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

Global Journal

of Medical Research: F

Diseases

Cancer, Ophthalmology & Pediatric



Prevalence of Hearing Loss

Risk Factors of Cardiovascular

Highlights

Social Study of Aged Persons

Prevalence of Helicobacter Pylori

Discovering Thoughts, Inventing Future

VOLUME 16 ISSUE 4 VERSION 1.0

© 2001-2016 by Global Journal of Medical Research, USA

Volume 16 Issue 15 was originally issued as F4

Global Journal of Medical Research: F
Diseases
Cancer, Ophthalmology & Pediatric

Volume 16 Issue 15
Originally issued as F4

Global Journal of Medical Research: F
Diseases
Cancer, Ophthalmology & Pediatric

Volume 16 Issue 4 (Ver. 1.0)

Open Association of Research Society

© Global Journal of Medical Research . 2016.

All rights reserved.

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

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

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

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

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

Engage with the contents herein at your own risk.

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

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

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

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

Global Journals Inc.

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

Sponsors: Open Association of Research Society
Open Scientific Standards

Publisher's Headquarters office

Global Journals® Headquarters
945th Concord Streets,
Framingham Massachusetts Pin: 01701,
United States of America
USA Toll Free: +001-888-839-7392
USA Toll Free Fax: +001-888-839-7392

Offset Typesetting

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

Packaging & Continental Dispatching

Global Journals
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 Finance Professor of Finance
Lancaster University Management School
BA (Antwerp); MPhil, MA, PhD (Cambridge)

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

Dr. Fotini Labropulu
Mathematics - Luther College
University of Regina Ph.D., M.Sc. in Mathematics
B.A. (Honors) in Mathematics
University of 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 Finance Lancaster University Management School Ph.D. (WHU Koblenz)
MBA/BBA (University of Saarbrücken)

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

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

Dr. Sanjay Dixit, M.D.
Director, EP Laboratories, Philadelphia VA Medical Center
Cardiovascular Medicine - Cardiac Arrhythmia
Univ of Penn School of Medicine

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

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

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

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

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

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

Dr. Aziz M. Barbar, Ph.D.
IEEE Senior Member
Chairperson, Department of Computer Science
AUST - American University of Science & Technology
Alfred Naccash Avenue – Ashrafieh

President Editor (HON.)

Dr. George Perry, (Neuroscientist)
Dean and Professor, College of Sciences
Denham Harman Research Award (American Aging Association)
ISI Highly Cited Researcher, Iberoamerican Molecular Biology Organization
AAAS Fellow, Correspondent Member of Spanish Royal Academy of Sciences
University of Texas at San Antonio
Postdoctoral Fellow (Department of Cell Biology)
Baylor College of Medicine
Houston, Texas, United States

Chief Author (HON.)

Dr. R.K. Dixit
M.Sc., Ph.D., FICCT
Chief Author, India
Email: authorind@computerresearch.org

Dean & Editor-in-Chief (HON.)

Vivek Dubey(HON.)
MS (Industrial Engineering),
MS (Mechanical Engineering)
University of Wisconsin, FICCT
Editor-in-Chief, USA
editorusa@computerresearch.org

Sangita Dixit
M.Sc., FICCT
Dean & Chancellor (Asia Pacific)
deanind@computerresearch.org

Suyash Dixit
(B.E., Computer Science Engineering), FICCTT
President, Web Administration and
Development , CEO at IOSRD
COO at GAOR & OSS

Er. Suyog Dixit
(M. Tech), BE (HONS. in CSE), FICCT
SAP Certified Consultant
CEO at IOSRD, GAOR & OSS
Technical Dean, Global Journals Inc. (US)
Website: www.suyogdixit.com
Email: suyog@suyogdixit.com

Pritesh Rajvaidya
(MS) Computer Science Department
California State University
BE (Computer Science), FICCT
Technical Dean, USA
Email: pritesh@computerresearch.org

Luis Galárraga
J!Research Project Leader
Saarbrücken, Germany

Contents of the Issue

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

1. Prevalence of Helicobacter Pylori Infection among the Whole Spectrum of Age and the Performance of the Different Diagnostic Tests. *1-5*
2. The Prevalence and Risk Factors of Cardiovascular Comorbidity in Patients with Severe and Very Severe COPD. *7-13*
3. Testosterone and Vitamin D Deficiency as Risk Factors for Hip Fracture Elderly Male Patients: Time for Vitamin D and Testosterone Replacement. *15-18*
4. The Prevalence of Hearing Loss in Chronic Kidney Disease Bangladeshi Patients Undergoing Dialysis. *19-22*
5. Medico Social Study of Aged Persons: A Case Study from Serampore City. *23-30*
6. *Helicobacter Pylori* and Steps for its Elimination: A Review. *31-36*

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

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Prevalence of Helicobacter Pylori Infection among the Whole Spectrum of Age and the Performance of the Different Diagnostic Tests

By Awad Magbri, Eussera El-Magbri, Mariam El-Magbri & Fiona Stevens
George Washington University, United States

Abstract- *Design, setting, participants & measurements:* Three hundred and thirty eight patients were included in the study. They presented to the endoscopy suite at University College Hospital Galway, Ireland (UCHG) with upper gastrointestinal symptoms. The age range is 21-90 years with a median age of 52 years, 62% females, and 24% diabetics. They were divided into 3 groups 18-30 years, 31-60 years, and 61-90 years. The prevalence of H. pylori among the different spectrum of age is calculated using different methods of diagnosing H. pylori.

Reliabilities of the diagnostic tests: The sensitivity, specificity, positive and negative predictive values for (i) Rapid urease test (RUT), (ii) ELISA, (iii) Histology and (iv) Culture. The rapid urease test was found to have a high sensitivity and specificity (89.5% and 96.8%), respectively. Although estimation of serum IgG H. pylori antibody by ELISA is relatively non-invasive procedure, unfortunately, it lacks sufficient sensitivity (63%) to be used as a sole diagnostic test for H. pylori infection. Histology on the other hand is widely available in most hospitals and has a relatively high sensitivity (77.4%) and specificity (75%).

Keywords: *helicobacter pylori, sensitivity, specificity, rapid urease test, gastric cancer, ELISA test, IgG to H. pylori.*

GJMR-F Classification : *NLMC Code: WI 387*



Strictly as per the compliance and regulations of:

© 2016. Awad Magbri, Eussera El-Magbri, Mariam El-Magbri & Fiona Stevens. 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.

Prevalence of Helicobacter Pylori Infection among the Whole Spectrum of Age and the Performance of the Different Diagnostic Tests

Awad Magbri [α], Eussera El-Magbri [σ], Mariam El-Magbri [ρ] & Fiona Stevens [ω]

Abstract- ***Design, setting, participants & measurements:*** Three hundred and thirty eight patients were included in the study. They presented to the endoscopy suite at University College Hospital Galway, Ireland (UCHG) with upper gastrointestinal symptoms. The age range is 21-90 years with a median age of 52 years, 62% females, and 24% diabetics. They were divided into 3 groups 18-30 years, 31-60 years, and 61-90 years. The prevalence of H. pylori among the different spectrum of age is calculated using different methods of diagnosing H. pylori.

Reliabilities of the diagnostic tests: The sensitivity, specificity, positive and negative predictive values for (i) Rapid urease test (RUT), (ii) ELISA, (iii) Histology and (iv) Culture. The rapid urease test was found to have a high sensitivity and specificity (89.5% and 96.8%), respectively. Although estimation of serum IgG H. pylori antibody by ELISA is relatively non-invasive procedure, unfortunately, it lacks sufficient sensitivity (63%) to be used as a sole diagnostic test for H. pylori infection. Histology on the other hand is widely available in most hospitals and has a relatively high sensitivity (77.4%) and specificity (75%). Culture of H. pylori was found to be highly specific (100%) and sufficiently sensitive (86.2%).

Prevalence of H. pylori infection: The prevalence of H. pylori is assessed in the different age groups. There was a substantial increase in the prevalence of H. pylori infection with increasing age up to the age 61 years. In this study the highest prevalence of infection was found in the age group 31-60 years. The overall prevalence of H. pylori infection in patients with upper gastrointestinal symptoms as assessed by histology (73%), culture (53%), serum IgG ELISA (56%), and rapid urease test (65%).

Conclusion: The prevalent of Helicobacter pylori infection are worldwide and the infection rate is intimately related to age, ethnicity, and socio-economic factors. The sensitivity and specificity of the different methods used to detect H. pylori infection vary considerably and depends on the inherent characteristics of the test used. A test with high sensitivity and specificity is needed to capture the majority of patients with infection so they can be treated early and cured of the bacteria this will prevent the development of gastric and duodenal ulcer and the late consequences of gastric malignancy.

Author α: MD- Dialysis Access Center of Pittsburgh, PA.
e-mail: elmagbri@hotmail.com
Author σ: MD candidate, George Washington University, Washington DC.
Author ρ: BSc, American University, Washington DC.
Author ω: University College Hospital Galway, Ireland.

Keywords: helicobacter pylori, sensitivity, specificity, rapid urease test, gastric cancer, ELISA test, IgG to H. pylori.

I. Introduction

Studies from Western Europe, New Zealand, Australia, and United States have shown that the prevalence of H. pylori infection in symptomatic patients undergoing endoscopy is very high. The rate of H. pylori infection in patients with upper gastro-intestinal symptoms ranges from 40-60%. In benign gastric ulcer the organism is found in about 70% (1). No the other hand, the rate of infection in duodenal ulcer patients is 85-95% (2, 3). The rate of infection of H. pylori related to several factors, for example the rate of infection increases with age (1, 4-8). The prevalence in children was found to range between 20-68% (9-15). The rate of infection also correlate to underlying disease process; in duodenal ulcer and duodenitis the rate of H. pylori infection may be as high as 95%, and in gastritis the rate of infection ranged from 62-97% (16-30). The sensitivity and specificity of the various tests used to diagnose H. pylori infection have wide variation ranging from (63% to 89.5% for sensitivity) and (41.7% to 100% for specificity). The prevalence of H. pylori infection in different age groups was carried out in this study and was found to be highly variable in different age groups. The highest prevalence was found in the age group of 31-60 years.

II. Subjects and Methods

Three hundred and thirty eight patients were included in the study. They presented to the endoscopy suite at University College Hospital Galway, Ireland (UCHG) with upper gastrointestinal symptoms. The age range is 21-90 years with a median age of 52 years, 62% females, and 24% diabetics. They were divided into 3 groups 18-30 years, 31-60 years, and 61-90 years. The prevalence of H. pylori among the different spectrum of age is calculated using different methods of diagnosing H. pylori, table 3.2.

Formal written consent was obtained and the procedure was explained to each patient included in the study.

Blood was collected in a plain tube before endoscopy for estimation of serum IgG antibodies to H. pylori using ELISA test (Biometra, Germany).

© 2016 Global Journals Inc. (US)

Specimens were taken from antrum and duodenum from each patient enrolled in the study, for histological examination and culture. They were forwarded to the bacteriology laboratory in a separate containers containing a transport medium (Nutrient Broth Code: CMI oxide) for direct smear and culture on Colombia blood agar base (code: CM331) containing cefoperazone selective supplement (code: SR125) mixed together into sterile Petri dishes prepared according to the specifications of the supplier (Oxide, Ireland).

The specimens for the histological examination were labeled with reference numbers, and were formalin fixed and prepared according to the standard methods. Sections 5 μm thin and stained with haematoxylin and eosin (H&E) or modified Giemsa stain and read by an experienced pathologist (RS) without previous knowledge of clinical or microbiological information.

A biopsy specimen was examined by commercially available rapid urease test kindly provided by (Jatrox HP-Test, Rohm Pharma Waterston, Germany).

The performance of the different tests used to diagnose H. pylori was outlined in table 3.1.

III. Results

Reliabilities of the diagnostic tests: The sensitivity, specificity, positive and negative predictive values for (i) Rapid urease test, (ii) ELISA, (iii) Histology and (iv) Culture are shown in table 3.1.

The rapid urease test (RUT) was found to have a high sensitivity and specificity (89.5% and 96.8%) respectively. However, it needs an endoscopic procedure to obtain an antral biopsy for the assay which is not available in all hospitals. Endoscopy is an invasive and expensive procedure.

Although estimation of serum IgG H. pylori antibody by ELISA is relatively non-invasive procedure, unfortunately, it lacks sufficient sensitivity (63%) to be used as a sole diagnostic test for H. pylori infection, table – 3.1.

Histology on the other hand is widely available in most hospitals and has a relatively high sensitivity (77.4%) and specificity (75%), table 3.1. It is relatively quick, cheap and easy to perform but is requires endoscopic examination which is an invasive technique and needs a well trained histological expertise and therefore, it cannot be utilized as a screening test for H. pylori diagnosis.

Culture of H. pylori was found to be highly specific (100%) and sufficiently sensitive (86.2%), table – 3.1. However, it takes a few days for the results to come through and it cannot be used for quick diagnosis of H. pylori infection. Culture of H. pylori is, however, needed to determine the sensitivity of the bacterium to the anti-microbial agents, especially to metronidazole. Obtaining the biopsy for culture is an invasive procedure.

Prevalence of H. pylori infection: The prevalence of H. pylori is assessed in the different age groups, table – 3.2. There was a substantial increase in the prevalence of H. pylori infection with increasing age up to the age 61 years. This result agrees with the results of previous workers. However, in the age group 18-30 years the prevalence of H. pylori infection in patients with dyspepsia ranges from 45-53% depending on the mode used for diagnosis.

In this study the highest prevalence of infection was found in the age group 31-60 years, table-3.2. Usually the colonization of the bacteria is most prevalent in the elderly. The reason for this finding is not entirely clear. However, the frequent use of drugs like NSAIDS, and corticosteroids could contribute to the relatively low prevalence in this age group.

The overall prevalence of H. pylori infection in patients with upper gastrointestinal symptoms as assessed by histology (73%), culture (53%), serum IgG ELISA (56%), and rapid urease test (65%) table-3.2 agree with the previous studies from the developed countries (31-33).

IV. Discussion

Infection with H. pylori is rampant and worldwide. The rate of infection is influenced by age, race, geographical and socio-economic factors, as well as dietary practices (34-44). The rate of infection is found to be higher in China and India than in North America. On the other hand, the infection rate is similar in Mexico and the United States (37, 45). It has been revealed that the rate of infection of H. pylori in the United States is influenced by many factors like social-economic, ethnicity, age, and gender. These findings suggest that the rate of H. pylori infection is modified by geographical and host factors. The type and severity of gastritis associated with H. pylori colonization are also influenced the rate of infection.

The epidemiology of H. pylori infection has been extensively studied and was found to be closely correlated with superficial type-B gastritis. Infection with H. pylori is associated with active and chronic inflammation of gastric mucosa (32, 46). The density of the bacteria in the tissue is also correlated to the severity of inflammation and the local and systemic immune response mounted against the bacteria (32, 46-48).

H. pylori infection can be detected with various methods e. g histological examination and culture of the gastric biopsy specimens which takes several days, serology, rapid urease test etc. Serum IgG/IgA ELISA and Rapid Urease test were compared to the gold standard tests (histology and culture) and evaluated in this study. The organism was detected in 76 of 107 dyspeptic patients attending GI unit at UCHG. We found a relatively good correlation between serology and histological findings in the antral biopsies despite the

© 2016 Global Journals Inc. (US)

low sensitivity (63%) of our ELISA test compared to histology and culture, table-3.1. Our results of high sensitivity and specificity (89.5% and 96.8%) of rapid urease test agreed with Carvalho and others (15, 49-56), but disagreed with the results of Nichols and others (23, 57). The advantages of quick test e.g. RUT is that treatment can be given to the patients within one hour of their endoscopic procedures. In the Amsterdam study (15) the results of culture and histology were analogous to ours.

We found that, histological examination, culture, ELISA and RUT revealed an increased prevalence of H. pylori infection and the rate of infection are rising with increasing age up to the age of 61 years. This is in parallel with the findings that the prevalence of infection is related to the prevalence of gastritis (6, 31-33). However, the prevalence of H. pylori in the elderly age group is lower than the reported prevalence from Western countries, table-3.2. We noted that the prevalence of H. pylori infection in the age group 61-90 years was below that of 30-60 years. This agreed with the findings of Newell et al (57).

Previously, it has been suggested that the age discrepancy is due to progressive atrophic gastritis with hypochlorhydria in the body and fundus of the stomach of the elderly patients. This environment is hostile to the existence of the organism. Another possible explanation to the low infection rate in the elderly could be related to the increased use of the antibiotics in this age group which may clear the organism. The histological sections from the mucosa of the 25 patients from the group 61-90 years old were reviews, none were taken NSAIDs concurrently. We found 14(56%) of these patients had either normal or mild inflammation and of them 6(43%) were H. pylori positive. Moderate inflammation was present in 9(36%) all were H. pylori positive. Only 2(8%) had severe inflammation and both were H. pylori positive. Atrophy of specialized cells in the fundus and body of the stomach cannot be inferred from examination of antral biopsies. Thus in this study we have no evidence to support the notion that atrophic gastritis is associated with a decreased prevalence of H. pylori in the elderly. We concluded that the majority if the elderly (>61 years) had a prevalence of H. pylori ranging from (45-64%), table-3.2, depending on the mode used for detection of H. pylori infection. More than 50% of them had only mild inflammation; in these group H. pylori was isolated in 43%. However, moderate to severe degree of inflammation was present in 44% of them and H. pylori were always associated with gastritis.

V. Conclusion

The prevalent of Helicobacter pylori infection are worldwide and the infection rate is intimately related to age, ethnicity, and socio-economic factors. The sensitivity and specificity of the different methods used to detect H. pylori infection vary considerably and depends on the inherent characteristics of the test used. A test with high sensitivity and specificity is needed to capture the majority of patients with infection so they can be treated early and cured of the bacteria this will prevent the development of gastric and duodenal ulcer and the late consequences of gastric malignancy.

References Références Referencias

1. Dwyer B, Kaldor J. Tee W, et al. The prevalence of Campylobacter pylori in human populations. In Rathbone BJ & Heatley RV (editors). Campylobacter pylori and Gastroduodenal Disease. Blackwell Science Publ. 1989: 190-196
2. Dixon MF. Helicobacter pylori and peptic ulceration: histopathological aspects. J Gastroenterol Hepatol. 1991; 6: 125-30
3. Heatley RV. Helicobacter pylori Infection and Inflammation. Scand J Gastroenterol. 1991; 26(suppl. 187): 23-30
4. Perez- Perez GI, Taylor DN, Bodhidatta L, et al. Seroprevalence of Helicobacter pylori infection in Thailand. J Infect Dise. 1990; 161: 1237-1241
5. Przyklend B, Bauernfeind A, Bornschein W, et al. The role of Campylobacter (Helicobacter) pylori in disorders of the gastrointestinal tract. Infection. 1990; 18 (1): 3/9-7/13
6. Siurala M, Sipponen P, Kekki M. Chronic gastritis: dynamic and clinical aspects. Scand J Gastroenterol. 1985; 20(suppl 109): 69-76
7. Siurala M, Varis K. Kekki M. New aspects on epidemiology, genetics, and dynamics of chronic gastritis. Front Gastrointest Res. 1980; 6: 148-65
8. Sipponen P, Hyvarinen H. role of Helicobacter pylori in the pathogenesis of gastritis, peptic ulcer, and gastric cancer. Scand J Gastroenterol. 1993; 28 suppl 196: 3-6
9. Drumm B, Sherman P, Cutz E, et al. Association of Campylobacter pylori on the Gastric Mucosa with Antral Gastritis in Children. N Eng J Med. 1987; 316: 1557-1561
10. Czinn SJ, Carr H. Rapid diagnosis of Campylobacter pylori associated gastritis. J Ped 1987; 110: 569-70
11. Oderda G, Vaira D, Holton J, et al. Non-specific abdominal pain in childhood: Can serology detect those with Campylobacter associated gastritis? Gut. 1988; 29: A 1475
12. Hill R, Pearman J, Worthy P. et al. Campylobacter pylori and gastritis in children. Lancet. 1986; i: 387
13. Cadranel S, Goossens H, Boek de M, et al. Campylobacter pyloridis in children. Lancet. 1986; i: 735-6
14. Eastham EJ, Elliott TSM. Campylobacter pyloridis in children. Arch Dis Child. 1987; 62: 652

© 2016 Global Journals Inc. (US)

15. Parsonnet J, Friedman GD, Vandersteen DP, et al. Helicobacter pylori infection and the risk of gastric carcinoma. N Eng J Med. 1991; 325: 1127-31
16. Booth L, Holdstock G, MacBride, et al. Clinical importance of Campylobacter pyloridis and associated serum IgG and IgA antibody responses in patients undergoing upper gastrointestinal endoscopy. J Clin Pathol. 1986; 39: 215-9
17. Burnett RA, Forrest JAH, Girdwood RWA, et al. Campylobacter-like organisms in the stomach of patients and healthy individuals. Lancet. 1984; i: 1349
18. O'Connor HJ, Dixon MF, Wyatt JI, et al. Effect of duodenal ulcer surgery and enterogastric reflux on Campylobacter pyloridis. Lancet. 1986; ii: 1178-81
19. Fiocca R, Villani L, Turpini F, et al. High incidence of Campylobacter-like organisms in endoscopic biopsies from patients with gastritis, with or without peptic ulcer. Digestion. 1987; 38: 234-44
20. Haruma K, Sumii K, Okamoto S, et al. Helicobacter pylori infection causes low antral somatostatin content: pathogenesis of inappropriate hypergastrinemia. Gastroenterology. 1992; 102 (pt 2): A80
21. Jones DM, Lessells AM, Eldridge J. Campylobacter-like organisms on the gastric mucosa: culture, histological, and serological studies. J Clin Pathol. 1984; 37: 1002-6
22. Langenberg ML, Tytgat GNJ, Schipper MEI, et al. Campylobacter-like organisms in the stomach of patients and healthy individuals. Lancet. 1984; i: 1348-9
23. Marshall BJ and Warren JR. Unidentified curved bacillus in the stomach of patients with gastritis and peptic ulcerations. Lancet. 1984: 1311-1315.
24. Marshall BJ, McGechie DB, Rogers PA, et al. Pyloric Campylobacter infection and gastrodudodenal disease. Med J Austr. 1985; 142: 439-44
25. McNulty CAM, Watson DM. Spiral bacteria of gastric antrum. Lancet. 1984, i: 1068-9
26. Price AB, Levi J, Dolby JM. Et al. Campylobacter pylori in peptic ulcer disease: microbiology, pathology, and scanning electron microscopy. Gut. 1985; 26: 1183-8
27. Rauws EAJ, Langenberg W, Houthoff HJ, et al. Campylobacter pyloridis-associated chronic active antral gastritis. Gastroenterology. 1988; 94: 33-40
28. Rathbone BJ, Wyatt JI, Worseley BW, et al. Systemic and local antibody responses to gastric Campylobacter pylori in non-ulcer dyspepsia. Gut. 1986; 27: 642-7
29. Von Wulffen H, Heesemann J, Butzow GH, et al. Detection of Campylobacter pylori in patients with antrum gastritis and peptic ulcer by culture, complement fixation test, and immunoblot. J Clin Microbiol. 1986; 24: 716-20
30. Wyatt JI, Rahthbone BJ, Dixon MF, Heatley RV. Campylobacter pyloridis and acid induced gastric metaplasia in the pathogenesis of duodenitis. J Clin Pathol. 1987; 40: 841-848
31. Ihamki T, Saukkonen M, Siurala M. Longterm observation of subjects with normal mucosa and with superficial gastritis. Results of 23-27 years follow up examination. Scand J Gastroenterology. 1979; 13: 771-6
32. Prieto G, Polanco I, Larrauri J, et al. Helicobacter pylori infection in children: clinical, endoscopic, and histological correlations. J Ped Gastroenterol & Nutrit. 1992; 14(4): 420-25
33. Siurala M, Varis K. Gastritis In: Sircus W, Smith AN, eds, Scientific foundations of gastroenterology. Philadelphia: WB Saunders. 1980; 375-96
34. Craanen ME, Dekker W, Blok P, et al. Intestinal metaplasia and Helicobacter pylori: an endoscopic bioptic study of the gastric antrum. Gut. 1992; 33: 16-20
35. Dooley CP, Cohen H, Fitzgibbons PL, et al. Prevalence of H pylori infection and histological gastritis in asymptomatic persons. N Eng J Med. 1989; 321 (23): 1562-66
36. Graham DY, Klein PD, Opekun AR, et al. Effect of Age on the Frequency of Active Campylobacter pylori Infection Diagnosed by the (C13) Urea Breath Test in Normal Subjects and Patients with Peptic Ulcer Disease. J Infect Disease. 1988; 157: 777-780
37. Graham DY, Adam E, Reddy GT, et al. Seroepidemiology of Helicobacter pylori infection in India. Comparison of developing and developed countries. Dig Dis Scien. 1991; 36 (8): 1084-8
38. Hopkins RJ, Russell RG, O'Donnoghue JM, et al. Seroprevalence of Helicobacter pylori in Seventh-Day Adventists and Other Groups in Maryland. Arch Int Med. 1990; 150: 2347-2348
39. Kang JY, Wee A, Math MV, et al. Helicobacter pylori and gastritis in patients with peptic ulcer and non-ulcer dyspepsia: ethnic differences in Singapore. Gut. 1990; 31: 850-853
40. Kosunen TU, Hook J, Rautelin HI, et al. Age-dependent increase of Campylobacter pylori antibodies in blood donors. Scad J Gastroenterol. 1989; 24: 110-114
41. Malaty HM, Evans DG, Evans DJ, et al. Helicobacter pylori in Hispanics: Comparison with blacks and whites of similar age and socioeconomic class. Gastroenterology. 1992; 103: 813-816
42. Mendall MA, Goggin PM, Molineaux N, et al. Childhood living conditions and Helicobacter pylori seropositivity in adult life. Lancet. 1992; 339 (8798); 896-7
43. Tytgat GN, Axon ATR, Dixon MF, et al. Helicobacter pylori: Causal agent in peptic ulcer disease? Working Party Reports. (1990): 36-45

© 2016 Global Journals Inc. (US)

44. The Gastrointestinal Physiology Working Group. Helicobacter pylori and Gastritis in Peruvian Patients: Relationship to Socioeconomic Level, Age, and Sex. The Am J Gastroenterol. 1990; 85(7): 819-23
45. Bertram TA, Murray PD, Morgan DR, et al. Gastritis associated with infection by Helicobacter pylori in humans: Geographical differences. Scand J. Gastroenterol. 1991; 26 (suppl. 181): 1-8
46. Karttunen T, Niemela S, Lehtola J. Helicobacter pylori in dyspeptic patients: quantitative association with severity of gastritis, intragastric pH, and serum gastrin concentrations. Scand J Gastroenterol. 1991; (suppl. 186): 124-34
47. Mollenkopf C, Steinger H, Weineck G, Meyer M. Gastritis: Immunohistochemical detection of specific and nonspecific immune response to Helicobacter pylori. Zeitschrift Fur Gastroenterol. 1990; 28 (7): 327-34
48. Crabtree JE, Shallcross TM, Wyatt JI, et al. Mucosal humoral immune response to Helicobacter pylori in patients with Duodenitis. Dig Dis Scien. 1991; 36 (9): 1266-73
49. Carvalho AS, Queiroz DM, Mendes EN, et al. Diagnosis and distribution of Helicobacter pylori in the gastric mucosa of symptomatic children. Brazilian J Med & Biolog Resea. 1991; 24(2): 163-66
50. Borromeo M, Lambert JR, Pinkard KJ. Technical Methods; Evaluation of "CLO-test" to detect Campylobacter pyloridis in gastric mucosa. J. Clin. Pathology. 1987; 40: 462-468
51. Ching CK, Buxton C, Holgate C, et al. Cytological brushing urea broth test: a highly sensitive and specific test for Helicobacter pylori infection. Gastrointestinal Endoscopy. 1991: 550-551
52. McNulty CAM, Dent JC, Uff JS, et al. Detection of Camploybacter pylori by the biopsy urease test: an assessment in 1445 patients. Gut. 1989; 30: 1058-1062
53. Thillainayagam AV, Arvind AS, Cook RS, et al. Diagnostic efficiency of an ultrarapid endoscopy room test for Helicobacter pylori. Gut. 1991; 32: 467-69
54. Vaira D, Holton J, Cairns SR, et al. Four hour rapid urease test for detecting Campylobacter pylori: is it reliable enough to start treatment? J Clin Pathol. 1988; 41: 355-6
55. Westblom TU, Madan E, Kemp J, Subik MA. Evaluation of a rapid urease test to detect Campylobacter pylori infection. J Clin Microbiol. 1988; 26: 1393-4
56. Nichols L, Sughayer M, DeGirolami PC, et al. Evaluation of diagnostic methods for Helicobacter pylori gastritis. Am J Clin Pathol. 1991; 95(6): 769-773
57. Newell DG, Hawtin PR, Stacey AR, et al. Estimation of prevalence of Helicobacter pylori infection in an asymptomatic elderly population compaing (14C) urea breath test in serology. J Clin Pathology. 1991; 44(5): 395-7

Table – 3.1 : The reliabilities of the various diagnostic tests for H. pylori infection.

Test	Sensitivity	Specificity	PP value	NP value
Histology	77.4%	75%	83.7%	66.7%
Culture	86.2%	100%	100%	76.5%
Serum IgG	63%	97%	98%	51%
Local IgA	79.2%	41.7%	57.6%	66.7%
Urease test	89.5%	96.8%	98.6%	78.9%

Table 3.2 : The prevalence of H. pylori infection: age difference.

	18-30 years	31-60 years	61-90 years	Overall
Histology	52.9%	85.3%	56%	72.8%
Culture	47.1%	57.4%	45.5%	53%
ELISA	45.8%	61.2%	52.6%	55.8%
Rapid Urease test	47.06%	69.8%	64%	64.8%

© 2016 Global Journals Inc. (US)

This page is intentionally left blank

© 2016 Global Journals Inc. (US)

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

The Prevalence and Risk Factors of Cardiovascular Comorbidity in Patients with Severe and Very Severe COPD

By Jagoda Stojkovikj, Beti Ivanovska-Zafirovska, Irina Angelovska, Angela Debreslioska, Sead Zejnel, Smiljko Jovanovski, Dragana Stojkovikj, Sasha Anastasova & Ivana Jovanovska

University Clinic of Pulmollogy and Allergology

Abstract- Cardiovascular comorbidities are most frequent comorbidities in COPD and are responsible for many deaths in those patients. The aim of the study was to investigate the prevalence and the risk factors of these comorbidities. In the survey 114COPD patients were included with severe and very severe stage of the disease, FEV1<50%, which were stable. Cardiovascular comorbidity was detected in 92 (80.7%) respondents, 61.9 % with severe and 38.1 % with very severe COPD. Blood sugar (p=0.023*), CRP (p=0.00007**), CAT score (p<0.0006**) and number of exacerbations (p<0.0001) were significantly higher in patients with cardiovascular comorbidity. We can conclude that cardiovascular comorbidities are frequent in COPD patients with severe and very severe stage. They have a great impact in this patients.

Keywords: severe COPD, very severe COPD, risk factors, cardiovascular comorbidity.

GJMR-F Classification : NLMC Code: QY 400



Strictly as per the compliance and regulations of:



© 2016. Jagoda Stojkovikj, Beti Ivanovska-Zafirovska, Irina Angelovska, Angela Debreslioska, Sead Zejnel, Smiljko Jovanovski, Dragana Stojkovikj, Sasha Anastasova & Ivana Jovanovska. 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.

The Prevalence and Risk Factors of Cardiovascular Comorbidity in Patients with Severe and Very Severe COPD

Jagoda Stojkovikj [α], Beti Ivanovska-Zafirovska [σ], Irina Angelovska [ρ], Angela Debreslioska [ω], Sead Zejnel [¥], Smiljko Jovanovski [§], Dragana Stojkovikj [χ], Sasha Anastasova [ν] & Ivana Jovanovska [Θ]

Abstract- **Cardiovascular comorbidities are most frequent comorbidities in COPD and are responsible for many deaths in those patients. The aim of the study was to investigate the prevalence and the risk factors of these comorbidities. In the survey 114COPD patients were included with severe and very severe stage of the disease, FEV1<50%, which were stable. Cardiovascular comorbidity was detected in 92 (80.7%) respondents, 61.9 % with severe and 38.1 % with very severe COPD. Blood sugar (p=0.023*), CRP (p=0.00007**), CAT score (p<0.0006**) and number of exacerbations (p<0.0001) were significantly higher in patients with cardiovascular comorbidity. We can conclude that cardiovascular comorbidities are frequent in COPD patients with severe and very severe stage. They have a great impact in this patients.**

Keywords: severe COPD, very severe COPD, risk factors, cardiovascular comorbidity.

I. Introduction

Chronic obstructive pulmonary disease (COPD) is defined as a systemic disease, and is a major cause of morbidity and mortality throughout the world and continues to cause a heavy health and economic burden. (1,2) Understanding of the pathophysiology of COPD, focused on the concept of systemic inflammation, has also helped to explain the high comorbidities frequency in these patients. Comorbidities affect seriously health status and influence the prognosis of these patients (1,3). Cardiovascular comorbidities are responsible for many deaths in COPD patients. The risk of cardiovascular morbidity and mortality is two to three times higher in patients with COPD in comparison to an age-matched and gender-matched population without COPD. (1,4,5) Probably due to shared pathophysiological mechanisms; cardiovascular comorbidities often remain unrecognized in patients with COPD. Great number of severe even very severe cases of COPD first has been diagnosed in the Cardiovascular Intensive Care Units during myocardial infarction or some other cardiovascular disease. (6,7,8) Longitudinal population-based studies show that low lung function, measured by forced expiratory volume in 1 second (FEV1), is associated with cardiovascular mortality. Participants in the National Health and Nutrition Examination Survey (NHANES) Epidemiologic Follow-up Study with the lowest levels of FEV1 showed 5 times higher risk of deathby ischemic heart disease. (9,10,11) In recent years, a hypothesis has been generated that a systemic inflammatory process, present in COPD patients, could be the link between this disease and different comorbidities. Inflammatory cytokines, including tumor necrosis factor-α, interleukin-6, C-reactive protein (CRP) and fibrinogen, are increased within the circulation of patients with COPD, particularly during exacerbation when this inflammation significantly increase, probably representing an overspill of inflammatory mediators from the peripheral lung. These cytokines are common to many inflammatory diseases, and could explain their association with COPD.(4,12.13,)Risk factors, however, can also explain this association. Tobacco is a most common risk factor implicated in the genesis of COPD, remain as well as cardiovascular disease. In addition, the reduced physical activity due to reduced exercise tolerance first of all as a result of dyspnea, which is a primary clinical feature of chronic obstructive pulmonary disease (COPD). (1,2,14,15) The increase of vascular disease can be due to the higher prevalence of classic risk factors. Thus, in the recently published Cardiovascular Risk Factors in COPD study (4), it was observed that COPD patients presented high prevalence of hypertension, diabetes, and dyslipidemia, which were related with an increased risk for ischemic heart disease.The pathophysiological mechanisms underlying the vascular alterations in COPD are mainly mediated by endothelial dysfunction and coagulopathy. The systemic inflammation observed in COPD seems to be the key determinant for the development of pulmonary and systemic endothelial dysfunction. (1)Low body mass index (BMI) and weight loss is common in many chronic diseases; however, in COPD the picture is more complex, as low weight is due to a disproportionate loss of fat-free tissue, especially muscle mass increase death risk. (15,16) The mechanisms explaining cachexia in COPD are still

Author α σ ρ ω ¥ § χ ν Θ : University Clinic of Pulmollogy and Allergology, Institute for Epidemiology and Biostatistics and Medical Informatics, University Clinic of Cardiology, Skopje, Macedonija.
e-mails: stojkovic_jagoda@yahoo.com, betizafirova@yahoo.com, irina.angelovska@yahoo.com, angela.debreslioska@gmail.com, sead.zeynel@gmail.com

© 2016 Global Journals Inc. (US)

unclear,(16) but go beyond the classic explanation of an increase in the oxygen cost of breathing, or the pro-inflammatory effect of hypoxemia. (16, 17)Physical inactivity and smoking were more strongly associated with the presence of comorbidities compared with airflow obstruction. (17)

II. Material and Methods

The aim of the study was to investigate the prevalence and risk factors of cardiovascular comorbidities in privies diagnosed COPD patients with severe and very severe stage of the disease, which ware stable. For that we investigated 114 subjects, all of them current smokers, with smoking status >10 years. According Global Initiative for Chronic Obstructive Lung Disease the patients with severe stage of the disease were with: 50% >FEV1>30%, FEV1/FVC <0,70, and with very severe stage of the disease: FEV1<30%, FEV1/FVC <0,70. Then they were divided in two groups: 92 subjects with and22 without cardiovascular comorbidities. It was cross sectional study. Besides demographic parameters (age, gender), body mass index (BMI), level of cholesterol, LDL and HDL, CRP, mMRC dyspnea scale, we use CAT score, according to the: 2011 Global Initiative for Chronic Obstructive Lung Disease (GOLD) strategy document which recommends assessment of chronic obstructive pulmonary disease (COPD) using symptoms and future exacerbation risk, employing two score cut-points: COPD Assessment Test (CAT) score≥10 or modified Medical Research Council dyspnea scale (mMRC) grade≥2, and exacerbations number (18,19). Also the number of exacerbations and number of cardiovascular comorbidities were calculated.

a) *Statistical analysis*

Statistical analysis: Statistical analysis of the data base was made in the program SPSS for Windows 17, 0.Testing of the distribution of the data was done with Kolmogorov-Smirnov and Shapiro-Wilk's test. Categorical variables were presented with absolute and relative numbers, numeric variables were shown MPC descriptive statistics (mean, median, rank values).For comparing of respondentswith and without cardiovascular comorbidities were used parametric and nonparametric methods for independent samples(Chi-square test, Student t-test, Mann-Whitney U test). The correlation between the number of cardiovascular comorbidities and both (mMCR dyspnea scale and CAT test) was analyzed with Spearman-s a duty-rank correlation. For independent significant factors associated with cardiovascular comorbidity,Binary Logistic Regression analysis was used. For statistically significant values was taken p<0,05.

III. Results

In the research participated 114 subjects, COPD patients. Cardiovascular comorbidity was detected in 92 (80.7%) respondents, 61.9 % with severe and 38.1 % with very severe COPD.

Sex, age and body mass index of patients with severe and very severe HOBB had not significant effect on the occurrence of cardiovascular comorbidity (^{c}p=0.9, ^{a}p=0.98 and p=0.19 consequently)

Table 1 : The age, gender and BMI in patients

variable	noCVS N=22	yesCVS N=92	p value
gendern (%)			
Female 40	8 (20)	32 (80)	^{c}p=0.9
Male 74	14 (18.92)	60 (81.08)	
age (mean±SD)			
	62,44 ± 6,4	62,34 ± 10,7	^{a}p=0.98
BMI (mean±SD)			
	22.4 ± 6.6	24.87 ± 5.3	^{a} p=0.19

^{a}(Student-ov t test) ^{c} (Chi-square)

The values of cholesterol, LDL and HDL insignificantly differ between patients studied with and without cardiovascular comorbidity.

Elevated blood sugar significantly more often was registered in the group of patients with cardiovascular comorbidity compared with patients without cardiovascular comorbidity (25% vs 0%).

In group with cardiovascular comorbidity were measured significantly higher values of glucose (p = 0.023).

More than 50% of subjects with cardiovascular comorbidity present or 54.35% had values of CRP higher than 6 mg/l.

Significantly higher values of CRP were observed in the group of patients with cardiovascular comorbidities (p = 0.00007).

© 2016 Global Journals Inc. (US)

Table 2 : The level of cholesterol, LDL, HDL, glycaemia and CRP in patients

variable	noCVS N=22	yasCVS N=92	p value
cholesteroln (%)			
0 – 5.51	14 (63.64)	41 (44.56)	[c]p=0.1
> 5.51	8 (36.36)	51 (55.44)	
cholesterol (mean±SD) median (IQR)			
	5.74 ± 1.2	6.17 ± 1.5	[b]p=0.51
	5.6 (4.7 – 6.6)	5.6 (4.9 – 6.1)	
LDL n (%)			
0 – 2.2	5 (22.73)	24 (26.09)	[c]p=0.89
2.3 – 3.7	11 (50)	36 (39.13)	
> 3.7	6 (27.27)	32 (34.78)	
LDL (mean±SD) median (IQR)			
	3.13 ± 1.4	3.58 ± 1.1	[b]p=0.21
	2.7 (1.9 – 4.2)	3.8 (2.2 – 3.9)	
HDL n (%)			
0.9 - 2	6 (27.27)	45 (48.91)	[c]p=0.09
> 2	6 (27.27)	11 (11.96)	
< 0.9	10 (45.45)	36 (39.13)	
HDL (mean±SD) median (IQR)			
	1.26 ± 0.7	1.25 ± 0.6	[b]p=0.94
	1.2 (0.8 – 2.1)	1.2 (0.7 – 1.8)	
glycemia n (%)			
3.5 – 6.1	22 (100)	69 (75)	[c]p=0.02
> 6.1	0	23 (25)	
glycemia (mean±SD) median (IQR)			
	5.09 ± 0.4	6.44 ± 2.5	[b]p=0.023*
	5 (4.9 – 5)	5.7 (5 – 6.4)	
CRP n (%)			
< 6	22 (100)	42 (45.65)	[c]p=0.00004**
> 6	0	50 (54.35)	
CRP (mean±SD) median (IQR)			
	4.22 ± 0.4	7.15 ± 2.8	[b]p=0.00007**
	4 (4 – 4)	7 (5 – 9)	

*[b](Mann-Whitney test) [c](Chi-square) *p<0.05 **p<0.01*

Respondents with and without cardiovascular comorbidity scores had insignificantly different mMRC, while significantly differed in terms of CAT score ($p < 0.0006$). CAT average score in the group, with and without cardiovascular comorbidity was 9.56 ± 0.5 and 15.54 ± 5.0 consequently), while the median score was 10 (range 9-100) and 17 (range 10-20) consequently.

Values of CAT score higher than 10 were significantly more likely registered only in group with cardiovascular comorbidities (67.39 %).

COPD pacients with and without cardiovascular comorbidity significantly differ in the number of exacerbationsin addition to patients with cardiovascular comorbidity ($p < 0.0001$).

© 2016 Global Journals Inc. (US)

Table 3 : The level of mMRC dyspnea scale, CAT test score and exacerbation number in patients

variable	noCVS N=22	yesCVS N=92	p value
mMRC n (%)			
1	0	2 (2.17)	[b]p=0.09
2	17 (77.27)	40 (43.48)	
3	5 (22.73)	40 (43.48)	
4	0	8 (8.69)	
5	0	2 (2.17)	
CAT n (%)			
< 10	22 (100)	30 (32.61)	[c]p<0.0001
> 10	0	62 (67.39)	
CAT (mean±SD) median (IQR)			
	9.56 ± 0.5 10 (9 – 100)	15.54 ± 5.0 17 (10 – 20)	[b]p=0.0006**
egzacerbation number n (%)			
0	9 (40.91)	2 (2.17)	
1	10 (45.45)	33 (35.87)	
2	3 (13.64)	17 (18.48)	
3	0	25 (27.17)	
4	0	9 (9.78)	
5	0	6 (6.52)	
egzacerbation number n (%)			
0	9 (40.91)	2 (2.17)	[c]p<0.0001
1-2	13 (59.09)	50 (54.35)	
2>	0	40 (43.48)	

*[b](Mann-Whitney test) [c](Chi-square) *p<0.05 **p<0.01*

As an independent predictor of cardiovascular comorbidity regression analysis confirmed serum marker CRP (p = 0.013). Increasing the values of CRP in serum 1mg/l in patients with severe and very severe COPD increases chance to 7.92 (95 % CI 1.545 - 14.607) times for cardiovascular comorbidity.

Table 4 : Binary Logistic Regression independent predictors of cardiovascular comorbidities in patients with severe and very severe HOBB

		B	S.E	Wald	df	Sig.	Exp(B)	95,0% C.I. for EXP (B)	
								Lower	Upper
Step 1[a]	glycaemia	1,028	1,053	,952	1	,329	2,794	,355	22,005
	CRP	2,069	,834	6,158	1	,013	7,920	1,545	14,607
	CAT	1,661	,986	2,837	1	,092	5,267	,762	36,401
	Constant	-30,152	12,614	5,713	1	,017	,000		

a. Variable(s) entered on step 1: glikemijam CRP, CAT.

Patients with CRP values greater than 6 mg/l were more significant in the register group 3 or 4 cardiovascular comorbidities as compared with the group with one or two cardiovascular comorbidities (88.46 % vs. 42.42% p = 0.00006).

CAT score significantly differed in patients with different number of cardiovascular disease (p<0.0001).

Table 5 : The association of CRP and CAT score with number of comorbidities in patients

variable	number of CVS (1-2) N=66	number of CVS (3-4) N=26	p value
CRPn (%)			
< 6	38 (57.57)	3 (11.54)	[c]p=0.00006**
> 6	28 (42.42)	23 (88.46)	
CAT (mean±SD) median (IQR)			
	6.12± 1.7 6 (5 – 7)	9.61 ± 3.3 9 (8 – 11)	[b]p<0.0001**

*[b](Mann-Whitney test) [c](Chi-square) **p<0.01*

© 2016 Global Journals Inc. (US)

The number of cardiovascular comorbidities in patients with severe and very severe COPD significantly positively correlated with mMRC and CAT scor (R = 0.423 and R = 0.637 accordingly) Fig.1 and Fig.2.

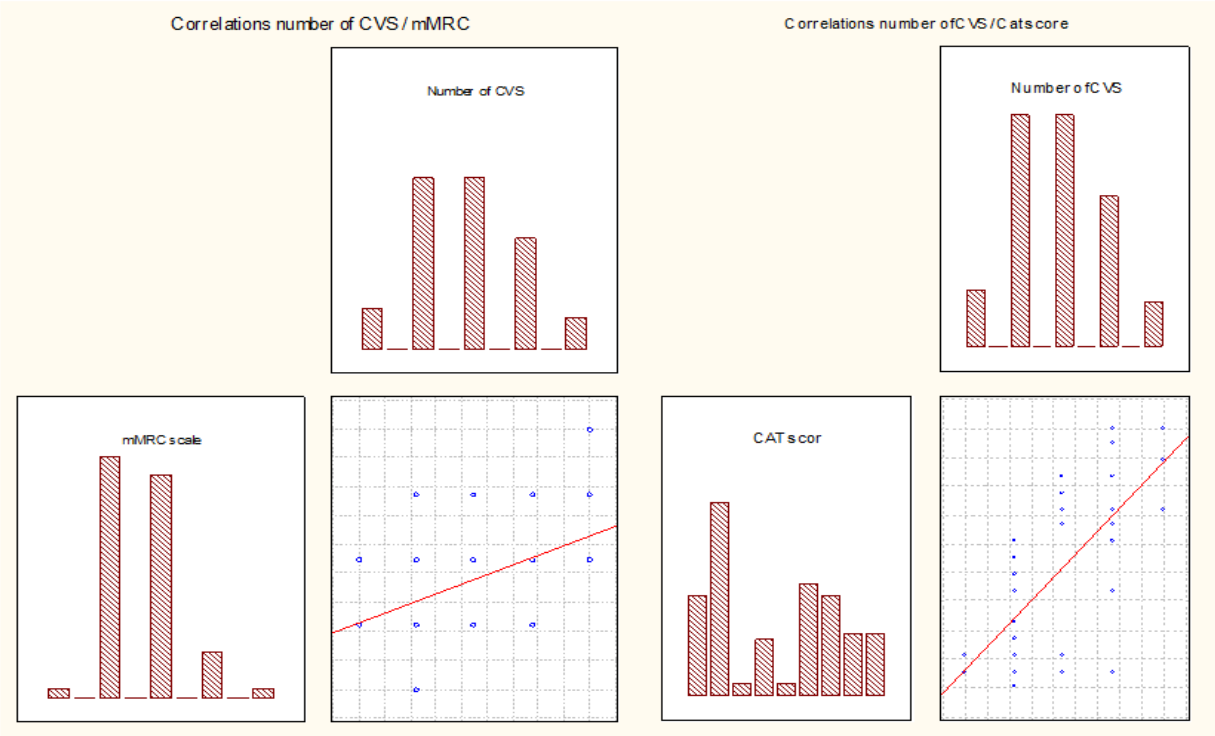


Fig. 1

Fig. 2

IV. Discussion

COPD is primarily characterized by the presence of airflow limitation resulting from inflammation and remodeling of small airways and is often associated with lung parenchymal destruction or emphysema. It is increasingly recognized that COPD extends beyond the lung and that many patients have several systemic manifestations that can further destruction or emphysema. It is increasingly impair functional capacity and health-related quality of life [11,20,21]. In addition, COPD is associated with several other diseases.

Rover L. in a systematic literature review concluded that FEV1 is a risk factor for cardiovascular mortality in patients of COPD, 10% decrease in FEV1 increases all-cause mortality by 14%, cardiovascular mortality by 28%, and nonfatal coronary event by almost 20%. (22)

The leading causes of hospitalizations and mortality among COPD patients are cardiovascular events. In the Lung Health Study, over 5 800 patients with mild to moderate COPD were studied. Forty-two to 48% of all hospitalizations that occurred over the study's 5-year follow-up period were related to cardiovascular complications.

Various population-based studies suggest that independent of smoking, age, and gender, COPD increases the risk of cardiovascular morbidity and mortality twofold. (11)

In our survey from 114 COPD patients which were included, 92 (80,7%) had cardiovascular comorbidity. Sex, age and body mass index of patients with severe and very severe HOBB had not significant effect on the occurrence of these comorbidity (p=0.9, p=0.98 and p=0.19).

It is very alarmingly that the use of bronchodilators, which are commonly used to treat symptoms in COPD, may increase the risk of cardiovascular morbidity and even mortality among COPD patients. Some dates discuss the epidemiologic evidence linking COPD and cardiovascular events as well as the potential mechanism(s) which may be responsible for this association. A pooled analysis of similar longitudinal studies determined that for every 10% decline in FEV1, cardiovascular mortality increases by 28% showing a clear relation between overall cardiovascular death and low lung function.(9,23) A similar gradient exists if the analysis is limited to those fulfilling the diagnosis of COPD. Data from more than 5,000 participants in 2 cohorts (the Atherosclerosis Risk in Communities Study and the Cardiovascular Health Study) showed that while the odds ratio (OR) of having cardiovascular disease is 1.7 (95% confidence interval [CI] 1.5-1.9) for those in the Global Initiative for chronic Obstructive Lung Disease (GOLD) spirometry category

© 2016 Global Journals Inc. (US)

1, it increased to 2.2(95% CI 1.9-2.5) for those in GOLD 2, and 2.4(95% CI 1.9-3.0) in GOLD spirometry stage 3-4.(6,9,24)

Chen et al. identified 18,176 unique references and included 29 datasets in the meta-analyses. Compared with the non-COPD population, patients with COPD were more likely to be diagnosed with cardiovascular disease (odds ratio [OR] 2·46; 95% CI 2·02-3·00; p<0·0001), including a two to five times higher risk of ischemic heart disease, cardiac dysrhythmia, heart failure, diseases of the pulmonary circulation, and diseases of the arteries. Additionally, patients with COPD reported hypertension more often (OR 1·33, 95% CI 1·13-1·56; p=0·0007), diabetes (1·36, 1·21-1·53; p<0·0001], and ever smoking (4·25, 3·23-5·60; p<0·0001). The associations between COPD and these cardiovascular disease types and cardiovascular disease risk factors were consistent and valid across studies. (21,24)Metabolic syndrome also is one of the comorbidity in COPD patients. It is one of the risk factor for cardiovascular comorbidity. (25,26,27,28)

In our group of patients the values of cholesterol, LDL and HDL insignificantly differ between patientswith and without cardiovascular comorbidity, butin this group were measured significantly higher values of glucose (p = 0.023).

Systemic inflammation that occurs in COPD is considered one of main risk factors for cardiovascular comorbidities in these patients. (30,31)The chronic inflammatory process in the lung contributes to the extrapulmonary manifestations of COPD which are predominantly cardiovascular in nature. Same dates review the significant burden of cardiovascular disease in COPD and discuss the clinical and pathological links between acute exacerbations of COPD and cardiovascular disease. The exacerbations increase the inflammation. (29) CAT test (25,26,27) is designed as a simple tool to assist patient's health status, and for identification of patientsat increased risk of exacerbations. (32,33)

More than 50% of subjects in our survey with cardiovascular comorbidity is present or 54.35% had values of CRP higher than 6 mg/l. Significantly higher values of CRP were observed in the group of patients with cardiovascular comorbidities (p = 0.00007).And as an independent predictor of cardiovascular comorbidity regression analysis confirmed serum marker CRP (p = 0.013). Alsoour pacients with and without cardiovascular comorbidity significantly differ in the number of exacerbations in addition to patients with cardiovascular comorbidity (p <0.0001).The number of cardiovascular comorbidities in patients with severe and very severe COPD significantly positively correlated with mMRC and CAT scor (R = 0.423 and R = 0.637 accordingly). Values of CAT score higher than 10 were significantly more likely registered only in group with cardiovascular comorbidities (67.39 %).

V. Conclusion

Chronic obstructive pulmonary disease (COPD) is a growing global epidemic that is particularly important in developing countries. Comorbidities, especially cardiovascular are frequent occurrence in these patients, and significantly influence the treatments and prognosis of the disease. Common risk factors in these patients are age, smoking, physical inactivity and systemic inflammation and treatment with corticosteroids. Lower FEV1-severe COPD, increases cardiovascular mortality and all-cause mortality.

References Références Referencias

1. Mannino, D.M. (2002).COPD: epidemiology, prevalence, morbidity and mortality, and disease heterogeneity. Chest, 121(5), pp.121–126. [CrossRef] [Medline]
2. Sidney, S. et al. (2005). COPD and incident cardiovascular disease hospitalizations and mortality: Kaiser Permanente Medical Care Program. Chest, 128, pp. 2068–2075. [CrossRef] [Medline]
3. Andriana, I. (2015). Cardiovascular comorbidities in hospitalised COPD patients: a determinant of future risk? European Respiratory Journal, 46, pp.846-849; DOI: 10.1183/09031936.00237014
4. Arnaud, C. et al. (2013). Comorbidities of COPD. European Respiratory Review, 22, pp. 454-475; DOI: 10.1183/09059180.00008612
5. Dionne, E. S. (2015). Impact of cardiovascular comorbidities on COPD Assessment Test (CAT) and its responsiveness to pulmonary rehabilitation in patients with moderate to very severe COPD: protocol of the Chance study. BMJ Open, 5(7), e007536.Published online 2015 Jul 21.doi: 10.1136/bmjopen-2014-007536PMCID: PMC4513521
6. Izquierdo, J.L. (2010). Lack of association of ischemic heart disease with COPD when taking into account classical cardiovascular risk factors.Int J Chron Obstruct Pulmon Dis, 8(5), pp. 387-94.PMID:21103405
7. Michael, F. (2012). Chronic obstructive pulmonary disease as a cardiovascular risk factor. Results of a case-control study (CONSISTE study).Int J Chron Obstruct Pulmon Dis, 7, pp 679–686.doi: 10.2147/COPD.S36222PMCID: PMC3468057
8. VanDijk, W.D. et al. (2010).Interaction in COPD experiment (ICE): a hazardous combination of cigarette smoking and bronchodilation in chronic obstructive pulmonary disease. Med Hypotheses, 74(2), pp. 277-80. doi: 10.1016/j.mehy.2009.09.012. Epub 2009 Oct 1.
9. Sin, D.D. Man, S.F. (2005). Chronic obstructive pulmonary disease: a novel risk factor for cardiovascular disease. Can J Physiol Pharmacol, 83(1), pp.8-13.

© 2016 Global Journals Inc. (US)

10. Sin, D.D. Man, S.F. (2008).Impact of cancers and cardiovascular diseases in chronic obstructive pulmonary disease. Curr Opin Pulm Med, 14(2), pp.115-21.doi: 10.1097/MCP.0b013e3282f45ffb.
11. Martinez, C.H. Miguel, D.J.Mannino, D.M. (2014). Defining COPD-related comorbidities, 2004-2014. J COPD F, 1(1), pp. 51-63. doi: http://dx.doi.org/10.15326/jcopdf.1.1.2014.0119.
12. Barnes, P. (2010). Chronic Obstructive Pulmonary Disease: Effects beyond the Lungs. PLoS Med 7(3): e1000220. doi:10.1371/journal.pmed.1000220
13. Sin, D.D. Man, S.F. (2005). Chronic obstructive pulmonary disease as a risk factor for cardiovascular morbidity and mortality, Proc Am Thorac Soc, 2(1), pp. 8-11. doi: http://dx.doi.org/10.1513/pats.200404-032MS.
14. Mannino, D.M. (2008).Prevalence and outcomes of diabetes, hypertension and cardiovascular disease in COPD. EurRespir J, 32(4),pp.962-969. doi: http://dx.doi.org/10.1183/09031936.00012408.
15. Langen, R.C. et al. (2013).Triggers and mechanisms of skeletal muscle wasting in chronic obstructive pulmonary disease. Int J Biochem Cell Biol, 45(10), pp. 2245-2256. doi: http://dx.doi.org/10.1016/j.biocel.2013.06.015.
16. Donahoe, M.et al. (1989).Oxygen consumption of the respiratory muscles in normal and in malnourished patients with chronic obstructive pulmonary disease. Am Rev Respir Dis, 140(2), pp. 385-391. doi: http://dx.doi.org/10.1164/ajrccm/140.2.385.
17. Li Wei, M.B.et al. (2004). Taking Glucocorticoids by Prescription Is Associated with Subsequent Cardiovascular Disease. Ann Intern Med. 2004, 141(10), pp. 764-770. doi: 10.7326/0003-4819-141-10-200411160-0000721.
18. Perez, T. et al. (2015). Modified Medical Research Council scale vs Baseline Dyspnea Index to evaluate dyspnea in chronic obstructive pulmonary disease. J Chron Obstruct Pulmon Dis. 2015, 10, 1663–1672. doi: 10.2147/COPD.S8240822.
19. Müllerová, H. (2014). Prevalence and Burden of Breathlessness in Patients with Chronic Obstructive Pulmonary Disease Managed in Primary Care. PLoS ONE. 9 (1), e85540. doi:10.1371/journal.pone.008554.
20. Van Remoortel1, H. et al. (2014).Risk Factors and Comorbidities in the Preclinical Stages of Chronic Obstructive Pulmonary Disease. Am J Respir Crit Care Med. 189(1), pp. 30-38. doi: 10.1164/rccm.201307-1240OC.
21. Chen, W. (2015). Risk of cardiovascular comorbidity in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis. Lancet Respir Med. (8), pp.631-9. doi: 10.1016/S2213-2600(15)00241-6.
22. Roever, L. Resende, E.S. (2015). Cardiovascular Comorbidities in COPD Patients. Transl Med. pp.5, 151. doi:10.4172/2161-1025.1000151
23. Jones, P.W. et al. (2013).Comparisons of health status scores with MRC grades in COPD: implications for the GOLD 2011 classification. European Respiratory Journal.42, pp. 647-654. DOI: 10.1183/09031936.00125612
24. Masaki, M. et al. (2014). Analysis of comorbid factors that increase the COPD assessment test scoresRespir Res. 15(1), pp.13. doi: 10.1186/1465-9921-15-13.
25. Leea,S.D. et al.(2014).The COPD assessment test (CAT) assists prediction of COPD exacerbations in high-risk patients. Respiratory Medicine. 108(4), pp. 600–608.
26. Jones,P.W. (2009).Development and first validation of the COPD Assessment Test. Eur Respir J. 34,pp. 648–654.
27. Sarioglua,N. et al. (2016).Is the COPD assessment test (CAT) effective in demonstrating the systemic inflammation and other components in COPD? ErelaRevista Portuguesa de Pneumologia (English Edition). 22(1), pp. 11–17.doi:10.1016/j.rppnen.2015.08.007
28. MacDonald, M. et al.(2016).Cardiac dysfunction during exacerbations of chronic obstructive pulmonary disease. 4(2), pp.138–148.
29. Terzano, C. et al. (2010). Comorbidity, hospitalization, and mortality in COPD: results from a longitudinal study. Lung. 188(4) pp. 321–329.
30. Man,S.F.P. et al.(2006). C-reactive protein and mortality in mild to moderate chronic obstructive pulmonary disease. Thorax. 61 (10), pp. 849–853.
31. Patil, S.P. J.et al. (2003). In-hospital mortality following acute exacerbations of chronic obstructive pulmonary disease. Archives of Internal Medicine. 163 (10). pp. 1180–1186.
32. Wong, A.W.M. et al. (2008). Acute exacerbation of chronic obstructive pulmonary disease: influence of social factors in determining length of hospital stay and readmission rates. Canadian Respiratory Journal. 15 (7) pp. 361–364.
33. Kessler, R. et al.(1999). Predictive factors of hospitalization for acute exacerbation in a series of 64 patients with chronic obstructive pulmonary disease. American Journal of Respiratory and Critical Care Medicine. 159(1), pp. 158–164.

© 2016 Global Journals Inc. (US)

This page is intentionally left blank

© 2016 Global Journals Inc. (US)

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Testosterone and Vitamin D Deficiency as Risk Factors for Hip Fracture Elderly Male Patients: Time for Vitamin D and Testosterone Replacement

By Awad Magbri MD, Gussail MA, Eussera El-Magbri, Smew MA, Mariam El-Magbri, Taha El-Magbri, H. Grimes & J Kelly

George Washington University, United States

Abstract- Twenty eight male patients with non-pathological fracture neck of femur (FNOF), age range 61-89 years, mean age 74.4 years, presented for surgery for fracture neck of femur to Merlin Park Regional Hospital, Galway Ireland and 28 age and sex matched control patients, age range 60-85 years, mean age 72.4 years who were admitted to the medical ward for chest pain were included in the study. Following a formal written consent blood were collected for CBC, CMP, and total and free testosterone levels, LH, Estradilol, total 25OHD and $1,25(OH)_2D$, and PTH levels pre-operatively. Bone mineral density was done within 7 days of the incident fracture on the patients and the control groups. The study is approved by the local IRB.

The results were analyzed using T-test for paired data and Chi-square test for the dichotomous data when applicable. The levels of free and total testosterone (<0.001), LH (<0.001), total protein (<0.001), albumin (<0.001), PTH (<0.001), and free estradilol levels (<0.04) were significantly low in patients with hip fracture compared to controls.

Keywords: osteoporosis, fracture neck of femur, hip fracture, testosterone, bone mineral density, vitamin D, 25(OH)D, 1, 25(OH)$_2$D. secondary hyperparathyroidism.

GJMR-F Classification : NLMC Code: WE 855



Strictly as per the compliance and regulations of:

© 2016. Awad Magbri MD, Gussail MA, Eussera El-Magbri, Smew MA, Mariam El-Magbri, Taha El-Magbri, H. Grimes & J Kelly. 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.

Testosterone and Vitamin D Deficiency as Risk Factors for Hip Fracture Elderly Male Patients: Time for Vitamin D and Testosterone Replacement

Awad Magbri MD [α], Gussail MA [σ], Eussera El-Magbri [ρ], Smew MA [ω], Mariam El-Magbri [¥], Taha El-Magbri [§], H. Grimes [χ] & J Kelly [ν]

Abstract- Twenty eight male patients with non-pathological fracture neck of femur (FNOF), age range 61-89 years, mean age 74.4 years, presented for surgery for fracture neck of femur to Merlin Park Regional Hospital, Galway Ireland and 28 age and sex matched control patients, age range 60-85 years, mean age 72.4 years who were admitted to the medical ward for chest pain were included in the study. Following a formal written consent blood were collected for CBC, CMP, and total and free testosterone levels, LH, Estradilol, total 25OHD and 1,25(OH)$_2$D, and PTH levels pre-operatively. Bone mineral density was done within 7 days of the incident fracture on the patients and the control groups. The study is approved by the local IRB.

The results were analyzed using T-test for paired data and Chi-square test for the dichotomous data when applicable. The levels of free and total testosterone (<0.001), LH (<0.001), total protein (<0.001), albumin (<0.001), PTH (<0.001), and free estradilol levels (<0.04) were significantly low in patients with hip fracture compared to controls. The BMD of the femoral neck in g/cm2 were also significantly lower in the patient compared to controls (P<0.001).

Conclusions: testosterone and vitamin D deficiency are potentially preventable risk factors in elderly male patients with non-pathological hip fracture. Vitamin D deficiency might also be implicated for the rise in PTH levels, secondary hyperparathyroidism and bone mineral disorders. Hormonal treatment may be potential option to prevent osteoporosis and decrease the risk of hip fracture in elderly male patients.

Keywords: osteoporosis, fracture neck of femur, hip fracture, testosterone, bone mineral density, vitamin D, 25(OH)D, 1, 25(OH)$_2$D. secondary hyperparathyroidism.

I. Introduction

Vitamin D and hormonal deficiency are well recognized disorders in elderly women. However, there has been insufficient awareness in the medical profession or the public arena that these disorders are leading secondary causes for osteoporosis in elderly males. Osteoporotic fractures are public health problems and any measures to curtail their frequency will have a great impact on the health delivery and expenditure. Trauma in the form of falls, reduced bone density and impaired bone quality all contribute to fracture risks. The incidence of hip fracture increases sharply after 75 years of age. It is also greater at higher latitude. There is encouraging data from Canada and elsewhere that the age-standard rate decline in hip fracture in both females and males is occurring (1). However, the one year mortality and the need for institutional care after hip fracture are higher in men than women. On the other hand, men are less likely to be investigated and treated for secondary causes of osteoporosis excluding age (2). How common is osteoporosis in men? Has not unfortunately, been answered clearly and sufficiently as the case in women. Even though, the definition of osteoporosis in men is ambiguous (-2.5 T-score below the normal young males), It is estimated that 3-6% of males >50 years of age are osteoporotic, compared to 22% in women (3).

Between 28-60% of fractures in elderly females >80 yrs are attributed to osteoporosis (3, 4). Bone quantity and quality as well as the extent of trauma are important determinants of hip fracture in this age group (5-7).

Androgen deficiency and advanced age have been associated with increased parathyroid hormone (PTH) level (8,9). Reduced levels of 25-hydroxycholecalciferol [25(OH)D] and 1,25-dihydroxycholecalciferol [1,25(OH)2D] (10-13) may have contributed to the frequent occurrence of hip fracture in elderly male patients.

II. Participants and Methods

This study included 28 elderly male patients with fracture neck of femur who were admitted to the orthopedic ward for surgery. The age range of these patients was 61-89 years, mean age 74.4 years. A 28 age and sex matched elderly male patients (age range 60-85 years, mean age 72.4 years) admitted to the medical ward for various medical problems, including chest pain, gastroenteritis, or upper respiratory tract infection were included. Informed consent was obtained from each participant in the study and the study is

Author α σ ρ ω ¥ § χ ν: Departments of Medicine, Orthopedics, Public Health Promotion and Laboratory Medicine, University College Hospital Galway, Ireland. e-mail: elmagbri@hotmail.com

© 2016 Global Journals Inc. (US)

approved by the local IRB. The 2 groups are well balanced as far as age, weight and height, tobacco and alcohol consumption.

The eligibility criteria are age >60 years, participants should have no previous fracture, no use of steroids or vitamin D supplements. Patients had to be ambulatory and have suffered a fracture neck of femur due to minor trauma (fall). All blood samples were taken from the patients within 24 hours to minimize the effect of trauma on the biochemical parameters.

The exclusion criteria include: i) pathological fracture ii)previous fracture or fractures of femurs secondary to trauma other than falls iii) thyroid diseases iv) alcohol abuse v) use of calcium or vitamin D supplements vi) use of thiazide, bisphosphonate, calcitonin or corticosteroids medications for more than 3 months.

Blood was drawn from each participant including the control group for estimations of parathyroid hormone (PTH), vitamin D levels, CBC, complete metabolic panel, luteinizing hormone (LH), testosterone, and estradiol levels. Bone mineral density scan were done within one week from the patients and controls using dual-energy X-ray absorptiometry (DXA). Area bone mineral density (BMD) was used measured using Lunar DPX-L scanner (Lunar Corp., Madison, WI, USA) according to the manufacture specification.

a) Statistical analysis

All statistical analysis was done using the SAS (Statistical analysis systems Inc. NC, USA). P value of 0.05 or less is taken as significant results. Student T-test is used for continuous data and all p value is reported as two-sided. Dichotomous data are analyzed using the chi-square test whenever applicable.

III. Results

Serum vitamin D levels below the reference range were found in 19/28(68%) of patients with hip fracture compared to 3/28(10.7%) in control subjects. Both 25(OH)D 23/28(82%) Vs 4/28(14.3%) and 1, $25(OH)_2$ D levels were significantly lower in patients compared to controls. This may explain the significant higher levels of PTH and evidence of compensatory secondary hyperparathyroidism in patients compared to control subjects. The PTH levels were higher in patients compared to control 16/28(57.1%) vs 2/28(7.1%).

Total protein and albumin levels were significantly lower in patients compared to control subjects. The trauma incurred during fall with fractures could have been contributing factors to low levels of proteins and albumin in patients compared to control subjects.

Calcium, phosphorus, and creatinine levels are similar in the 2 groups.

No significant difference observed between the 2 groups as far as age, height, tobacco habits, and alcohol consumption. However, the BMI was significantly lower in patients compared to control subjects' table-1.

Serum total and free testosterone levels less than the reference value were found in 24/28(85.7%) and 26/28(92.9%) of patients compared to 5/28(17.9%) and 3/28(10.7%) in controls, respectively. As a results of low androgen levels secondary to primary gonad insufficiency the LH is significantly higher in patients compared to controls.

Bone mineral density were lower in patients compared to controls, denoting evidence of osteoporosis probably secondary to testosterone and vitamin D deficiencies in patients compared to controls table-1.

IV. Discussion

Low vitamin D with secondary hyperparathyroidism (SHPT) and decreased radial bone density in elderly men was illustrated in Baltimore Longitudinal Study of aging and others (14,15). In a study involving 133 community based elderly men the inverse relationship between high level of PTH after adjusting for BMI and low level of BMD of multiple femoral sites have supporting the notion that SHPT may contribute to bone loss in elderly men with increased incidence of hip fracture. The high levels of PTH coupled with low levels of 25(OH)D in patients with hip fracture is in agreement with our study (16-18). Even after adjusting for protein binding, the low level s of 25(OH) D in patient s with hip fracture is well demonstrated. These findings are concurring with our results (18). The levels of 1,25(OH)2D showed no difference between the patients and the controls denoting that the activity of 1 α-hydroxylase enzyme is sensitive to PTH levels even in elderly men (19). The normal levels of 1,25(OH)D in patients with hip fracture may explain the low incidence of osteomalacia in cases of hip fracture (20,21). Moreover, the increased activity of 1α-hydroxylase brings about normalization of 1,25(OH)D at the expense of low levels of 25(OH)D3. This effect is mediated by high levels of PTH.

The androgen deficiencies in hip fracture patients along with high levels of LH are consistent with primary gonadal failure (22). Androgens are indeed essential for the maintenance of bone mass; especially if we believe that hypogonadism in adult men is associated with osteopenia (23-25). There have been reports that treatment with testosterone in hypogonadal adults could result in high BMD with reversal of bone loss (26,27). Androgen and vitamin D deficiencies in elderly men with hip fracture have additive but not synergistic effect.

This study and others have shed light on how common androgen and vitamin D deficiencies in elderly male patients with osteoporotic hip fractures. This study

© 2016 Global Journals Inc. (US)

also showed that (68% and 92.9%) of elderly male patients with hip fracture had vitamin D and testosterone deficiencies, respectively, while 57.1% had increased levels of PTH as a compensatory SHPT from low 25(OH)D levels. These staggering numbers call for further studies to evaluate the importance of vitamin D and testosterone supplementation to prevent osteoporotic hip fractures in this section of population.

The limitation of this study is that markers of bone resorption were not done. The small sample size and effects of other cofounders like trauma on the levels of protein, albumin, and testosterone in these patients could not be entirely dismissed. A cross-sectional study like this can not suggest cause and effect relationships between androgen and vitamin D and bone resorption. Our study also was not design to study the effects of hormone replacement therapy on the quality and quantities of underlying bone fracture.

V. Conclusion

Testosterone and vitamin D deficiency are potentially preventable risk factors in elderly male patients with non-pathological hip fracture. Vitamin D deficiency might also be implicated for the rise in PTH levels, secondary hyperparathyroidism and bone mineral disorders. Hormonal treatment may be potential option to prevent osteoporosis and decrease the risk of hip fracture in elderly male patients.

Table-1 : Clinical and biochemical data for fracture neck of femur patients and controls.

	Controls (n = 28)		Patients (n = 28)		(p value)
	Mean	SD	Mean	SD	
Age (years)	74.4	4.3	72.4	4.7	0.12
BMI (kg/m2)	27.3	2.8	24.9	5.1	0.005
Phosphorus (mg/dl)	3.1	0.6	3.0	0.7	0.87
Calcium (mg/dl)	9.5	0.4	9.3	0.5	0.10
Total Protein (g/dl)	7.3	0.3	6.2	0.2	0.001
Albumin (g/dl)	4.3	0.4	3.5	0.3	0.001
Creatinine (mg/dl)	1.05	0.14	1.08	0.18	0.18
Total 25(OH)D (ng/ml)	18.9	7.3	11.2	8.5	<0.001
Total 1,25$(OH)_2$D pg/ml)	47.9	8.9	35.6	14.9	<0.001
PTH (pg/ml)	15.3	7.2	44.5	26.8	<0.001
LH μIU/ml)	7.0	4.6	13.8	8.7	<0.001
Total testosterone (ng/dl)	435.8	178.4	169.3	81.3	<0.001
Total estradiol (pg/ml)	25.7	6.4	23.2	14.6	0.21
Free testosterone index	8.3	2.8	3.2	1.3	<0.001
Free estradiol index	1.6	0.3	1.2	0.7	0.04
Femoral neck BMD (g/cm2)	0.952	0.128	0.615	0.103	<0.001

References Références Referencias

1. Leslie WD, O'Donnell S, Jean S, et al. Trends in hip fracture rates in Canada. JAMA 2009; 302: 883-889.
2. Papaioannou A, Kennedy CC, Loannidis G et al. The osteoporosis care gap in men with fragility fracture: The Canadian Multicenter Osteoporosis Study. Osteoporosis Int 2008; 19: 581-587.
3. Schuit SC, van der Klift M, Weel AE, et al. Fracture incidence and association with bone mineral density in elderly men and women: The Rotterdam Study. Bone 2004; 34: 195-202.
4. Stone KL, Seeley DG, Lui LY, et al. BMD at multiple sites and risk of fracture of multiple types: Long-term results from the study of Osteoporotic fractures. J Bone Miner Res 2003; 18: 1947-1954.
5. Zebaze RMD, Ghasem-Zadel A, Bohte A, et al. Intracortical remodeling and porosity in the distal radius and postmortem femurs of women: A cross-sectional study. Lancet 2010; 375(9727): 1729-1736.
6. Khosla S, Riggs BL, Atkinson EJ, et al. Effects of sex and age on bone micro-structure at the ultra-distal radius: A population-based non-invasive in vitro assessment. J Bone Miner Res 2005; 21: 124-131.
7. Orwoll E, Marshall LM, Nielson CM, et al. Finite element analysis of the proximal femur and hip fracture risk in older men. J Bone Miner Res 2008; 24: 475-483.
8. Young G, Marcus R, Mioff JR, Kim LY, Sergre GV. Age-related rise in parathyroid hormone in man: The use of intact and mid-molecule antisera to distinguish hormone secretion from retention. J Bone Miner Res 1987; 2: 367-374.
9. Endres DB, Morgan CH, Garry PJ, et al. Age – related changes in serum immunoreactive parathyroid hormone and its biological action in healthy men and women. J Clin Endocrinol Metab 1087; 65: 724-731.
10. Orwoll ES, Meier DE. Alteration in calcium, vitamin D, and pathyroid hormone physiology in normal men with ageing: Relationship to the development of senile osteopenia. J Clin Endocrinol 1986; 63: 1262-1269.
11. Epstein S, Bryce G, Hinman JW, et al. The influence of age on bone mineral regulating hormones. Bone 1986; 7: 421-425.

© 2016 Global Journals Inc. (US)

12. Halloran BP, Portale AA, Lonergan ET, et al. Production and metabolic clearance of 1,25-dihydroxyvitamin D in men: Effect of advancing age .J Clin Endocrinol 1990; 70: 318-323.
13. Chapuy M, Arlot M, Duboeuf F, et al. Vitamin D3 and calcium to prevent hip fractures in elderly women. N Engl J Med 1992; 327: 1637-1642.
14. Riggs BL, Melton LJ. Involutional osteoporosis. N Engl J Med 1986; 314: 1676-1686.
15. Sherman SS, Tobin JD, Hollis BW, et al. Biochemical parameters associated with low bone density in healthy men and women. 1992; 7: 1123-1130.
16. Pun K, Wong F, Wang C, et al. Vitamin D status among patients with fractured neck of femur in Hong-Kong. Bone 1990; 11: 365-368.
17. MacDonald D, Lan E, Chan E, et al. Serum intact parathyroid hormone level in elderly Chinese females with hip fracture. Calcif Tissue Int 1992; 51: 412-414.
18. Benhamou C, Tourliere D, Gauvain J, et al. Calciotopic hormones in elderly people with and without hip fracture. Osteoporos Int 1995; 5: 103-107.
19. Bouillon R, Auwerx J, Lissens W, et al. Vitamin D status in the elderly: Seasonal substrate deficiency causes 1,25-dihydroxycholecalciferol deficiency. Am J Clin Nutr 1987; 45: 755-763.
20. Lips P, Netelenbos J, Jongen M, et al. Histomorphometric profile and vitamin D status in patients with femoral neck fracture. Metab Bone Dis Rel Res 1982; 4: 85-93.
21. Compston J, Vedi S, Croucher P. Low prevalence of osteomalacia in elderly patients with hip fracture. Age Ageing 1991; 20: 132-134
22. Selby C, Sex hormone binding globulin: origin, function and clinical significance. Am Clin Biochem 1990; 27: 532-541.
23. Orwoll ES, Klein RF. Osteoporosis in men. Endocr Rev 1995; 16: 87-116.
24. Finkelstein JS, Klibanski A, Neer RM, et al. Osteoporosis in men with idiopathic hypogonadotrophic hypogonadism. Ann Intern Med 1987; 106: 354-361.
25. Greenspan SL, Oppenheim DS, Klibanski A. Importance of gonadal steroids to bone mass in men with hyperprolactinemic hypogonadism. Ann Intern med 1989; 110: 526-531.
26. Isaia G, Mussetta M, Pecchio, et al. Effects of testosterone on bone in hypogonadal males. Maturitas 1992; 15: 47-51.
27. Devogelaer J, De Cooman S, Nagant De Deuxchaisnes C. Low bone mass in hypogonadal males: Effect of testosterone substitution therapy: A densitometric study. Maturitas 1992; 15: 17-23.

© 2016 Global Journals Inc. (US)

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

The Prevalence of Hearing Loss in Chronic Kidney Disease Bangladeshi Patients Undergoing Dialysis

By Rezwanur Rahman & Nayareen Akhtar
Delta Medical College

Abstract- Objectives: End stage renal failure patients, face multiple complications. One of them is the involvement of auditory system. The aim of this study was to determine the prevalence and degree of hearing loss in CKD patients on haemodialysis.

Methods and Results: This cross sectional study was conducted from July 2014 to June 2015. The subjects consist of 50 CKD patients on haemodialysis. The patients were from a tertiary care teaching hospital. The baseline characteristics and risk factors such as age, sex, exposure to ototoxic drugs, diabetes, hypertension, renal functions, electrolytes and duration of dialysis were recorded for all patients. The patients were evaluated for their hearing function using pure tone audiometry. Association of CKD patients with haemodialysis for hearing loss was compared with duration of dialysis. The prevalence of hearing loss in CKD patients on dialysis was found to be 42%. Prevalence of hearing loss based on duration of dialysis is 52.4% in patient who got HD < 1 month, 23.8. % who got HD for 1-6 months and 23.8% in >6 months group.

Conclusion: Mild sensorineural hearing loss was seen to be relatively prevalent in patients with CKD on haemodialysis. Hearing loss was seen to be inversely associated with duration of dialysis.

Keywords: CKD, hearing loss, haemodialysis.

GJMR-F Classification : NLMC Code: WJ 300



Strictly as per the compliance and regulations of:

© 2016. Rezwanur Rahman & Nayareen Akhtar. 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.

The Prevalence of Hearing Loss in Chronic Kidney Disease Bangladeshi Patients Undergoing Dialysis

Rezwanur Rahman [α] & Nayareen Akhtar [σ]

Abstract- ***Objectives:*** End stage renal failure patients, face multiple complications. One of them is the involvement of auditory system. The aim of this study was to determine the prevalence and degree of hearing loss in CKD patients on haemodialysis.

Methods and Results: This cross sectional study was conducted from July 2014 to June2015.The subjects consist of 50 CKD patients on haemodialysis. The patients were from a tertiary care teaching hospital. The baseline characteristics and risk factors such as age, sex, exposure to ototoxic drugs, diabetes, hypertension, renal functions, electrolytes and duration of dialysis were recorded for all patients. The patients were evaluated for their hearing function using pure tone audiometry. Association of CKD patients with haemodialysis for hearing loss was compared with duration of dialysis. The prevalence of hearing loss in CKD patients on dialysis was found to be 42%. Prevalence of hearing loss based on duration of dialysis is 52.4% in patient who got HD < 1 month, 23.8. % who got HD for 1-6 months and 23.8% in >6 months group.

Conclusion: Mild sensorineural hearing loss was seen to be relatively prevalent in patients with CKD on haemodialysis. Hearing loss was seen to be inversely associated with duration of dialysis.

Keywords: CKD, hearing loss, haemodialysis.

I. Introduction

The kidney and the Cochlea are closely linked together. Antigenic similarity between basement membranes of glomeruli and stria vascularis of the inner ear may explain this association to some extent.[1]It has been suggested that common physiologic mechanisms involving fluid and electrolyte shifts in stria vuscularis of cochlea and glomerulus might explain the association between hearing loss and CKD.[2] The aetiopathogenetic mechanisms reported included osmotic alteration resulting in loss of hair cells, collapse of the endolymphatic space, oedema and atrophy of specialized auditory cells in some, complications of haemodialysis have been hypothesized.[3] The prevalence of end-stage renal disease is increasing worldwide. Several small studies have indicated an increased prevalence of high-frequency hearing loss in patients with CKD or those with end-stage kidney disease who are on dialysis Therapy. [4, 5, 6]As the disease progresses, hemodialysis and renal transplants are almost always required, both of which induce electrolytic, osmotic and immunological alterations at the inner ear level, resulting in tinnitus, vertigo and hearing loss.[7]Effect of duration of dialysis and type of dialysate used, on hearing impairment is still under debate. Sensorineural hearing impairment following single session of dialysis has been reported .[8]

II. Methods

This was a cross sectional study conducted in Department of Nephrology, Bangabandhu Sheikh Mujib Medical University, Dhaka. The participants comprised of 50 hemodialysis CKD patients. Subjects with audiometric evidence of conductive hearing loss & past medical or surgical treatment of otologic conditions were excluded from the study. Detailed general and systemic examinations as age, gender, and risk factors, such as diabetes, hypertension, and history of ototoxic drug use were assessed. Blood parameters haemoglobin, serum creatinine, calcium & phosphate were also obtained. A prescribed data collection sheet was used for this purpose. Duration of haemodialysis was documented. All CKD patients were evaluated for their hearing function using standard pure tone audiometry. Prevalence and degree of hearing loss was determined in CKD patients undergoing haemodialysis. Sensorineural hearing impairment were also compared with regard to duration of haemodialysis. Written informed consent was obtained from CKD patients. Permission was taken from the departments concerned for this study. The study was conducted after due ethical approval which was subjected to the hospital administrations.

Author α: Department of Nephrology, Bangladesh Medical College & Hospital. e-mail: dr_rezwan07@yahoo.com
Author σ: Department of Microbiology, Delta Medical College. e-mail: nayareen07@gmail.com

© 2016 Global Journals Inc. (US)

III. Results

Case group consist of 50 CKD patients undergoing haemodialysis. Data obtained are summarized in Table 1

Table I : Different baseline clinical characters of patients with chronic kidney disease

Baseline characteristics	CKD group (n=50)
Age,y Mean± SD	39.4±12.5
Sex(male/female)	30/20
Diabetes mellitus	16
Hypertension	34
Duration of CKD (in Months) Mean± SD	18.7±17.1
BMI (kg/m^2) Mean± SD	19.6±3.83
Systolic BP(mm Hg) Mean± SD	149±18
Diastolic BP(mm Hg) Mean± SD	85.3±7.6
Hb % (gm/dl) Mean± SD	8.5±1.75
Serum creatinine(mg/dl) Mean± SD	6.1±3.8
Serum Calcium (mmol/l) Mean± SD	1.72±0.12
Serum Phosphate (mmol/l) Mean± SD	1.93±0.2

Fig 1 shows total 50 patients were on haemodialysis. Among them 21 pateints (42%) showed evidence of sensorineural hearing loss and 29 patients (58%) had normal hearing function.

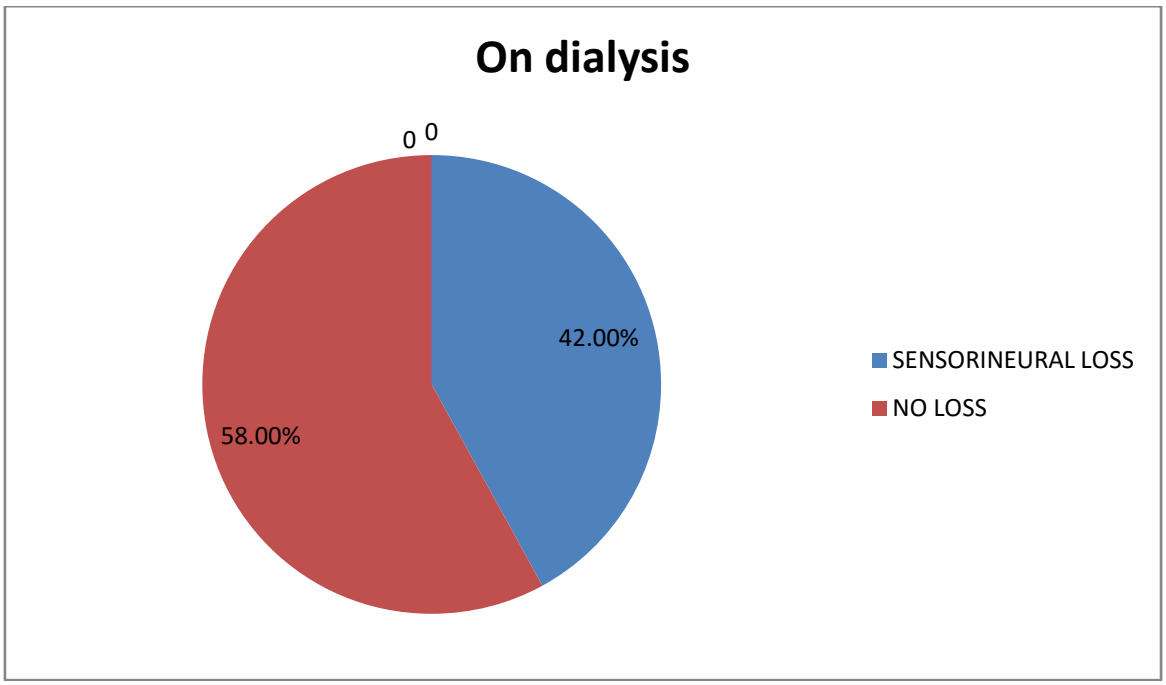


Figure 1 : Prevalence of hearing loss in patient undergoing dialysis (n=50)

Figure 2 shows prevalence of hearing loss based on duration of dialysis. Total 21 patients on haemodialysis had sensorineural hearing loss. Among those 11 patients (52%) were getting dialysis for less than 1 month, 5 (24%) patients were getting dialysis for 1-6 months and another 5 (24%) patients were getting dialysis for more than 6 months.

© 2016 Global Journals Inc. (US)

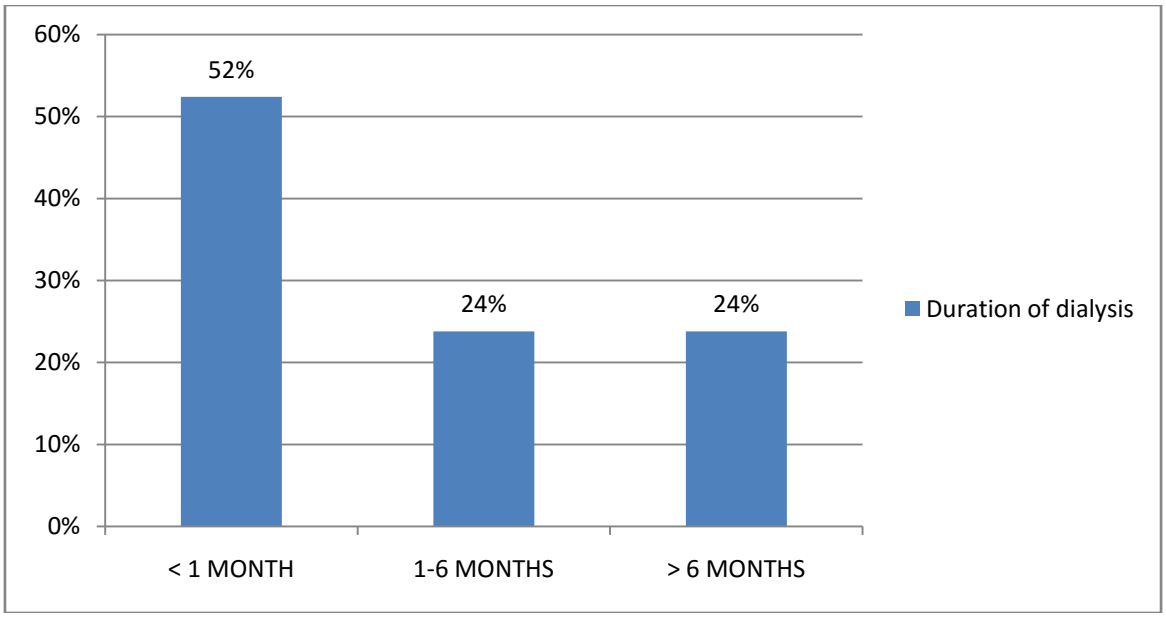


Figure 2 : Prevalence of hearing loss based on duration of dialysis (n=21)

IV. Discussion

This study was conducted to evaluate the prevalence of hearing loss in patients undergoing haemodialysis.

Many similarities, anatomical, physiological, pharmacological and pathological, exist between the nephron and the stria vascularis of the cochlea, and hearing loss has been reported in patients with renal failure.[9,10,11]The fact that the cochlea is susceptible to a wide variety of metabolic, hydroelectrolytic and hormonal imbalances is already widely known and these imbalances are systemic alterations usually found in patients who have compromised renal function. Therefore, it is expected that subjects with CRF develop cochlear dysfunction, clinically manifested by sensorineural hearing loss.[12, 13,14,15]

This study found that 42 per cent of CKD patients on haemodialysis had hearing loss. Our study result almost matches with Jishana et al. (2015).[16] Effects of both a single session of hemodialysis[17] and long-term hemodialysis [18] therapy have been studied in several small studies. Bazzi et al. (1995) performed an audiometric evaluation of 91 patients on hemodialysis therapy and found a very high prevalence (77%) of slight to moderate sensorineural hearing loss. Ozturan and Lam (1998) found a moderate to severe hearing loss in 46% of the tested patients.[19] Result of prevalence of hearing loss in dialysis patient in our study is more consistent with Ozturan and Lam (1998).[19]Bergstrom suggested that before the advent of haemodialysis and renal transplantation uraemic patients had no higher incidence of hearing loss than the general population.[10] A possible explanation of this statistic may be that the demise of the patient occurred before they developed a hearing loss. Mathog and Johnson described fluctuation of hearing in patients undergoing haemodialysis.[20] Impairment of hearing with haemodialysis has been reported by Rizvil and Mitschke.[21, 22]

We found that hearing loss is more prevalent in patients who are getting haemodialysis for < 1 months (52%) compared to those who are getting haemodialysis between 1-6 months (24%) and > 6months (24%).

Our finding that hearing loss is more prevalent in patients who are getting haemodialysis for < 1 months (52%) is interesting as it suggests a possible beneficial association between increasing number of dialysis sessions and hearing loss. Gartland et al.(1991) recorded pure tone thresholds on 31 patients before and after a session of haemodialysis and documented a low frequency hearing loss, which improved significantly on one-third of the patients after dialysis.[23]

V. Conclusion

Sensorineural hearing loss was seen to develop in CKD patients undergoing haemodialysis. However, there may be an ameliorative effect of haemodialysis on hearing loss in CKD, an association that needs to be tested further. So, we recommend closely monitoring of hearing levels in dialysis patients.

Hemodialysis may have an important role in occurrence of hearing loss in CRF.

References Références Referencias

1. Cosgrove D, Samuelson G, Meehan DT, Miller C, McGee J, Walsh EJ. et al. Ultrastructural, physiological, and molecular defects in the inner ear of a gene-knockout mouse model for autosomal Alport syndrome. Hear Res. 1998 Jul; 121, (1-2): 84–98.

© 2016 Global Journals Inc. (US)

2. Thodi Chryssoula, Elias Thodis, Vassilis Danielides, Ploumis Pasadakis and Vassilis Vargemezis., Hearing in renal failure. *Nephrol Dial Transplant.* 2006; 21: 3023-3030.
3. Stavroulaki P, Nikolopoulos TP, Psarommatis I, Apostolopoulos N., Hearing evaluation with distortionproduct otoacoustic emissions in young patients undergoing haemodialysis. *Clin Otolaryngol Allied Sci*. 2001; 26: 235-42.
4. Jakic M, Mihaljevic D, Zibar L, Jakic M, Kotromanovic Z, Roguljic H. Sensorineural hearing loss in hemodialysis patients. *Coll Antropol*. 2010 Mar; 34(1): 165–71.
5. Vilayur E, Gopinath B, Harris DC, Burlutsky G, McMahon CM, Mitchell P. The association between reduced GFR and hearing loss: a cross-sectional population-based study. *Am J Kidney Dis*. 2010 Oct; 56(4): 661–9.
6. Zeigelboim BS, Mangabeira-Albernaz PL, Fukuda Y.High frequency audiometry and chronic renal failure. *Acta Otolaryngol*.2001; 121:. 245-8.
7. Samir M, Riad H, Mahgoub M, Awad Z, Kamal N. Transient otoacoustic emissions in children with chronic renal failure. *Clin Otolaryngol Allied Sci*. 1998 Feb; 23(1): 87–90.
8. Lasisi OA, Salako BL, Kadiri S, Arije A, Oko- Jaja R, Ipadeola A and Olatoke F., 2006. Sudden sensorineural hearing loss and hemodialysis. *Journal of Ear, Nose and Throat*. 2006; 85: 819-821.
9. Quick CA, Fish A, Brown C. The relationship between cochlea and kidney. *Laryngoscope* 1973; 83: 1469-82
10. Bergstrom L, Jenkins P, Sando I, English GM. Hearing loss in renaldisease: Clinical and pathological studies. *Ann Otol* 1973; 82: 555-76 3
11. Adler D, Ritz E. Terminal renal failure and hearing loss. *Arch Otorhinolaryngol* 1982; 235: 587-90
12. Tyler HR, Tyler KL: Neurologic complications. In: Eknoyan G, Knochel JP, (eds.), The systemic consequences of renal failure. Orlando: Grune and Stratton. 1984; pp. 311-330,.
13. Bazzi C, Venturini CT, Pagani C, Arrigo G, Damico G: Hearing loss in short and long-term haemodialysed patients. *Nephrol Dial Transplant*. 1995; 10: 1865-68.
14. Quick CA: Hearing loss in patients with dialysis and renal transplants. *Ann Otol* .1976; 85: 776-90.
15. Gatland D, Tucker B, Chalstrey S, Keene M, Baker L: Hearing loss in chronic renal failure: hearing threshold 296 changes following haemodialysis. *J R Soc Med*. 1991; 84(I 0): 587- 9,.
16. Jishana Jamaldeen, Aneesh Basheer,Akhil Chandra Sarma, Ravichandran Kandasamy revalence and patterns of hearing loss among chronic kidney disease patients undergoing haemodialysis Australas Med J. 2015; 8(2): 41–46.
17. Serbetcioglu MB, Erdogan S, Sifil A. Effects of a single session of hemodialysis on hearing abilities. *Acta Otolaryngol*.., 2001, 121(7):. 836-838.
18. Pagani C, B. C. A. G. V. C. D. G.,. Evoked potentials (VEPs and BAEPs) in a large cohort of short- and long-term haemodialysed patients. *Nephrol Dial Transplant.* 1993;. 8(10): 1124-1128.
19. Ozturan O, L. S., The effect of haemodialysis on hearing using pure tone audiometry and distortion product otoacoustic emissions. *ORL J Otorhinolaryngol Relat spec*. 1998; 60: 306-13.
20. Johnson DW, Wathen RL, Mathog RH. Effect of haemodialysis on hearing threshold. ORL 1976; 38: 129-39
21. Rizvi SS, Holmes RA. Hearing lossfrom haemodialysis. Arch tolaryngol 1980; 106: 751-6
22. Mitschke H, Schmidt P, Zazgorlik J, Kopsa H, Pils P. Effect of renal transplantation on uraemic deafness; a long-term study. Audiology 1977; 16: 530-4
23. Gartland D, Tucker B, Chalstrey S, Keene M, Baker L., Hearing loss in chronic renal failure – hearing threshold changes following hemodialysis. *J Roy Soc Med*. 1991; 84: 587–589.

© 2016 Global Journals Inc. (US)

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Medico Social Study of Aged Persons: A Case Study from Serampore City

By Partha Talukdar
Serampore College

Abstract- Ageing is a biological process, experienced by mankind. Ageing is a dynamic process, determined by the relative size of the younger and older. However, concern for Ageing of population is a relatively new phenomenon, which has raised due to significantly large increase in the number and proportion of aged persons in the society. The phenomenon of population Ageing is becoming a major concern for the policy makers all over the world during the last two decades. Ageing of population is affected due to downward trends in fertility and mortality i.e. due to low birth rates with long life expectancies. Life expectancy at birth is projected to continue to rise in the coming years all over the world. The aged population has specific health problems that are basically different from those of adults or young persons. Most diseases in the aged are chronic in nature-cardiovascular, arthritis, stroke, cataract, deafness, chronic infections, cancer. Disease process is usually multiple. Availability and utilization of health services is an important determinant of the health status of population. The needs for health services tend to vary directly with the age of the individuals. The older the one gets, the more health care he needs. Although the aged people face multiple health problems, even then, they do not consider seeking medical aid and as a result, many conditions remain unreported and untreated till they become complicated.

Keywords: *morbidity, elderly population, ageing, physical disabilities.*

GJMR-F Classification : *NLMC Code: W 322*



Strictly as per the compliance and regulations of:

© 2016. Partha Talukdar. 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.

Medico Social Study of Aged Persons: A Case Study from Serampore City

Partha Talukdar

Abstract- Ageing is a biological process, experienced by mankind. Ageing is a dynamic process, determined by the relative size of the younger and older. However, concern for Ageing of population is a relatively new phenomenon, which has raised due to significantly large increase in the number and proportion of aged persons in the society. The phenomenon of population Ageing is becoming a major concern for the policy makers all over the world during the last two decades. Ageing of population is affected due to downward trends in fertility and mortality i.e. due to low birth rates with long life expectancies. Life expectancy at birth is projected to continue to rise in the coming years all over the world. The aged population has specific health problems that are basically different from those of adults or young persons. Most diseases in the aged are chronic in nature-cardiovascular, arthritis, stroke, cataract, deafness, chronic infections, cancer. Disease process is usually multiple. Availability and utilization of health services is an important determinant of the health status of population. The needs for health services tend to vary directly with the age of the individuals. The older the one gets, the more health care he needs. Although the aged people face multiple health problems, even then, they do not consider seeking medical aid and as a result, many conditions remain unreported and untreated till they become complicated. This emphasizes the need for strengthening of health care system for elderly population. According to Paul Wallace, all individuals should be prepared to face later years in life within their own limitation gloriously.

Keywords: morbidity, elderly population, ageing, physical disabilities.

I. Introduction

It is difficult to define the onset of old age. Biologically, Ageing begins as early as puberty and is a continuous process throughout adult life. Socially, the characteristics of members of society who are perceived as being old vary with the cultural settings and from generation to generation. Economically, the elderly are sometimes defined in terms of retirement from the work force. Chronologically, age has long been used as an indicator of expected residual life span. Recent changes in mortality rate have changed the predictive significance of chronological age and refined health care has shifted the emphasis from prolonging life expectancy to increasing the expectancy free of disability.

Author: Assistant Professor, Department of Botany, Serampore College, West Bengal, India.
e-mail: parthat.bot@seramporecollege.org

Ageing is generally defined as a process of deterioration in the functional capacity of an individual that results from structural changes, with advancement of age. High fertility and declining mortality are the major factors responsible for population increase in most countries of the world, especially the developing ones. Longevity has increased significantly in the last few decades mainly due to the socio-economic and health care developments. These factors are responsible for higher numerical presence of elderly people leading to higher dependency ratio. Demographers, researchers and responsible citizens have started to think about the aged population and its problems because of the demographic transition in many countries of the third world now taking place in a much shorter period of time. Ageing of the population will be one of the major challenges of the near future.

In USA,UK and other western countries, the attainment of the age of 65 years has been considered for the purpose of classifying aged persons, whereas in India, it is from 60 years (Vijaykumar S et al,1999).The elderly sub-population referred to as the "young old" (60-74),the "old" (75-84),and the "old-old" (above 85) (Swash Michael,1995).

II. Material and Methods

Serampore is an important city of Hooghly district, state of West Bengal, India. At the time of 2011 census, the population within the Municipal area of Serampore was 181,842. Study was conducted in randomly selected 32 areas distributed in Serampore city including Urban and Slum areas. List of zones and wards including Slum and Urban areas were obtained from Municipality of Serampore. From eight zones of Serampore city by simple random technique, four zones were selected. Out of the four zones, four wards were selected by simple random technique. From each ward, one slum area and one urban area were included in the study using simple random technique. A total of 32 areas were included in this study. Door to door survey was conducted. From each area, 20 elderly were included in study.

Sampling method: Multi stage simple random sampling technique.

Sample size: 640

Sample size was calculated by using statistical formula, n= Z2 l-a/2 P (l-P)/d

© 2016 Global Journals Inc. (US)

P = Morbidity Problems (50%), d= Absolute Precision (4%), Confidence level= 95%

As there was no baseline study in Serampore, Chhattisgarh, therefore it was not possible to estimate 'P', so a figure of 0.5(50%) was used. This is the 'safest' choice for the population proportion, since the sample size required is largest when P = 0.5(50%) [128].

A total of 600 figures come using statistical formula. For making uniformity, 20 subjects from each of 32 areas were selected that comes 640. Therefore, a total 640 subjects were included in the study.

III. Objectives of the Study

1) To study morbidity pattern in elderly population of Serampore city.
2) To determine the pattern of morbidity in elderly population of Serampore city.
3) To study the health-care seeking behaviour of elderly population.
4) To make suitable recommendations on the basis of the study.

IV. Observations and Discussion

Descriptive cross-sectional observational study was undertaken among the elderly population in Serampore city during the period July 2015 to June 2016.Information was collected from 640 elderly persons. The findings of the present study is an attempt to explore the morbidity pattern and health-care seeking behaviour among elderly population.

The findings of the study are discussed under following headings:

(A) Socio-demographic characteristics.
(B) Physical activity and substance abuse.
(C) Morbidity Profile.
(D) Health-care seeking behaviour.

Table – 1 : Age and sex wise distribution of morbidity in elderly population

Age groups (years)	Male			Female			Total		
	No examined	Morbid	%	No Examined	Morbid	%	No examined	Morbid	%
60-74	200	176	88	323	319	98.76	523	495	94.64
75-84	67	65	97.01	47	47	100	114	112	98.24
>85	0	0	0	3	3	100	3	3	100
Total	267	241	90.26	373	369	98.92	640	610	95.31

Chi-Square = 21.282 (df = 2, p < 0.0001)

Above table-1 shows, out of total study population (640 elderly) prevalence of morbidity was 95.31% (610). Prevalence among females was 98.92%, whereas among males was 90.26%. Morbidity was statistically positively associated with advancement of age. Among females, 98.76% in young old, 100% in both old and very old age group were morbid; whereas in males, 88% young old, and 97.01% of old were morbid. There was no one in very old age group in male elderly population. Present study shows that prevalence of morbidity was more in females than males. In all age groups, prevalence of morbidity among females was more in comparison to males. A community based study from rural area of West Bengal observed that almost all the elderly (96.95% males and 98.15% females) were suffering from one or more diseases at the time of study. The difference was small and statistically not significant (z=0.54, P>0.05). All elderly aged 70 years and above were found to be diseased. Only five elderly (2.45%) were well at the time of study in the age group of 60-69 years. All elderly in more than 80 years age group were suffering from some disease.

Table-2 : Distribution of morbidity according to system of involvement

System of involvement	Male (n= 241)		Female (n= =369)		Total n=610)	
	No	%	No	%	No	%
GIS	211	87.55	293	79.40	504	82.62
Eye	192	79.66	295	79.94	487	79.83
CVS	113	46.88	207	56.09	320	52.45
Locomotor	71	29.46	174	47.15	245	40.16
Ear	83	13.60	128	34.68	211	34.59
Metabolic and Endocrine system	57	23.65	111	30.08	168	27.54

© 2016 Global Journals Inc. (US)

Respiratory system	32	13.27	70	18.97	102	16.72
Nervous system	35	14.52	38	10.29	73	11.96
Skin& subcutaneous tissue	18	7.46	28	7.58	46	7.54
Genito urinary system	29	12.03	16	4.33	45	7.37
Others	5	2.07	12	3.25	20	3.27
Total	852	-	1398	-	2250	-

Note : Multiple system involvement was observed in many subjects.

Above Table-2 shows, out of total morbid subjects (n=610), many elderly had multiple system involvement and many had more than one disease in a particular system. Most common system involvement were Gastro intestinal system (GIS) (82.62%), Eye (79.83%), Cardiovascular system (52.45%), Locomotor system (40.16%), Ear 34.59%), Metabolic & Endocrine system (27.54%), Respiratory system (16.72%), Nervous system (11.96%). Skin & Subcutaneous tissue involvement in (7.54%), Genito urinary system (7.37%), and others (3.27%).Others included Anaemia, Enteric fever, Malaria, Generalized weakness. In most of the systems, prevalence of morbidity was more in female elderly than male elderly, except Gastro-intestinal system, Nervous system, and Genito-urinary system, where prevalence was more in males than in females. P Ray et al (2013) reported that 67.2% elderly had GIS disorder, followed by involvement of eye, cardiovascular and musculoskeletal system in 49.5%, 46.1% and 29.9% elderly respectively. Respiratory system was also involved in 29.2% study population. In 15.7% elderly there was Skin and subcutaneous tissue disease. Genito-urinary system, nervous system and ENT problem was seen in 9.8%, 5.4% and 4.9%o study population. In 24% elderly, there were other diseases. Shradha K et al (2012) studied that most common disorder reported among elderly was eye diseases (51.7%) followed by endocrine, nutritional and metabolic diseases (38.4%), diseases of circulatory system (33.1%), disorders of oral cavity (32.3%), musculoskeletal disorders (30.2%) and diseases of respiratory and digestive system was reported about 10% by the geriatric people. Rahul Prakash et al (2004) in a study in urban area of Udaipur, Rajasthan India observed that major health problem as per diagnostic group was Eye problem (70%), Hypertension (48%), Psycho-social problems (42%), Respiratory problems (36%), and rest others were Musculoskeletal disorders in 14.6%, Nervous system disorders 8.6% .

Table-3 : Distribution of diseases of gastrointestinal system including oral cavity

Diseases	Male (n=241)	%	Female (n=369)	%	Total (n=610)	%
Haemorrhoids	3	1.24%	3	0.81%	6	0.98%
Acute hepatitis	1	0.41%	0	0	1	0.16%
Inguinal hernia	3	1.24%	0	0	3	0.49%
Constipation	12	4.97%	19	5.14%	31	5.08%
Acut Gastro Entritis	0	0	7	1.89%	7	1.14%
Peptic Ulcer Disease	4	1.65%	10	2.71%	14	2.29%
Gingivitis	2	0.82%	2	0.54%	4	0.65%
Hydrocele	2	0.82%	0	0	2	0.32%
Attrition of tooth	158	65.56%	173	46.88%	331	54.26%
Enteric Fever	0	0	1	0.27%	1	0.16%
Partial Edentulous	44	18.25%	94	25.74%	138	22.62%
GERD	7	2.90%	2	0.54%	9	1.47%
Carries tooth	0	0	3	0.81%	3	0.49%
Submocosal fibrosis	1	0.41%	0	0	1	0.16%
Apthous ulcer	3	1.24%	1	0.27%	4	0.65%
Others (Macroglossia)	0	0	2	0.54%	2	0.32%
Total	240		317		557	

Note: Multiple illnesses were observed in many subjects.

© 2016 Global Journals Inc. (US)

Above table-3 shows, out of all 610 morbid elderly, 82.62% had morbidity related with Gastro intestinal system. Prevalence among the elderly males was 87.55% whereas in females, 79.40%. Of all the illnesses related to Gastro intestinal system and oral cavity, majority had Attrition of tooth (54.26%), Partial edentulous (22.62%), Constipation (5.08%), Peptic Ulcer disease (2.29%), Gastro oesophageal reflux disease (1.14%), Acute gastro enteritis (1.14%). Most of the illnesses were prevalent among females than males except, Haemorrhoids and Gastro oesophageal reflux disease (GERD), which was prevalent among males.

This is comparable to P Roy et al (2012) who reported 67.2% of gastrointestinal disorder in rural area of West Bengal .In another study done by Shradha K et al (2012) ,prevalence was less, reported 10.8% only;in females 11.3% whereas in males 10.1%. Aggrawal Anupam (1992) reported only 44.28% in their study.Another study done by Kulkarni and Niyogi (1974) reported 35.6% in a study at Baroda. Shradha K et al (2012) reported commonest disease was Gastritis (2.9%), Constipation (4.4%), and others.P Ray Karmakar et al (2012) reported Periodontal disease was most common followed by Dental caries , Constipation, Glossitis and others.Purohit and Sharma (1976) observed a much higher prevalence of Periodontitis (38.23%) and Raj and Prasad (1970) reported Dental caries in 7.90% of the elderly. Raj (1971) observed stomatitis in 4.0% elderly people.

Table-4 : Distribution of diseases of cardio vascular system

Diseases	Male (n=241)	%	Female (n=369)	%	Total (610)	%
Hypertension	113	46.88	207	56.09	320	52.45
Acute Myocardial Infarction	0		1	0.27	1	0.16
Congestive Cardiac Failure	2	0.82	3	0.81	5	0.81
Total	115	-	211	-	326	-

Chi-square = 0.594 (df = 2 , p = 0.743)

Above Table-4 shows, among total morbid elderly, prevalence of Cardio vascular system morbidity was 52.45%; prevalence was more in females (56.09%) than males (46.88%). Out of total morbidity related with Cardio vascular system, 52.45% had Hypertension, 0.81% had Congestive cardiac failure, and 0.16% had acute myocardial infarction. Prevalence of Hypertension was more in females (56.09%) than males (46.88%). There was positive association with advancement of age, 27.87% in young old to 100% in very old age group. Shradha K et al (2012), in their study in urban elderly at Mysore, Karnataka, India observed that 33.1% had morbidity of Cardio vascular system, more in males (34.3%) than females (32.3%). Of all the Cardio vascular morbidity, 29.3% had Hypertension, 30.45% in males whereas 28.55% in females. In present study, prevalence is higher than the observation made by Shradha K et al (2012), and it may be due to the absence of Class I socio-economic group in Shradha K et al (2012). Prakash Rahul et al (2004), in their study in urban area of Udaipur, Rajasthan India observed that 48% elderly had Hypertension; more in females (54.5%) than males (44.2%).Out of total 640 examined study population 320 (50%) had Hypertension. Out of the total hypertensives, 42.18% were newly diagnosed during the study and 57.81% were Known Hypertensives. Of the known hypertensive cases, 60% were females and 40% were males. Of the known hypertensives, 82.70% were receiving anti-hypertensive treatment; out of which 58.16% were females and 41.83% were males. Statistically significant difference was observed between those adequately treated (41.17%) and inadequately treated (58.82%). Females (76.19%) were more adequately treated than males (23.80%). Out of the total hypertensive population, 35.93% had family history of Hypertension. Out of total female hypertensives, 36.71% had family history of Hypertension whereas among male hypertensives, 34.51% had family history of Hypertension. Sulakshna et al (2013) found that 52% were hypertensive, 134 (39.8%) were males and 202 (60.1%) were females. Of the 174 hypertensives, 28 (16.09%) were newly diagnosed during the study and 146 were known hypertensives. Out of the 146 known hypertensives , 49 (33.5%) were males and 97 (66.43%)) were females. Out of the 146 hypertensives, only 41 (28%) took regular anti-hypertensive treatment and 105 (72%) did not seek treatment regularly.

© 2016 Global Journals Inc. (US)

Table-5 : Distribution of Hypertension with alcohol status

Alcohol Status	Hypertension				Total(n=640)	%
	Present (n=320)	%	Absent (n=320)	%		
Current alcoholic	28	(43.07)	37	(56.92)	65	10.15
Ex-alcoholic	0	0	23	(100)	23	3.59
Non-alcoholic	292	(52.89)	260	(47.10)	552	86.25
Total	320	(50)	320	(50)	640	(100)

Chi-square = 26.101 (df = 2, p =< 0.0001)

Above Table-5 shows that 43.07% of current alcoholic were hypertensives, whereas 52.89% among non-alcoholic were hypertensives. Among ex-alcoholics, none was hypertensive. The relation between alcohol and Hypertension was found to be statistically significant.

In another study by Anupam Prakash (1992) in rural area in Delhi,it was observed that 5.23% persons were' presently taking alcohol while 6.04% were ex-alcoholic. The relation between alcohol and Hypertension was found to be stastically significant (Chi square cal > Chi square tab).Out of 54 hypertensives, 16.67% were current alcoholics as compared to 558 non-hypertensives, amongst whom 4.13% were consuming alcohol presently.

In present study, finding was different from study done by Anupam Prakash (1992), there was negative association of hypertension with alcohol, may be due to more number of females who were mostly non- drinker in comparison to males.

Table- 6 : Distribution of Hypertension with Smoking status

Smoking Status	Hypertension				Total(n=640)	%
	Present(n=320)	%	Absent(n=320)	%		
Current Smoker	60	(49.58)	61	(50.41)	121	(18.90)
Ex-smoker	29	(33.33)	58	(66.66)	87	(13.59)
Non-smoker	231	(53.47)	201	(46.52)	432	(67.50)
Total	320	50	320	50	640	100

Chi-square = 11.758 (df = 2, p = 0.0028)

Above Table-6 shows that there was a total of 18.90% current smokers; out of which, l8.75% were hypertensives. 13.59% were ex-smokers, out of which 33.33% were hypertensives. A large number of elderly were non-smoker (67.50%), out of which 53.47% were hypertensives. Anupam Prakash et al (1992) observed that there was statistically negative association of hypertension with smoking. Out of total current smokers, 57.41% were hypertensive current smokers, whereas 12.96% ex-smokers were hypertensives, and 29.63% of non-smokers were hypertensives though smoking is a known risk factor for hypertension, but in present study negative association of hypertension with smoking was statistically significant. This indicates that there are some additional factors too responsible for hypertension.

Tabled-7 : Distribution of diseases of locomotor system

Diseases	Male(n=241)		Female(n=369)		Total(n=610)	
	No	%	No	%	No	%
Fracture Forearm	2	0.82%	0		2	0.32%
Lumbar Disc Disease	21	8.71%	59	15.98%	80	13.11%
Osteo- Arthritis	45	18.67%	121	32.79%	166	27.21%
Frozen Shoulder	3	1.24%	15	4.06%	18	2.95%
Rheumatoid Arthritis	1	0.41%	2	0.54%	3	0.49%
Psoriatic Arthritis	0	0	1	0.27%	1	0.16%
Cervical Spondilitis	0	0	4	1.08%	4	0.65%
Total	72	-'	202	-	274	-

Note: Multiple illnesses were observed in many subjects.

Chi-square = 8.388 (df = 6, p= 0.211)

© 2016 Global Journals Inc. (US)

Above Table-7 shows, the prevalence of Locomotor system disorder was found in 40.16% of the elderly. Prevalence was more in females (47.15%) than males (29.46%).The most common condition observed was Osteoarthritis (27.21%) which was more common in females (32.79%). The next common condition was Lumber Disc Disease (13.11%) which was also more common in females (15.98%). 2.95% elderly had Frozen shoulder; it was also more common in females (4.06%) than males (1.24%).The least common condition was Cervical Spondilitis (0.65%), Rheumatoid arthritis (0.49%), and Psoriatic arthritis (0.16%). There was an increase in the prevalence of Osteoarthritis with age which can be explained on the basis of degenerative nature of the disorder and its cumulation with age. In present study, prevalence of Osteoarthritis among morbid population was, from 27.87% in young old, to 22.32% in old and 100% in very old age group.

P Ray Karmakar et al (2012), reported Locomotor system disorders in 29.90% of elderly. Out of the aged males, 23.7% and out of aged females, 35.5% had disease of Musculoskeletal system. Osteoarthritis was the most common manifestation (22.54%) in both sexes together. Hanger et al (1990) in their Christchurch study observed that 33.80% of the elderly had Locomotor system involvement, of which Osteoarthritis was in 14 .20% of the elderly which is almost comparable to the figure in the present study (14.71%). Mc Donnel et al (1979) reported involvement of Musculoskeletal system in 19.0% of elderly in Leeds Metropolitan District.

In present study prevalence of Locomotor system was almost comparable to other study, especially Osteoarthritis which is almost comparable. One case of fracture forearm was observed. The overall prevalence of Rheumatoid arthritis was very low (0.46%) in the present study, which was found to be lower than that reported by P Ray Karmakar et al (2012), Raj (1971), and could be due to the fact that in present study proportion of very old population was very low. While Ehrlich et al (1970) had shown that this disease commenced after 60 years of age and flourishes as age advances.

Table-8 : Distribution of diseases of metabolic and endocrine system

Diseases	Male(n=241)	%	Female(n=369)	%	Total(n=610)	%
Diabetes Mellitus	52	21.57%	96	26.01%	148	24.26%
Hypothyroidism	3	1.24%	9	2.43%	12	1.96%
Gout	2	0.82%	6	1.62%	8	1.31%
Total	57	-	111	-	168	

Chi-square = 0.807 (df 2, p = 0.667)

In present study, prevalence of metabolic and endocrine system disorders was 27.54%, among females 30.08% whereas in males 23.65%. Above table shows that, common metabolic disorder was Diabetes mellitus (24.26%), prevalence among females (26.01%) was more than males (21.57%), followed by Hypothyroidism (1.96%), more in females (2.43%) than males (1.24%). Prevalence of gout was l.31%, more in females (1.62%) than in males (0.82%). Most common illness was Diabetes mellitus (23.12%), followed by Hypothyroidism (1.87%) and Gout (1.25%). Hypothyroidism was more common in female elderly (2.41%) than male elderly (1.12%). In other study done by Prakash R et al (2004), observed that 3.33% of total elderly population had metabolic and endocrine disorders. All male elderly were affected. Anupam Prakash et al (1992), in a study in rural area in Delhi, observed that Thyrotoxicosis was present in 0.33% of total elderly population. In present study, a significant number of cases of Hypothyroidism may be due to iodine deficiency which is common in Chhattisgarh state.

Table-9 : Distribution of diseases of respiratory system

Diseases	Male (n=241)		Female (n=369)		Total (n=610)	
	No	%	No	%	No	%
Acute Pharyngitis	3	1.24%	35	9.48%	38	6.22%
LRTI	1	0.41%	3	0.81%	4	0.65%
Asthma	2	0.82%	20	5.42%	22	3.6%
COPD	18	7.46%	13	3.52%	31	5.08%
Tuberculosis	0		1	0.27%	1	0.16%
Pneumonia	7	2.90%	1	0.27%	8	1.31%
Laryngitis	1	0.41%	5	1.35%	6	0.98%

Chi-square = 39.281 (df = 6, p < 0.0001)

© 2016 Global Journals Inc. (US)

In present study, prevalence of Respiratory system disorders was 16.72%; among females prevalence was 18.97% whereas in males, 13.27%. Out of total Respiratory system disorders, common disorder was Acute Pharyngitis (6.22%), Chronic Obstructive Pulmonary Disease (COPD) 5.08%, Asthma (3.6%), Pneumonia (1.31%). Asthma was more common in females (5.42%) than males (0.82%). COPD and Pneumonia were more common in males than females. COPD among males was 7.46% whereas in females was 3.52%. Pneumonia among males was 2.90%o whereas among females was 0.27%. One case of tuberculosis was reported. In another study, Rahul et al (2004) reported that 36% had respiratory diseases, more in males (41%) than females (27.3%). In present study, prevalence is more than the observation made by Rahul et al (2004). This may be due to more number of current male smokers than female smokers.

In another study by Prakash R et al (2004), reported that Asthma was the leading respiratory problem among both males and females followed by Coryza, Chronic bronchitis, Upper Respiratory Tract Infection (URTI) and Tuberculosis. Shradha et al (2012) observed that URTI, Acute Bronchitis, Bronchial Asthma were the major respiratory diseases.

Table-10 : Distribution of diseases of nervous system

Disease	Male(n=241)	%	Female(n=369)	%	Total(n=610)	%
TTH	1	0.41	0		1	0.16
Migraine	1	0.41	10	2.71	11	1.80
Hemiparesis	7	2.90	1	0.27	8	1.31
Peripheral Neuritis	12	4.97	1	0.27	13	2.13
Post op case of frontal lobe brain tumour	1	0.41	0		1	0.16
Hemiplegia	5	2.07	0		5	0.81
Anxiety	9	3.73	30	8.13	39	6.39
Depression	9	3.73	30	8.13	39	6.39
Total	45		72	-	117	

Note: Multiple illnesses were observed in many subjects.

Chi-square = 47.062 (df = 7, $p < 0.0001$)

Present study shows that, prevalence of Nervous system disorders including Mental illness disorder was 11.96%;among males 14.52% whereas in females 10.29%. Out of total morbidity among nervous system including Mental illness, majority had Anxiety (6.39%) and Depression (6.39%), followed by Peripheral Neuritis (2.13%). The least common conditions were Migraine (1.80%), Tension type headache (TTH) 0.16%, Hemiparesis (1.31%), Hemiplegia (0.81%), one post op case of frontal lobe brain tumour. Prevalence of Anxiety and Depression was more in females than in males. In another study conducted by Rahul Prakash et al (2004), reported that prevalence of Nervous system disorder was 8.5%.

V. Conclusion

The present study is an endeavour to find out the morbidity pattern among elderly in Serampore city on a small scale of young growing state of West Bengal, along with the existing health practices and finally to suggest a pattern of health services suitable for the elderly population in the city. The study was conducted in 640 elderly subjects selected randomly from 32 areas including urban and slum areas from 8 zones and 77 wards of Serampore city. Elderly persons in the age group, 60 years and above were 63635 (6.3% of total population in Serampore city), out of which only 640 persons (267 males and 373 females) were included in the study. Elderly females 373 (58.28%) out-numbered elderly males 267 (41.71%). Majority of the elderly persons (81.71%) belonged to “young old” age group. Bulk 40.15% of the elderly persons received education upto higher secondary.Graduates and above was only 15.78%, out of which 83.16% were in urban whereas 16.83% were from slum areas.

36.40% of the elderly population belonged to socio-economic Class IV, followed by Class II. A large proportion (84.07%) was living in joint families and 15.93% in nuclear family settings. Only 5.93% were living alone. 51.09% of the elderly were themselves heading the family with males predominating. A large proportion 42.03% of elderly population was unemployed. The principle occupation of the persons who were currently employed in some gainful occupation was agriculture/ shop owner/clerical 11.25%, while 18.12% were professional including retired persons. A large proportion 48.28% was financially dependent on others. Only 14.84% were receiving old age pension. Out of total dependent, 66.66% were dependent on their children, 13.26% on grand children and 1.29% on spouse, 14.56% on others. A small proportion 33.59% was aware about various Government welfare schemes for the elderly. The geriatric population is a dependent population. Hence, health care delivery system should

© 2016 Global Journals Inc. (US)

reorganize their timing other than routine schedule. Periodic comprehensive health check up, preferably twice a year must be carried out and primary health care delivery must be ensured to geriatric population.

References Références Referencias

1. Aggarwal Anupam. *A study of the morbidity status of geriatric population in the rural areas of Delhi*, New Delhi, India, 1992.
2. Campbell AJ, Rein ken J, Allen BC. *Thyroid disease in the elderly in the community.* Age Ageing 1981; 10: 47-52.
3. Goel PK, Garg SK, Singh JV et al. *Unmet needs of the elderly in rural population of Meerut*. Indian J Community Med, 2003; 28: 165-6.
4. Goswami S et al. *Premature Birth: An Enigma for the Society?* European Journal of Medicine, Vol 6, No 4: pp 215-225, DOI-10.13187/ejm.2014.6.215.
5. Goswami S, Sahai M. *A Study of Psychosocial Risk Status and Knowledge of Reproductive Health in Adolescents in Serampore City.* European Journal of Medicine, 2015, Vol 9, Is 3: pp 139-149, DOI: 10.13187/ejm.2015.9.139.
6. Hanger HC, Sainsbury R. *Screening the elderly-a Christchurch study.* The N Z Med J, 1990 Oct 10; 103 (899): 473-475.?>
7. Krishnamachari Shrinivasan, Mario Vaz, Tinku Thomas. *Prevalence of health related disability among community dwelling urban elderly from middle socio-economic strata in Bengaluru*, India. Indian J Med Res 131, April 2010: p 515-521.
8. Lena A, Ashok K, Padma M. *Health and social problems of the elderly: A cross-sectional study in Udupi Taluk, Karnataka*. Indian Journal of Community Medicine, Vol. XXIX, No 1, Jan-Mar, 2004.
9. Lena A, Ashok K, Padma M. *Health and social problems of the elderly: A cross-sectional study in Udupi Taluk, Karnataka*. Indian Journal of Community Medicine, Vol.34, Issue 2, April 2009.
10. Longo et al. *Textbook of Harrison's Principles of Internal Medicine.18th edition*. The McGraw Hill Companies, Inc. U.S. 2012, p 570.
11. Mittra et al. *A social study in the aged population of the urban health centre*, Anambah, Lucknow". Ind J.P. & S.M. 2: 139.
12. P Ray Karmakar, A Chattopadhyay. *A study on morbidity pattern and care seeking behaviour of elderly in rural area of West Bengal, India*. International Journal of Basic and Applied Medical Sciences ISSN; 2277-2103, 2012, Vol. 2 (3) September-December: p. 221-227.
13. Purohit C K and Sharma R. *A study of aged 60 years and above in social profile*. Ind J Geront, 1972; 4: 71-83.
14. Purohit CK, Sharma R. *A study of general health status of persons aged 60 years and above in R.H.T.C. area Naraila*. Ind J Med Res 1976, 64 (2): 202.
15. Raj B.A. *Medico social study of aged persons in certain villages*. Ind Med Gaz 1971; 10 (9):25-31.
16. Raj B,Prasad BG. *Health status of aged in India: A study in three villages*. Geriatrics 1970; 25: 142-158.
17. Sharma KL. *Leisure time activities of retired persons*. Ind J Geront 1969; 1 (1): 32-37.
18. Shraddha K, B Prashantha et al. *Study on morbidity pattern among elderly in urban population of Mysore, Karnataka, India*. International Journal of Medicine and Biomedical Research, Volume 1, Issue 3, September-December 2012; 1 (3): 215-223.
19. Sulakshna S Baliga, Praveen S Gopakumaran et al. *Treatment seeking behaviour and health-care expenditure incurred for hypertension among elderly in urban slums of Belgaum city*. National Journal of Community Medicine, Vol 4 (2), April-June 2013.
20. Swash Michael. *Hutchinson's Clinical Methods*, 20th edition ELBS with W.B. Saunders Company Ltd. 1995: p 387.
21. *The Seventh Report of the Joint National Committee on Prevention, Detection*, Evaluation and Treatment of High Blood Pressure, NIH Publication No.04-5230, August 2004.
22. Vijayakumar S. *Population ageing in India.* Help Age India Research Development Journal Vol 5 (2) 1999.

© 2016 Global Journals Inc. (US)

Global Journal of Medical Research: F
Diseases
Volume 16 Issue 4 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Helicobacter Pylori and Steps for its Elimination: A Review

By Sangita Boro & Manash Pratim Sarma
Assam Down Town University

Abstract- The only host for H. pylori is human and it is found to be present in stomach, duodenum, oesophagus and rectum. H. pylorus is responsible for causing chronic infections and therefore its complete eradication from the society is very much essential. This article therefore aims to review the recent treatment options prevalent for the eradication of this dreadful disease.

Keywords: helicobacter pylori, antimicrobial resistance, eradication, therapy.

GJMR-F Classification : NLMC Code: WI 387



Strictly as per the compliance and regulations of:



© 2016. Sangita Boro & Manash Pratim Sarma. 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.

Helicobacter Pylori and Steps for its Elimination: A Review

Sangita Boro [α] & Manash Pratim Sarma [σ]

Abstract- The only host for H. pylori is human and it is found to be present in stomach, duodenum, oesophagus and rectum. H. pylorus is responsible for causing chronic infections and therefore its complete eradication from the society is very much essential. This article therefore aims to review the recent treatment options prevalent for the eradication of this dreadful disease.

Keywords: helicobacter pylori, antimicrobial resistance, eradication, therapy.

I. Introduction

Helicobacter pylorus (H. pylori) is a microbial species that specifically colonizes the gastric epithelium. *Helicobacter pylori*, is a gram-negative, spiral bacterium situated on the epithelial surface of the stomach. It is thought to be the most common bacterial infection worldwide. Virtually, all persons infected by this organism develop gastritis, a signature feature of which is the capacity to persist for decades leading to chronic inflammation of the underlying mucosa. It has been recognized to be associated with increased risk of chronicgastritis, peptic ulcer disease (PUD) (gastric and duodenal),gastric mucosal-associated lymphoid tissue (MALT) lymphoma, gastric adenocarcinoma, World Health Organisation (WHO) has described *H. pylori* as a class 1carcinogen for gastric carcinoma. *H. pylori* infection also induces insulin resistance and has been defined as a predisposing factor toT2D development. Gastric and fecal microbiota may have been changed in H. pylori-infected persons and mice to promote gastric inflammation and specific diseases [1].

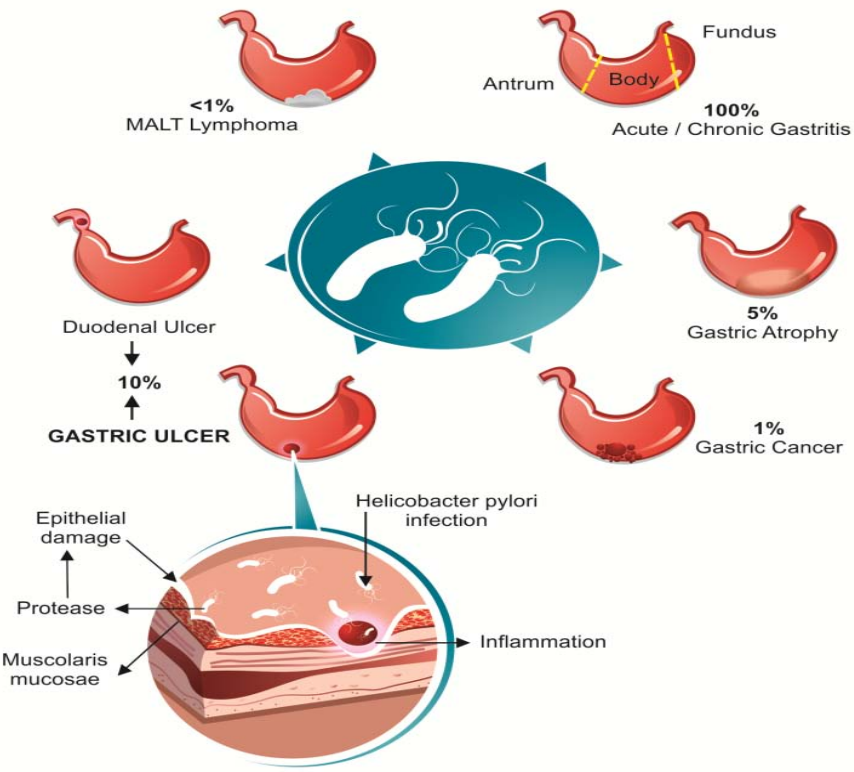


Figure 1 : A pictorial representation of the diseases involving *H. pylori*

*Source: The Mechanisms of Action and Resistance to Fluoroquinolone in Helicobacter pylori Infection, Carolina Negrei and Daniel Boda, INTECH. **13;** 349-378*

Author α: Department of Microbiology, Assam down town University, Panikhaiti, Guwahati, Assam, India.
Author σ: Department of Biotechnology, Assam down town University, Panikhaiti, Guwahati, Assam, India. e-mail: manash3268@gmail.com

© 2016 Global Journals Inc. (US)

Although the incidence varies by geographic location and socioeconomic conditions, *H. pylori* remains one of the most common bacterial infections in the world [2]. Therefore this review aims to find the most prevalent treatment options throughout world in order to eliminate *H. pylori.*

II. Antimicrobial Resistance

The main reason behind failure of treatment is antibiotic resistance. The prevalence of antimicrobial resistance has been found to have regional variance both within countries and outside countries. Studies done in India found that drug resistance in *H. pylori* was more for metronidazole, tinidazole and clarithromycin [36]. Clarithromycin resistance was also found to be prevalent in many western countries like USA, Canada, Northern, Southern and Eastern Europe [4]. The high prevalence of resistance in the developing countries compared to the industrialised countries is the high rate of antibiotic misuse. Metronidazole is more commonly used in developing countries for the treatment of parasitic infections whereas in developed countries it is more frequently used for dental and gynaecological infections (53). Patients who had had a failed case of H. pylori eradication have been found to be more prone to multi resistant *H.pylori* than untreated cases [65].

a) Diagnosis

The diagnostic tests for *H.pylori* infection include endoscopic and non endoscopic methods. The techniques used may be direct (culture, microscopic demonstration of the organism) or indirect (using urease, stool antigen or an antibody response as a marker of disease). The choice of test depend on factors like the cost and the requirement of the test i.e. whether it is for establishing the diagnosis of infection or for the eradication of the disease [7]. Successful eradication should always be confirmed by urea breath test (UBT) or an endoscopy based test. If UBT is not available then Stool Antigen Test (SAT) should be the alternative [8].

b) Treatment

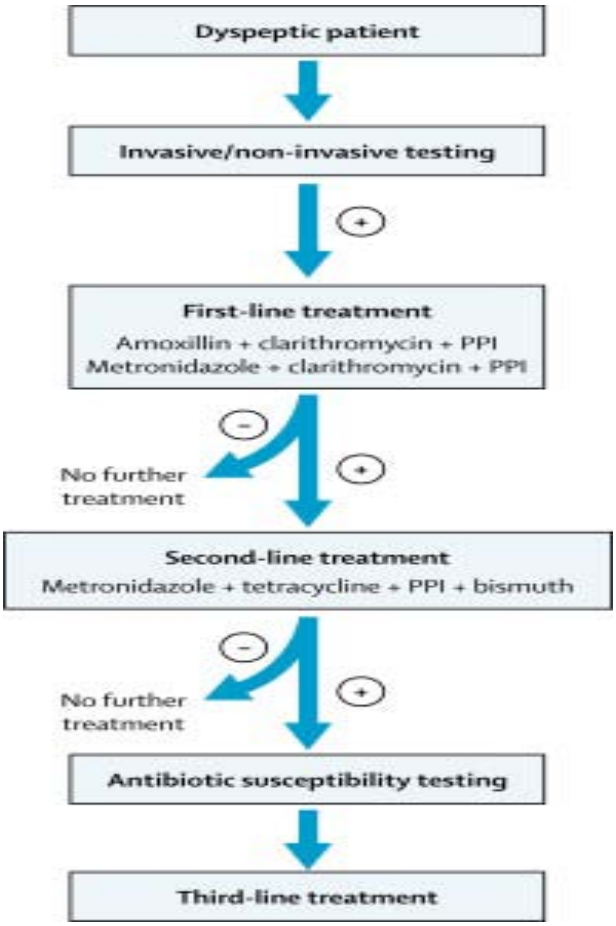


Figure 2 : A flowchart of the prevailing treatment regime

Source: httpwww.clinsci.orgcontent110330

c) Sequential Therapy

Since there has been tremendous decline in the cure rate of *H. pylori* hence sequential therapy was introduced. The sequential therapy in which PPI plus amoxicillin are given for 5 days followed by PPI plus clarithromycin and tinidazole also for 5 days has been found to have eradication rates close to or greater than 90%. In a number of Italian studies this sequential therapy has proved to be superior than the standard triple therapy in eradicating both susceptible and resistant *H. pylori* strains [8]. The incidence of side-effects was similar with both regimes in these trials. This treatment regimen appeared to overcome clarithromycin resistance. [9]

d) First Line Treatment

For over a decade the proton pump inhibitor (PPI) - based triple therapy has been used as the first line treatment of choice [10]. The currently approved regimen i.e. (a triple therapy consisting of a proton pump inhibitor, amoxicillin and clarithromycin) has been recommended by the European Helicobacter Study Group [11]. The currently approved regimen now been proven to be relatively ineffective because of the high

© 2016 Global Journals Inc. (US)

rate of clarithromycin resistance [12-16]. In many countries this therapy has been considered to be obsolete but since this is the only approved therapy by the government insurance the doctors are still in a dilemma. In the United States four drugs combinations therapy has been used (e.g., 14 day therapy with a proton pump inhibitor, clarithromycin, metronidazole, and amoxicillin or concomitant therapy which is effective except in the presence of clarithromycin-metronidazole dual resistance) or the combination of a bismuth, tetracycline, metronidazole and a proton pump inhibitor which is generally effective despite metronidazole resistance provided it is given a full dose and for 14 days [17, 18]. The combination of a high dose proton pump inhibitor and amoxicillin such as 20 mg of rabeprazole and 500 to 750 mg of amoxicillin every 6 hours for 14 days appears to be effective in Asia [19]. No single therapy can be recommended for any area as there are wide variations in the resistance patterns in different parts of the world.

Factors influencing outcome:

Treatment:	Strains:	Patients:
Increasing the dose of clarithromycin to 1-1.5 mg per day improves cure rates	Resistance of *H.pylori* to antimicrobial agents.	Depending on geographical region of patients.
The optimal duration of treatment has been found that better cure rates have been found for longer treatment duration.	Strain type.	Patient compliance.

Since so many factors has to be considered, therefore it is very essential to have an organized program to identify the resistance pattern in order to define highly effective regimes.

e) Quadruple

Bismuth quadruple therapy entails: bismuth 525 mg four times daily, metronidazole 250 mg four times daily, tetracycline 500 mg four times daily and a standard dose PPI for a total of 7-14 days. On seeing there ported eradication rate of 87%, some authors advocate bismuth based quadruple therapy as first line therapy for *H pylori* [20-22]. In areas of high clarithromycin resistance (> 15 percent) or in patients with a documented penicillin allergy the clinicians may consider Bismuth based quadruple therapy as first line treatment. [23,24]. The side effect profile of standard triple therapy versus quadruple therapy is almost equivalent as the overall adverse event rate in the quadruple therapy treatment arm was 58.5% compared to 59.0% in the triple therapy arm [25,26]. Symptoms included: diarrhea, dyspepsia, nausea, abdominal pain, and taste perversion, changes in stool colour or firmness and headache.

f) Second-Line Therapy

H. pylori may develop resistance to the prescribed antibiotics used for the first-line therapy. The resistance may be acquired by acquisition and recombination of genes from other bacteria and chromosomic mutations [27, 28]. Clarithromycin and Metronidazole appear to be the two antibiotics noted for resistance and most of *H. pylori* isolates after two eradication failures are resistant to the two drugs [29]. Subsequently, quadruple therapy which consists of PPI, bismuth, metronidazole and tetracycline is a recommended alternative to first-line treatment, which may be advocated in areas of high antibiotic resistance. In any case if bismuth is not available, second-line therapy may be with PPI-based triple therapy. [10]

g) Third-Line (Rescue/Salvage) Therapy

On multiple (at least two) treatment failures with different regimes the third line therapy is applied. Ideally, it would be chosen based on the results of antimicrobial susceptibility testing. Since it was noted that most of *H. pylori* isolates after two eradication failures are resistant to metronidazole and clarithromycin therefore, has been recommended to exclude the two drugs from the third-linetherapy. As a result, the third-line therapy is now being applied in some countries. These third-line therapies are the new emerging therapies. [8]

© 2016 Global Journals Inc. (US)

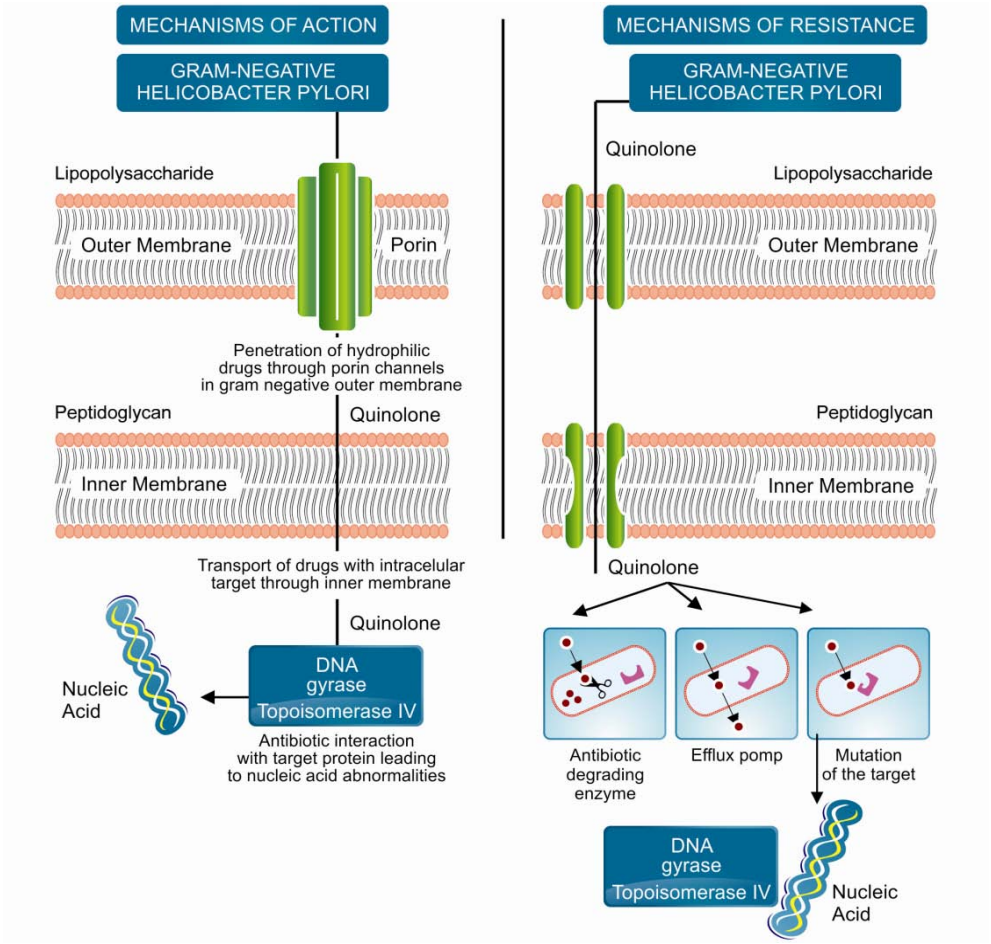


Figure 3 : Mechanism of action/ Mechanism of resistance

Source: The Mechanisms of Action and Resistance to Fluoroquinolone in Helicobacter pylori Infection, Carolina Negrei and Daniel Boda, INTECH. ***13;*** *349-378*

h) Concomitant Therapy

Concomitant therapy entails: Standard dose PPI, Amoxicillin 1000mg twice daily, Clarithromycin 50m mg twice daily and Metronidazole500 mg twice daily for 10-14 days. In terms of eradication it is similar to sequential therapy with an eradication rate of 94% and maybe a simple rregimen when compared to sequential therapy as all antibiotics are give nat once. A randomized trial comparing sequential and concomitant therapy, demonstrated comparable eradication rates (92.3% versus 93%,respectively) and similar adverse event rates (30.7% versus 26.9%).A regimen consisting of: esomeprazole and amoxicillin for seven days then esomeprazole, amoxicillin, clarithromycin, and metronidazole for 7 seven days (sequential-concomitant hybrid therapy) generated a99.1% eradication rate in 117 patients [2].

i) Emerging Therapies

i. *Fluroquinolone based therapies*

Levofloxacin-based triple therapies are now becoming the second-line treatment of choice in some European countries. It has proven very effective in the treatment of *H. pylori* infection in a study carried out in Italy. In a comparative study in Italy, the eradication rate achieved with levofloxacin-based triple therapy as a first-linetreatment was significantly higher than that with standard therapies. Levofloxacin has been advocated for use insecond-and third-line "rescue" regimens. Levofloxacin may thus represent a reasonable treatment regimen in the setting of Clarithromycin resistance [8]

ii. *Lactoferrin*

Lactoferrin is a natural antibiotic which is found in bovine milk. It has been found to be bacteriostatic to *H. pylori* both *in vivo* and *in vitro*. It is a milk protein that binds iron and its addition to the regular treatment regimen for *H. pylori* may improve eradication rates. Studies have been carried out to determine its use in combination with PPI and other antibiotics with varying efficacies. This modality of treatment has not been universally accepted [8].

iii. *Levofloxacin and rifaximin-based quadruple therapy*

Levofloxacin and rifaximin-based quadruple regimen as first line treatment for *H. pylori* infection has

© 2016 Global Journals Inc. (US)

been studied by Choi *et al*. but has limited efficacy in a Korean cohort [30]. Further multi-centred studies may be required in other countries.

III. Conclusion

Despite the introduction of various treatment regimens, *H. pylori* infection is still a major problem of concern. Though the clinicians have many different treatment regimens within them but standard PPI based triple therapy and bismuth based quadruple therapy remain in first line as the eradication rates remain relatively high (70-80%). The increased resistance of drugs and non compliance, due to complexity of regime and associated side effects has led to the investigation of many other therapeutic options which is necessary for the complete eradication of *H. pylori.* Hence from this review we can conclude that further many more trials are necessary to get a complete eradication of H. pylori.

IV. Future Treatment Module

The next generation of *H.pylori* therapeutic regimens should be simpler, novel and specific. There are some novel approaches available to achieve this goal, such as-

1) Development of therapeutic vaccine
2) Genome based drug discovery
3) Pathogen –host tissue adhesion inhibitor
4) Novel site specific drug delivery at specific site of *H. pylori* infection.

Although combination therapies have been found to have high rates of eradication, therapies that would be preferred are the ones which use a low dose of single drug with a short duration treatment and without any adverse effect.

References Références Referencias

1. Yao-Jong Yang and Bor-Shyang Sheu (2016) Metabolic Interaction of *Helicobacter pylori* Infection and Gut Microbiota. Microorganisms: 4, 15.
2. Nicholas Martinez MD Karthik Garapati MD, Charles Randall MD (2014) Management of *Helicobacter Pylori* Infection. Journal of Tropical Diseases 2:1
3. Yuan W, Li Yumin, Yang Kehu, Ma Bin, Guan Quanlin, et al. (2010) Iron deficiency anemia in Helicobacter pylori infection: meta-analysis of randomized controlled trials. Scand J Gastroenterol **45**: 665-676.
4. B. J. Egan, M. Katicic, H. J. O'Connor, C. A. O'Morain (2007) Treatment of *Helicobacter pylori. Helicobacter* 12(Suppl.1) 31-37
5. Janssen MJ, Hendrikse L, de Boer SY, Bosboom R, de Boer WA, Laheij RJ, Jansen JB. (2006) *Helicobacter pylori* antibiotic resistance in a Dutch region: trends over time. *Neth J Med;* **64**:191–5.
6. *Helicobacter pylori* Eradication: Decision Making in Clinical Practice, MP Sharma, Medicine Update. **64:** 378-381.
7. World Gastroenterology Organisation Global Guidelines Report on *Helicobacter pylori* in developing countries. August 2010: 1-15.
8. A. B. Olokoba, O. A. Obateru1, M. O. Bojuwoye. *Helicobacter pylori* eradication therapy: A review of current trends. Nigerian Medical Journal 2013; **54**: 1-4.
9. Zullo A, Vaira D, Vakil N, Hassan C, Gatta L, Ricci C, *et al*. (2003) High eradication rates of *Helicobacter pylori* with a new sequential treatment. Aliment Pharmacol Ther; **17**:719-26
10. Egan BJ, O'Morain CA. (2007) A historical perspective on *Helicobacter* gastroduodenitis and its complications. *Best Pract Res Clin Gastroenterol*; **21**: 335–46. Review.
11. Malfertheiner P, Megraud F, O'Morain C, et al. (2007) Current concepts in the management of *Helicobacter pylori* infection – The Maastricht III Consensus Report. *Gut*; **56**: 772–81.
12. Chung JW, Lee GH, Han JH, et al. (2011), The trends of one-week first-line and second-line eradication therapy for *Helicobacter pylori* infection in Korea. Hepatogastroenterology; **58**: 246-250.
13. Yoon JH, Baik GH, Sohn KM, et al. (2012) Trends in the eradication rates of Helicobacter pylori infection for eleven years. World J Gastroenterol; **18**: 6628-6634.
14. Jung YS, Lee SH, Park CS, et al. (2014) Trends in the eradication rates of *Helicobacter pylori* infection in Daegu and Gyeongsangbuk-do, Korea: multicenter study over 13 years. Korean J Gastroenterol; **63**: 82-89.
15. Jeon HK, Kim GH. (2014) Does standard triple therapy still have a role in first-line *Helicobacter pylori* eradication in Korea? J Korean Med Sci; **29**: 619-620.
16. 28. Gong EJ, Yun SC, Jung HY, et al. (2014) Meta-analysis of first-line triple therapy for helicobacter pylori eradication in Korea: is it time to change? J Korean Med Sci; **29**: 704-713.
17. Graham DY, Lee YC, Wu MS. (2014) Rational *Helicobacter pylori* therapy: evidence-based medicine rather than medicine-based evidence. Clin Gastroenterol Hepatol; **12**:177.e3-186.e3.
18. 30. Wu JY, Liou JM, Graham DY. (2014) Evidence-based recommendations for successful *Helicobacter pylori* treatment. Expert Rev Gastroenterol Hepatol; **8**: 21-28.
19. Furuta T, Graham DY. (2010) Pharmacologic aspects of eradication therapy for *Helicobacter pylori* Infection. Gastroenterol Clin North Am; **39**: 465-480.

© 2016 Global Journals Inc. (US)

20. Gené E, Calvet X, Azagra R, Gisbert JP (2003) Triple vs quadruple therapy for treating *Helicobacter pylori* infection: an updated meta-analysis. Aliment Pharmacol Ther **18**: 543-544.
21. Graham DY, Shiotani A (2012) Which Therapy for *Helicobacter pylori* Infection. Gastroenterology **143**: 10-12.
22. Fischbach L, Evans EL (2007) Meta-analysis: the effect of antibiotic resistance status on the efficacy of triple and quadruple first-line therapies for *Helicobacter pylori.* Aliment Pharmacol Ther **26**: 343-357.
23. Tepes B, O'Connor A, Gisbert JP, O'Morain C (2012) Treatment of Helicobacter pylori infection 2012. Helicobacter 17 Suppl **1**: 36-42.
24. Osato MS, Reddy R, Reddy SG, Penl and RL, Malaty HM, et al. (2001) Pattern of primary resistance of Helicobacter pylori to metronidazole or clarithromycin in the United States. Arch Intern Med **161**: 1217-1220
25. Laine L, Hunt R, El-Zimaity H, Nguyen B, Osato M, et al. (2003) Bismuth based quadruple therapy using a single capsule of bismuth biskal citrate, metronidazole, and tetracycline given with omeprazole versus omeprazole, amoxicillin and clarithromycin for eradication of Helicobacter pylori in duodenalulcer patients: A prospective, randomized, multicenter North American trial. AmJ Gastroenterol **98**: 562-567.
26. Laine L (2003) Is it time for quadruple therapy to be first line? Can J Gastroenterol 17 Suppl B: 33B-35B.
27. Cianci R, Montalto M, Pandolfi F, Gasbarrini GB, Cammarota G. (2006) Third-line rescue therapy for *Helicobacter pylori* infection. World J Gastroenterol; **12**: 2313-9.
28. Hua JS, Zheng PY, Fong TK, Khin MM, Bow H. (1998) *Helicobacterpylori* acquistion of metronidazole resistance by natural transformation *in vitro*. World J Gastroenterol; **4**: 385-7.
29. Cammarota G, Martino A, Pirozzi G, Cianci R, Branca G, Nista EC, *et al.* (2004) High efficacy of 1-week doxycycline-and amoxicillin-based quadruple regimen in a culture-guided, third-line treatment approach for *Helicobacter pylori* infection. Aliment Pharmacol Ther; **19**: 789-95.
30. Choi KH, Chung WC, Lee KM, Paik CN, Kim EJ, Kang BK, *et al.* (2011) Efficacy of levofloxacin and rifaximin based quadruple therapy in *Helicobacter pylori* associated gastroduodenal disease: A double-blind, randomized controlled trial. J Korean-Med Sci; **26**: 785-90.
31. *Helicobacter pylori* — Current Therapy and Future Therapeutic Strategies, Rajinikanth Siddalingam and Kumarappan Chidambaram. INTECH. **10**: 279-302.

© 2016 Global Journals Inc. (US)

Global Journals Inc. (US) Guidelines Handbook 2016

www.GlobalJournals.org

FELLOWS

FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN MEDICAL (FARSM)

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



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

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

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

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

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





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

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

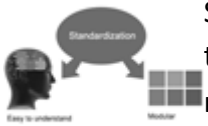


© Copyright by Global Journals Inc.(US) | Guidelines Handbook

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



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



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



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

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



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

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

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



© Copyright by Global Journals 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.

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

AUXILIARY MEMBERSHIPS

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

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



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

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

The Institute will be entitled to following benefits:

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

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

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





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

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



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

© Copyright by Global Journals 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.



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.

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

- 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.

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

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.



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

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.



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

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.



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

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

Adenocarcinoma · 31

C

Cachexia · 8
Cefoperazone · 2
Chronicgastritis · 31
Clarithromycin · 32, 33, 34, 35
Coagulopathy · 7

D

Dyslipidemia · 7

E

Estradilol · 15

G

Gastroduodenal · 3
Genito-Urinary · 25
Glomeruli · 19

H

Haematoxylin · 2

J

Jatrox · 2

K

Kolmogorov · 8

M

Metronidazole · 32, 33

O

Oesophageal · 26
Oesophagus · 31
Osteomalacia · 16, 18
Osteopenia · 16, 18
Ozturan · 21, 22

P

Parenchymal · 11

R

Rabeprazole · 33

S

Sensorineural · 19, 21, 22

T

Testosterone · 15, 17
Thiazide · 16
Tinidazole · 32

U

Uraemic · 21, 22
Urease · 1, 2, 3, 5, 6, 32

V

Vuscularis · 19





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