement opportunities, dilapidated infrastructure, incessant equipment breakdown and long equipment down time as major causes of dissatisfaction and frequent industrial strikes among radiographers in the region.

Keywords: academic radiographer, burnout, clinical radiographer, job satisfaction, workload.

I. Introduction

The history of job satisfaction stems back to the early 1900's with the situationist perspective on job satisfaction. This perspective states that satisfaction is determined by certain characteristics of the job and characteristics of the job environment itself. This view has been present in the literature since the first studies by Hauser, Taylor and the various projects at the Western Electric plants in Hawthorne. [1] These studies follow the assumption that when a certain set of job conditions are present a certain level of job satisfaction will follow.

It is noteworthy that, the greatest challenge facing healthcare systems in sub-Saharan Africa is the insufficiency of human resources from both qualitative and quantitative stand points. [2] This implies that every effort must be channelled towards improving the work standards and welfare of healthcare professionals in order to retain the current professionals and possibly attract more persons to the health sector. [3]

Radiographers across the world remain highly vital and highly indispensible as far as the healthcare institution and patient care is concerned. Consequently, the overall condition of the radiographer is paramount to the promotion of excellent well being of the sick patient. It is evident that dissatisfied health workers have compromised efficiency and a direct or indirect negative impact on the well being of the patient. [4, 5]

It is in view of this fact that, several studies have been conducted by diverse intellectuals to evaluate and assess job satisfaction among medical practitioners and other allied health professional across the world. [2] Although studies have been conducted regarding medical practitioners and other health professionals, radiographers have not received considerable attention in this respect. [6]

Okaro reported that radiographers in southeast Nigeria are not satisfied with their jobs and would prefer another job if the opportunity comes. [7] This finding was also supported by David who also observed that radiographers in Northern Nigeria were clearly dissatisfied with their salaries. [9] Now, what are the main causes of strikes among radiographers and other allied health professionals? Has the welfare of radiographers in Nigeria improved over the years? If not, what then is the way forward? These are some of the questions which require urgent answers.

"Job satisfaction" is a multifaceted concept which covers the positive emotional, physical, psychological, moral and social gratification or contentment that individuals derive from their chosen profession. Visser et al., described job satisfaction as the extent to which one is generally fulfilled by or the pleasure derived from one's current job or working

Author α σ ρ: University of Maiduguri. e-mail: jacobameh3@gmail.com

© 2015 Global Journals Inc. (US)

conditions. [9] Although it is quite difficult to objectively assess job satisfaction, it is still achievable in many respects.

This study collated views of academic and clinical radiographers in some hospitals and universities in Northern Nigeria using job assessment scales and analyzed them in order to ascertain satisfaction. [6]

II. Materials and Methods

The objective of this study was to determine the level of job satisfaction among clinical and academic radiographers and possibly identify areas which require improvements in the tertiary healthcare institutions and universities in northern Nigeria. A prospective cross-sectional survey design was used for this study. It was carried out for a period of 4 months, from December 2014- March 2015.

a) *Setting and Subjects*

A stratified convenience sampling technique was used for this study as 3 major geo-political zones in Northern Nigeria were considered, these include, the North-east, North-west and North-central. Primary source of data (questionnaires) was used for this study as data was collected from the radiographers working at hospitals and universities in Northern Nigeria. Acceptance to participate in the study after explanation of the study was considered as consent and participation was voluntary. Participants were allowed to withdraw from the study at any point without explanation.

b) *Instrument*

The data was collected using self-administered 20 item scale structured questionnaires with questions on demographics, Job satisfaction, working conditions and areas requiring developments in radiography.

c) *Statistical Analysis*

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 19. Descriptive statistics such as mean, standard deviation, percentages and frequency distribution tables were utilized to analyze quantitative data and content analysis was used for semi-structured questions, t-test was used for the inferential statistics and $p \leq 0.05$ was considered.

III. Results

A total of 60 semi-structured questionnaires were distributed across northern Nigeria among academic and clinical radiographers and 48 were retrieved representing a response rate of 80%. There were 33 males (68.8%) and 15 females (31.2%). The age of radiographers ranges from 25 to 50 years with a mean age of 29 years±10.5 years.

A total of 35 clinical radiographers and 13 academic radiographers participated in the study. About 22 radiographers (48.8%) who participated in the study recorded high rate of job satisfaction while 13 radiographers (31.3%) had optimal satisfaction and 11 radiographers (22.9%) were dissatisfied with their job.

Table 1.0 : Demographic Information of Radiographers with Overall Job satisfaction

Demographics		Frequency(%)	Satisfied	Dissatisfied
Category	Clinical Radiographers	35(72.9)	24(68.6)	11(31.4)
	Academic Radiographers	13(27.1)	13(100)	0
	Both (Clinical & Academic)	13(27.1)	13(100)	0
Gender	Male	33(68.8)	25(75.8)	8(24.2)
	Female	15(31.2)	12(80)	3(20)
Age	25-30	29(60.4)	24(82.8)	5(17.2)
	31-35	14(29.1)	9(64.3)	5(35.7)
	36-40	2(4.2)	1(50)	1(50)
	41>	3(6.3)	2(100)	0
Nature of Work	Full-time	43(89.6)	35(81.4)	8(18.6)
	Part-time	5(10.4)	2(40)	3(60)
Years of Experience	0-5	34(70.8)	25(73.5)	9(26.5)
	6-10	9(18.7)	8(88.9)	1(11.1)
	11-15	3(6.2)	3(100)	0
	16>	2(4.2)	1(50)	1(50)
Highest Qualification	DCR	1(2.1)	0	1(100)
	BSc	39(81.3)	29(74.4)	10(25.6)
	Msc and above	8(16.7)	8(100)	0
Institution	UMTH	13(27.1)	8(61.5)	5(38.5)
	FNPH	3(6.3)	3(100)	0
	ATBUTH	4(8.3)	3(75)	1(25)
	UNIMAID	7(14.6)	7(100)	0
	AKTH	10(20.8)	8(80)	2(20)

© 2015 Global Journals Inc. (US)

NHA	5(10.4)	3(60)	2(40)
BUK	6(12.5)	6(100)	0

Key: DCR: Diploma Certificate Radiography
BSc: Bachelor of Science Radiography
Msc: Masters Degree Radiography
UMTH: University of Maiduguri Teaching Hospital
FNPH: Federal NeuroPschiatry Hospital
ATBUTH: Abubakar Tafawa Teaching Hospital
UNIMAID: University of Maiduguri
AKTH: Aminu Kano Teaching Hospital
NHA: National Hospital Abuja
BUK: Bayero University Kano

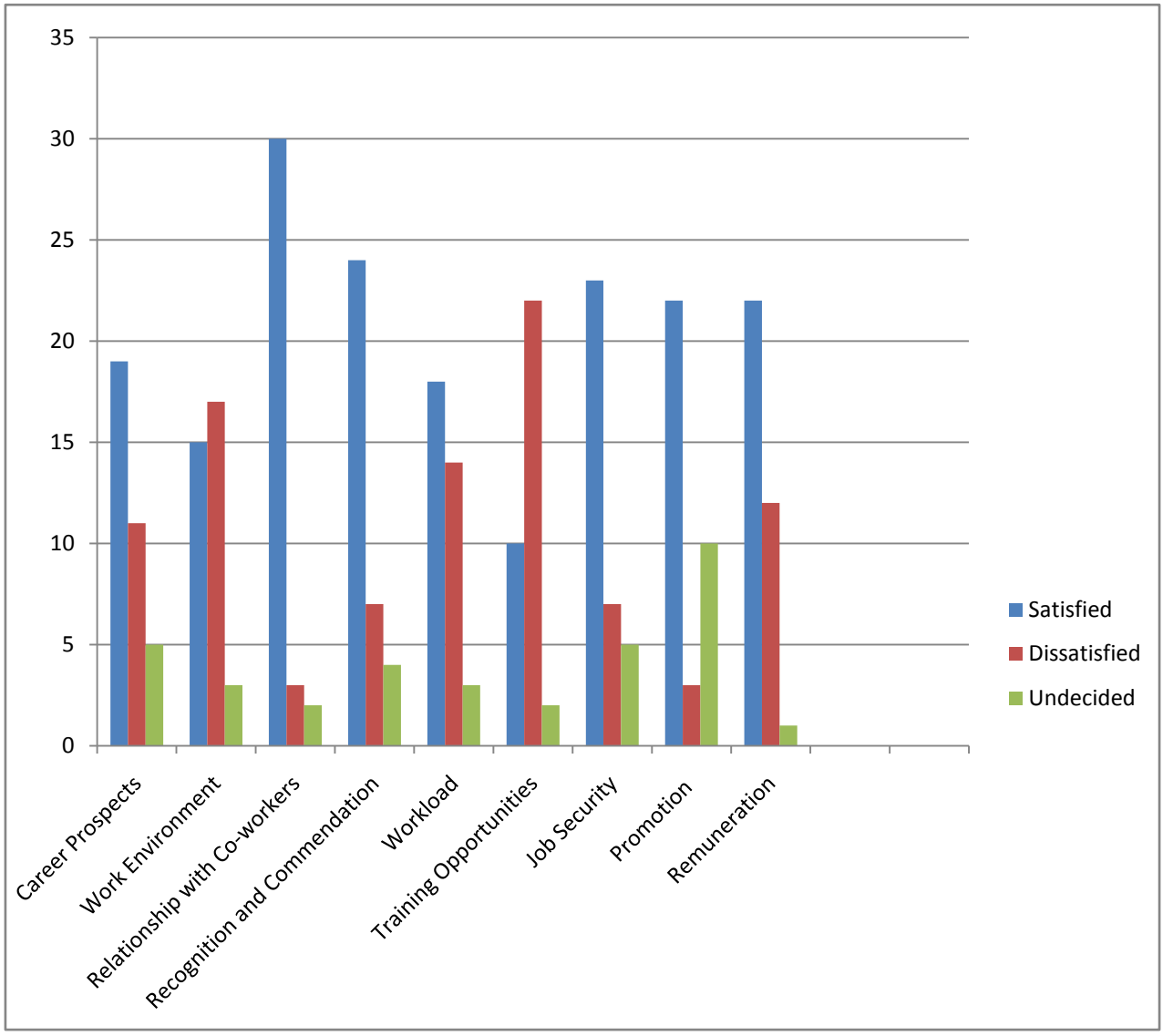

Figure 1.0 : Clinical radiographer's satisfaction with different job facets.

© 2015 Global Journals Inc. (US)

Table 1.2 : Academic radiographer's views on the different facets of their Jobs

Job facet	Satisfied (%)	Dissatisfied (%)	Undecided (%)
Career Prospects	13(100)	0	0
Work Environments	3(23.1)	10(76.9)	0
Relationship with Co-workers	13(100)	0	0
Recognition	11(84.6)	2(15.4)	0
Workload	0	13(100)	0
Training Opportunities	10(76.9)	3(23.1)	0
Job Security	9(69.2)	2(15.4)	2(15.4)
Promotion	7(53.8)	5(38.5)	1(7.7)
Remuneration	4(30.8)	9(69.2)	0
Total	70(59.8%)	44(37.6%)	3(2.6%)

Table 1.3 : Overall satisfaction among clinical and academic radiographers

Clinical Radiographer			
Strongly Dissatisfied	Dissatisfied	Satisfied	Strongly Satisfied
1	10	10	14
2.9%	28.6%	28.6%	40

Academic Radiographer			
Strongly Dissatisfied	Dissatisfied	Satisfied	Strongly Satisfied
0	0	5	8
0	0	38.5%	61.5%

Table 1.4 : Statistical Analysis of mean satisfaction score using Student t-test out of 10.

Academic Radiographer(X)	Clinical Radiographer(Y)	X^2	Y^2
6	7	36	49
9	3	81	9
7	5	49	25
5	5	25	25
7	6	49	36
5	5	25	25
8	10	64	100
5	7	25	49
5	6	25	36
6	2	36	4
8	5	64	25
8	4	64	16
7	5	49	25
0	4	0	16
0	4	0	16
0	4	0	16
0	8	0	64
0	3	0	9
0	10	0	100
0	4	0	16
0	3	0	9
0	6	0	36
0	3	0	9
0	6	0	36
0	8	0	64
0	7	0	49
0	9	0	81
0	7	0	49
0	7	0	49
0	5	0	25
0	9	0	81

© 2015 Global Journals Inc. (US)

0	4	0	16
0	10	0	100
0	8	0	64
0	8	0	64
$\sum X=86$	$\sum Y=207$	$\sum X^2=592$	$\sum Y^2=1393$

Standard error (ste-x) = 0.69 Critical value = 2.201 t = 1.10

IV. Discussion

The study evaluated job satisfaction among 48 radiographers working in northern Nigeria either as academic or clinical radiographers. The mean age of respondents was 29 years with a standard deviation of 10.5 and about 33 males and 15 females were involved in the study.

The study considered 10 critical job facets which include, career prospects, work environment, relationship with fellow radiographers, radiologists and other workers in the radiology department, recognition by departmental heads and superiors at work, daily workload, availability of training and advancement opportunities, job security, frequency of promotions, remuneration and other benefits. This is similar to studies conducted some researchers in Europe. [4, 10' 11]

All radiographers who participated in the study provided information about each job facet in their respective institutions and the overall job satisfaction was determined based on responses provided regarding each job facet.

The study indicated that about 68.6% (n=24) clinical radiographers were satisfied with their jobs while 33.5% (n=11) were dissatisfied with their jobs. On the other hand, it was observed that about 100% (n=13) academic radiographers were satisfied with their job. This proved that academic radiographers were more likely satisfied with their job than their counterparts in the clinic. This could be due to the fact that, there are more opportunities for post graduate training (MSc, PhD, and post doctoral training) as well as timely promotions.

These findings of high level satisfaction were at variance with findings by some researchers who found that majority of radiographers (68%) in south east Nigeria were unsatisfied with their jobs. [7] This new trend could be attributed to the fact that over the years the number of radiographers has grown rapidly as more universities now graduate radiographers in Nigeria. This has led to a significant decrease in the daily workload.

The study has also shown that there is a need for more female radiographers in the north as only about 31.2% females were reached in the course of the study. This is especially important considering socio-cultural perspectives of Nigerians residing in the north with most female patients preferring services from female radiographers.

Existing literatures suggest that job satisfaction in the health sector increases with increase in qualification.[12-14] This study also supports this finding as satisfied than those who had only DCR and/or Bsc. This could be because higher qualification provides room for advancement, role extension and better incentives. Similarly, the higher the years of professional practice in radiography, the higher the satisfaction the radiographer derives. This is in agreement with a study by Lehman et al., (2015) who explored the relationship between workers retention and job satisfaction of Swiss Radiographers in Switzerland.

It was also observed that radiographers working part-time were not as satisfied as those working fulltime probably because they had limited benefits, low job security and were excluded from routine promotions.

Previous studies of job satisfaction among Maltese Radiographers observed that salary was the major cause of dissatisfaction, this study identified lack of training/ advancement opportunities (62.9% indicating dissatisfaction), dilapidated infrastructure, incessant equipment breakdown and long equipment down time (48.6% indicating dissatisfaction) as the major aspects of dissatisfaction among clinical radiographers. [8, 11]

These views about lack of standard work environment were also identified as a serious challenge in a similar studies of job satisfaction among radiographers in Finland, Tanzania, Malawi and South Africa. [6, 10] It is important to note that, the provision of essential imaging technologies such as Computed tomography, automated ultrasound imaging systems, digital breast tomosynthesis, PET scanners, Magnetic Resonance imaging among others in all Tertiary Healthcare institutions in Northern Nigeria will not only contribute to enhancing job satisfaction among radiographers, it will also check upsurge in the number of Nigerians travelling abroad for medical diagnosis and treatment.

Even though the academic radiographers appeared more satisfied, with all of them attaining high overall satisfaction scores, they expressed deep concerns about their remuneration (69.2% indicating dissatisfaction) and work environment (76.9% indicating dissatisfaction). They strongly emphasized the need for autonomy, respect and value for both academic and clinical radiographers especially with advancement. This agrees with findings from studies of factors influencing job satisfaction, burnout and stress in public healthcare sector in Pakistan, Australia and New Zealand. [13, 14]

One critical job facet which has been an issue over the years is remuneration and benefits resulting in frequent strikes (industrial action) among the allied However aspects such as work environments, dilapidated infrastructure, long equipment downtime, lack of training/ advancement opportunities and

© 2015 Global Journals Inc. (US)

inadequate remuneration have been identified as major job facets which have negative impacts on overall job satisfaction of radiographers as most of the radiographers were dissatisfied with these aspects of their job. The study also revealed that, autonomy, respect and value for radiographers would enhance career satisfaction among radiographer.

References Références Referencias

1. Cranny, Smith and Stone. Factors Explaining Job Satisfaction among Faculty. 1992. [Cited 2015 April 12]. Available from: http://www.citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.502.123&rep=rep&type=pdf
2. Faye A., Diop P. I., Philibert A., Morestin F., and Dumont A.,. Developing a Tool to Measure Satisfaction among Health Professional in Sub-saharan Africa. 2013. [Cited 2015 April 12] Availablle from: *http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3704923/*
3. Goetz K., Campbell S. M., Borge B., Dosfer C. E., Brodowski M. and Szecsenyi. The Impact of Intrinsic and Extrinsic Factors on the Job Satisfaction of Dentists. 2012. [Cited 2015 April 12] Available from: *http://www.onlinelibrary.wiley.com/doi/10.1111/71600-0528.2012.00693.x/abstract*
4. Lehman P., Meystre N. R., and Mamboury N.,. Factors for Lifelong Retention among Swiss Radiographers. 2015. [Cited 2015 May 5] Available from: *http://www.researchgate.net/publication/275589254_factors_for_lifelong_job_retension_among_Swiss_radiographers.*
5. Khamisa N., Oldenburg B., Peltzer K., and Ilic D. Work Related Stress, Burnout,, Job Satisfaction and General Health of Nurses. 2015 [Cited 2015 February 10]. Available from: www.mpdi.com/journal/ijerph.
6. Blaauw D. D., Masko F., Ditlopo P., Chirwa M., Mwisongo A., Bidwell P., Thomas S. and Normand C. Comparing the Job Satisfaction and Intension to leave different Categories of Health Workers in Tanzania, Malawi and South Africa. 2013. [Cited 2015 March 12] Available from: *http://www.ncbi.nlm.nih.gov/m/pubmed/23364090/*
7. Okaro A. O., Eze C. U., Ohagwu C. C. Survey of Job Satisfaction among Nigerian Radiographers in Southeast Nigeria. 2010. *European Journal of Scientific Research.* 3(5): 448-456.
8. David N. K. Assessment *of Job Satisfaction among Radiographers of North-east Nigeria*, 2010 project at B. Rad. Department of Medical Radiographer. University of Maiduguri
9. Visser J. and Marais D. Satisfaction of south African Registered Dieticians. 2012. [Cited 2015 March 12] Available from: *http://www.ajol.info/index.php/sajea/article/view/81514*

9. Visser J. and Marais D. Satisfaction of south African Registered Dieticians. 2012. [Cited 2015 March 12] Available from: *http://www.ajol.info/index.php/sajea/article/view/81514*

10. Gronroos E., and Pajukari A.,. Job Satisfaction of the Radiological Department Staff. 2010 *European Journal of Radiography*. 6(1). Doi:10.1016/j.ejradi.2010.03.001
11. Corleo C. C. Perception of Job satisfaction Among Maltese Radiographers. 2014. [Cited 2015 March 4] Available from*: http://www.staff.um.edu.mt/istal/MHSRD.A0306.htm*.
12. Myhren H., Ekeberg O., and Stokland O. Job Satisfaction and Burnout among Intensive Care Unit Nurses and Physicians. 2013 [Cited 2015 March 4] Available from: *http://www.hindawi.com/journals/ccrp/2013/786176.*
13. Ali R. M., and Wajidi A.F. Factors influencing job satisfaction in public health sector of Pakistan. 2013*. Global Journal of Management and Administrative Research. Global Journal Inc*. 13(8) 2249-4588
14. Lueng J., Rioneco P., and Munro P. Stress, Satisfaction and Burnout amongst Radiation Oncologists. 2014. [Cited 2015 April 4] Available from: *http://www.ncbi.nlm.nih.gov/m/pubmed/25088562*
15. Ugwu A. C., Egwu O. A., Ochie K., Owunonu E. O., Ovuoba K. N. and Njoku C. O. Incidence of Occupational Stress among Medical Radiographers: A population based zonal survey. 2007. [Cited 2015 March 12] Available from: *http://www.ncbi.nlm.nih.gov.m/pubmed/18379631*

© 2015 Global Journals Inc. (US)

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 addres with 100 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.

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

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

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

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

© Copyright by Global Journals Inc.(US)| Guidelines Handbook

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

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

MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (MARSM)

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

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

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

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

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

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

© Copyright by Global Journals Inc.(US) | Guidelines Handbook

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

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

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

It is mandatory to read all terms and conditions carefully.

Auxiliary Memberships

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

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

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

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

The Institute will be entitled to following benefits:

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

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

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

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

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

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

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 conveninet , 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 briefness.

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 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 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 though 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.

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

A

Angiomyolipoma · 15, 18
Arterioportal · 14, 17, 22, 24
Axium · 18, 23

E

Exophytic · 3

H

Hepatoportal · 15
Hypodense · 4, 6, 8

I

Imatinib · 2, 3, 4, 10

M

Mesylate · 3, 10
Microcatheter · 14, 16, 18, 20, 22, 24, 26, 28
Myxoid · 2, 3

N

Neurointerventional · 14

O

Onyx · 14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 27, 28
Ostium · 25

T

Thylene · 14
Traxcess · 16

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