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

Global Journal

of Medical Research: F

Diseases

Cancer, Ophthalmology & Pediatric



Nutritional Status in Adults

Outcomes of Experimental Treatments

Highlights

Two Cases at the Kati Health Center

Self-Perception of Social Participation

Discovering Thoughts, Inventing Future

VOLUME 23 ISSUE 5 VERSION 1.0

© 2001-2023 by Global Journal of Medical Research, USA

Volume 23 Issue 22 was originally issued as F5

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

Volume 23 Issue 22
Originally issued as F5

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

Volume 23 Issue 5 (Ver. 1.0)

Open Association of Research Society

© Global Journal of Medical Research. 2023.

All rights reserved.

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

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

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

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

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

Engage with the contents herein at your own risk.

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

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

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

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

Global Journals Inc.

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

Sponsors: Open Association of Research Society
Open Scientific Standards

Publisher's Headquarters office

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

Offset Typesetting

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

Packaging & Continental Dispatching

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

Find a correspondence nodal officer near you

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

eContacts

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

Pricing (Excluding Air Parcel Charges):

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

Editorial Board

Global Journal of Medical Research

Dr. Apostolos Ch. Zarros

DM, Degree (Ptychio) holder in Medicine, National and Kapodistrian University of Athens MRes, Master of Research in Molecular Functions in Disease, University of Glasgow FRNS, Fellow, Royal Numismatic Society Member, European Society for Neurochemistry Member, Royal Institute of Philosophy Scotland, United Kingdom

Dr. William Chi-shing Cho

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

Dr. Alfio Ferlito

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

Dr. Michael Wink

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

Dr. Jixin Zhong

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

Dr. Pejcic Ana

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

Rama Rao Ganga

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

Dr. Ivandro Soares Monteiro

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

Dr. Izzet Yavuz

MSc, Ph.D., D Ped Dent.
Associate Professor, Pediatric Dentistry Faculty of Dentistry, University of Dicle Diyarbakir, Turkey

Dr. Sanjay Dixit, M.D.

Director, EP Laboratories, Philadelphia VA Medical Center
Cardiovascular Medicine - Cardiac Arrhythmia
Univ of Penn School of Medicine
Web: pennmedicine.org/wagform/MainPage.aspx?

Sanguansak Rerksuppaphol

Department of Pediatrics Faculty of Medicine
Srinakharinwirot University
NakornNayok, Thailand

Antonio Simone Laganà

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

Dr. Han-Xiang Deng

MD., Ph.D
Associate Professor and Research Department
Division of Neuromuscular Medicine
Davee Department of Neurology and Clinical Neurosciences
Northwestern University Feinberg School of Medicine
Web: neurology.northwestern.edu/faculty/deng.html

Dr. Pina C. Sanelli

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

Dr. Roberto Sanchez

Associate Professor
Department of Structural and Chemical Biology
Mount Sinai School of Medicine
Ph.D., The Rockefeller University
Web: mountsinai.org/

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
Web: uphs.upenn.edu/

Dr. Feng Feng

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

Dr. Seung-Yup Ku

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

Dr. Hrushikesh Aphale

MDS- Orthodontics and Dentofacial Orthopedics.
Fellow- World Federation of Orthodontist, USA.

Santhosh Kumar

Reader, Department of Periodontology,
Manipal University, Manipal

Gaurav Singhal

Master of Tropical Veterinary Sciences, currently pursuing Ph.D in Medicine

Dr. Aarti Garg

Bachelor of Dental Surgery (B.D.S.) M.D.S. in Pedodontics and Preventive Dentistr Pursuing Phd in Dentistry

Sabreena Safuan

Ph.D (Pathology) MSc (Molecular Pathology and Toxicology) BSc (Biomedicine)

Getahun Asebe

Veterinary medicine, Infectious diseases, Veterinary Public health, Animal Science

Dr. Suraj Agarwal

Bachelor of dental Surgery Master of dental Surgery in Oromaxillofacial Radiology.
Diploma in Forensic Science & Oodntology

Osama Alali

PhD in Orthodontics, Department of Orthodontics, School of Dentistry, University of Damascus. Damascus, Syria. 2013 Masters Degree in Orthodontics.

Prabudh Goel

MCh (Pediatric Surgery, Gold Medalist), FISPU, FICS-IS

Raouf Hajji

MD, Specialty Assistant Professor in Internal Medicine

Surekha Damineni

Ph.D with Post Doctoral in Cancer Genetics

Arundhati Biswas

MBBS, MS (General Surgery), FCPS, MCh, DNB (Neurosurgery)

Rui Pedro Pereira de Almeida

Ph.D Student in Health Sciences program, MSc in Quality Management in Healthcare Facilities

Dr. Sunanda Sharma

B.V.Sc.& AH, M.V.Sc (Animal Reproduction, Obstetrics & gynaecology), Ph.D.(Animal Reproduction, Obstetrics & gynaecology)

Shahanawaz SD

Master of Physiotherapy in Neurology PhD- Pursuing in Neuro Physiotherapy Master of Physiotherapy in Hospital Management

Dr. Shabana Naz Shah

PhD. in Pharmaceutical Chemistry

Vaishnavi V.K Vedam

Master of dental surgery oral pathology

Tariq Aziz

PhD Biotechnology in Progress

Contents of the Issue

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

1. Conjonctival Myiasis: Two Cases at the Kati Health Center. *1-5*
2. Self-Perception of Social Participation Restrictions in Adults and Older Adults with Hearing Loss: A Systematic Review. *7-27*
3. Diagnostic and Therapeutic Approach to Epidermoid Cysts in the Gluteal Region: A Rare Case and Review of the Literature. *29-32*
4. One Step to a Cure: Outcomes of Experimental Treatments for Non-Hodgkin's Lymphomas, A Systematic Review. *33-36*
5. Nutritional Status in Adults with Disabilities Secondary to Cardiovascular Diseases in a Colombian Municipality: A Cross-Sectional Study. *37-49*

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

Global Journal of Medical Research: F
Diseases
Volume 23 Issue 5 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Conjonctival Myiasis: Two Cases at the Kati Health Center

By BA Kadiatou, Tall Aichata, Sidibe Moro, Danfaga Bakary, Cissoko Sadio, Diallo Oumar, Simaga Assiatou, Toure Aoua Ibrahima, Diallo Seydou, Toure Ousmane, Sidibe Mohamed Kolé, Saye Gounon, Sissoko Modibo, Coulibaly Mory, Dembele Adama, Coulibaly Abdoulaye Nouhoum & Sylla Fatoumata

Summary- Conjunctival myiasis is a condition characterized by the accidental presence of fly larvae in the conjunctiva.

We report two cases of conjunctival myiasis. The clinical signs were those of a noisy moving foreign body. The diagnosis was based on the detection of fly larvae (maggot) on slit lamp examination. The treatment consisted of extracting the larvae one by one, followed by immediate relief for the patients and then a prescription for antibiotic eye drops.

Conjunctival myiasis or external ophthalmomyasis is characterized by the accidental presence of fly larvae at the level of the conjunctival cul-de-sac. It causes a painful foreign body symptomatology which, if not treated, can progress to internal myiasis.

Keywords: *ocular myiasis, ophthalmomyiasis externa, oestrusovis.*

GJMR-F Classification: *NLMC: WW 270*



Strictly as per the compliance and regulations of:

© 2023. BA Kadiatou, Tall Aichata, Sidibe Moro, Danfaga Bakary, Cissoko Sadio, Diallo Oumar, Simaga Assiatou, Toure Aoua Ibrahima, Diallo Seydou, Toure Ousmane, Sidibe Mohamed Kolé, Saye Gounon, Sissoko Modibo, Coulibaly Mory, Dembele Adama, Coulibaly Abdoulaye Nouhoum & Sylla Fatoumata. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Conjonctival Myiasis: Two Cases at the Kati Health Center

BA Kadiatou [α], Tall Aichata [σ], Sidibe Moro [ρ], Danfaga Bakary [ω], Cissoko Sadio [¥], Diallo Oumar [§], Simaga Assiatou [χ], Toure Aoua Ibrahima [ν], Diallo Seydou [Θ], Toure Ousmane [ζ], Sidibe Mohamed Kolé [£], Saye Gounon [€], Sissoko Modibo [₣], Coulibaly Mory [₴], Dembele Adama [₵], Coulibaly Abdoulaye Nouhoum [₳] & Sylla Fatoumata [₫]

Summary- Conjunctival myiasis is a condition characterized by the accidental presence of fly larvae in the conjunctiva.

We report two cases of conjunctival myiasis. The clinical signs were those of a noisy moving foreign body. The diagnosis was based on the detection of fly larvae (maggot) on slit lamp examination. The treatment consisted of extracting the larvae one by one, followed by immediate relief for the patients and then a prescription for antibiotic eye drops.

Conjunctival myiasis or external ophthalmomyasis is characterized by the accidental presence of fly larvae at the level of the conjunctival cul-de-sac. It causes a painful foreign body symptomatology which, if not treated, can progress to internal myiasis.

Adequate and early treatment prevents progression to severe complications of internal ophthalmomyasis.

The purpose of this study is to draw the attention of ophthalmologists to this rare pathology, to clarify its diagnosis, its treatment and its complications.

Keywords: ocular myiasis, ophthalmomyiasis externa, oestrusovis.

I. Introduction

Myiases correspond to infestations of humans and animals by Diptera larvae[1]; [2], characterized by the accidental presence of fly larvae in the conjunctiva[3]; [4]; [5]. They are mainly found in populations living in direct contact with ungulates, sheep and goats [1], [6]. There are two types of ophthalmological involvement: external conjunctival ophthalmomyiasis, which is most often benign and quite frequent, and internal ophthalmomyiasis, which constitutes 5% of all ophthalmomyiases but which often leads to serious complications [1]; [7]. Human ophthalmomyiasis externa is cosmopolitan but seems more common in Mediterranean countries [8]. We report two cases of external ophthalmomyasis (conjunctival myiasis).

The purpose of this study is to draw the attention of ophthalmologists to this rare pathology, to clarify its diagnosis, its treatment and its complications.

II. Observation

a) Observation 1

It was a 9-year-old boy residing in a peri-urban area with his grandmother who keeps sheep at home, received in emergency consultation for sensations of foreign bodies moving in the right eye, with pain and redness. The interrogation allowed us to know that the child received an insect blow (unidentified) at the level of this eye 17 hours before the consultation. Visual acuity was 10/10 at both eyes.

Slit lamp examination (LAF) revealed diffuse tarsal and bulbar conjunctival hyperaemia in the right eye,therepresence of small moving bodieswhitish in appearance, about 1 mm long dispersed on the ocular surface at the level of the tarsus and in the conjunctival cul-de-sac (about ten), fowing light from the LAF (photophobic) (Figure 1). The rest of the anterior segment examination as well as the posterior segment were normal. The Adelphe eye was normal in all its components.

Management consisted of the instillation of a drop of 0.4% oxybuprocaine hydrochloride eye drops, followed by the extraction of all mobile elements (larvae) by swabbing and careful washing. We finished by prescribing local antibiotic prophylaxis with ciprofloxacin eye drops (one drop x3/d/1 week) and sent the sample to the parasitologist for identification.

Parasitological diagnosis revealed first stage larvae of Oestrusovis (L1).

In total we concluded to a conjunctival myiasis of the right eye.

The evolution was favorable with the disappearance of the functional signs, the reduction of the conjunctival hyperaemia, the total absence of larva on the ocular surface on D1, followed by the total disappearance of the signs and without any larva on D7 and D15 and healing without sequelae.

Author σ χ ν Θ ζ £ € ₣ ₴ ₫: Institute of Tropical Ophthalmology of Africa (IOTA), Bamako, Mali.
Author ρ ₵ : Regional Hospital of Sikasso, Mali / Alliance for the Development of Community Ophthalmology (ADOC), Bamako, Mali
Author ω ¥: Kati Reference Health Center, Koulikoro, Mali.
Author § ₳: Alliance for the Development of Community Ophthalmology (ADOC), Bamako, Mali.
Corresponding Author α: BA Kadiatou, Ophthalmologist at the Institute of Tropical Ophthalmology of Africa (IOTA), Bamako, Mali.
e-mail: coucouba2007@yahoo.fr

© 2023 Global Journals

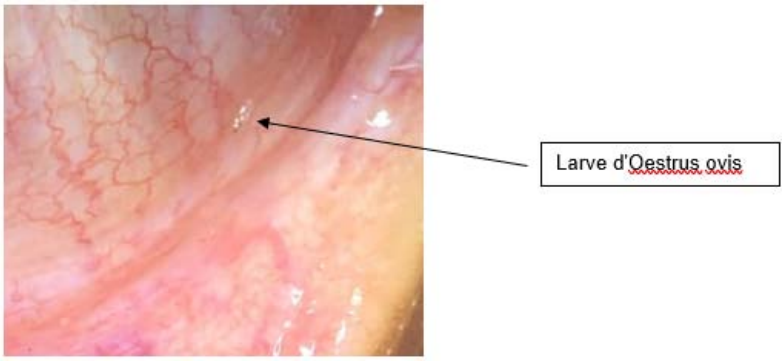


Figure 1: Macroscopic appearance of the first stage L1 Oestrusovis larva.



Figure 2: Appearance on the fifteenth day (D15) of the treatment.

b) Observation 2

It was a 16-year-old boy residing in an urban area received in emergency consultation for tingling sensations in the right eye, with ocular redness occurring on waking. The interrogation allowed us to find a notion of an insect bite (unidentified) in the right eye (OD), while driving a motorcycle the day before his admission to the consultation. Visual acuity was 10/10 in both eyes.

Slit lamp examination revealed conjunctival redness in the right eye,the presence of small moving bodies in appearance whitish, about 1 mm long, dispersed on the ocular surface at the level of the tarsus and in the conjunctival sac (4 in number) fleeing the light of the slit lamp (photophobic). The rest of the anterior segment examination as well as the posterior segment were normal.

The Adelphe eye was normal in all its components.

Management consisted of the instillation of a drop of 0.4% oxybuprocaine hydrochloride eye drops, followed by the extraction of all mobile elements (larvae) by swabbing and careful washing. We finished by prescribing local antibiotic prophylaxis with rifamycin eye drops (one drop x 3/d/1 week) and sent the sample to the parasitologist for identification of the pathogen.

Parasitological diagnosis revealed first stage larvae of Oestrus ovis (L1).

In total we concluded to a conjunctival myiasis of the right eye.

The evolution was favorable with the disappearance of the functional signs, the reduction of the conjunctival hyperaemia, the total absence of larva on the ocular surface on D1, followed by the total disappearance of the signs and without any larva on the seventh day (D7) and on the fifteenth day (D15) and recovery without sequelae (Figure 3).

© 2023 Global Journals

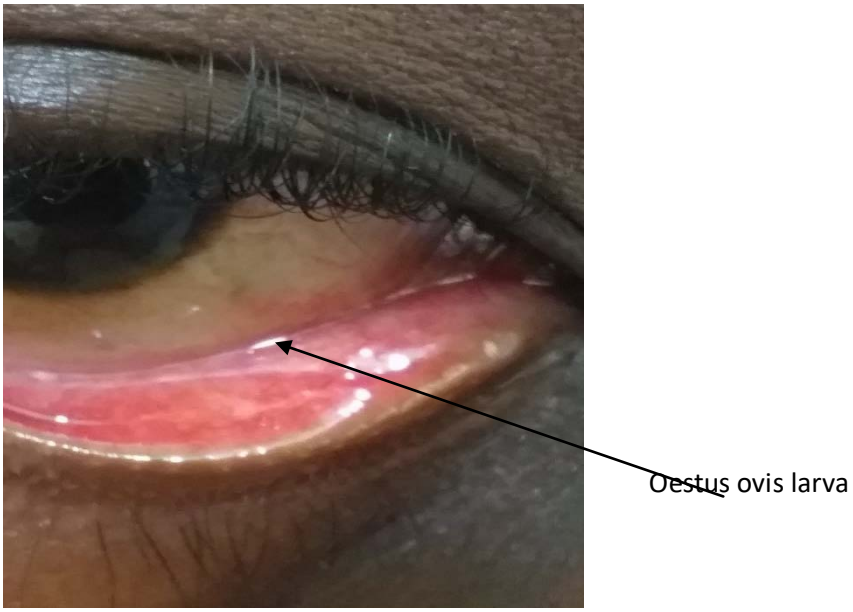


Figure 3: Macroscopic appearance of the first stage L1 Oestrusovis larva.

c) *The D Description of larva of OESTRUS OVIS STAGE 1*

Microscopic examination revealed that the larvaeovoid in shape with tapered ends, averaging 1mm long by 0.36mm wide with 12 segments or metamers, were comparable to the electron microscopic image of Steven JD in 1991 (Figure 4) [9].

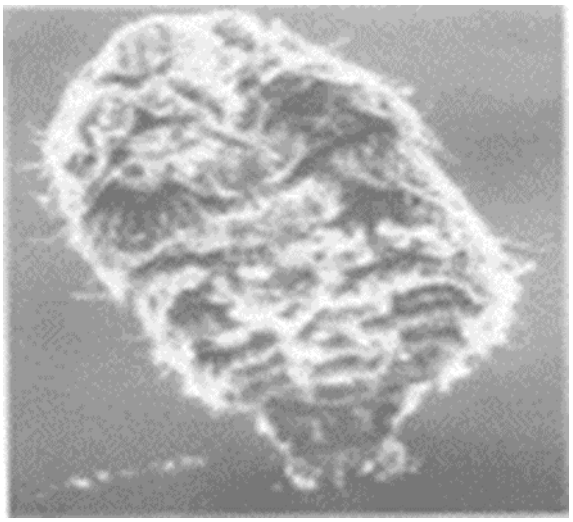


Fig. 4: Larva of oestrus ovis: ventral side [electron microscopy image (x120) Showing the cat's claw hooks curved and arranged in 2 groups] Source: Steven JD et al Br J Ophthalmol 1991(75) [9]

The cephalic end corresponding to the first metamer bears 2 strong mouth hooks, black, sclerotic curved, having the shape of hornsconsistent with the morphological description of Oestrus ovis larvaeL1 in the literature JD (Figure 5).

© 2023 Global Journals

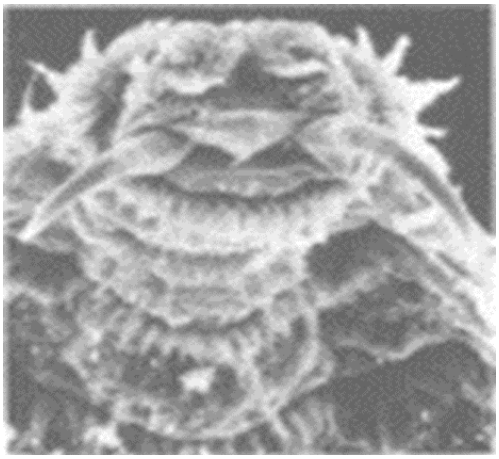


Fig. 5: Oestus ovis larva: cephalic end [electron microscopy image (x340) showing the 2 hooks curved in the shape of a horn]. Source: Steven JD et al Br J Ophthalmol 1991(75) [9]

III. Discussions

Myiasis is a pathology due to the presence of fly larvae in the human body. External conjunctival ophthalmomyiases represent the most frequent form of ophthalmomyases[1].It is a rare cosmopolitan disease [1];[10] usually observed in rural areas where animals are found grazing [11,]. Butobservations of external human oculomyiases occurring outside the breeding environment have been described[5];[12]; [13]. One of our observations lives in a suburban area with the notion of sheep farming in the family but the second observation lives in an urban area.

They are due to the accidental presence in the human conjunctival sac of larvae of insects belonging to the order Diptera and the family Oestridae.[1], [3]. They are non-biting flies and the 2 species most often found in conjunctival myiasis are Oestrus ovis and more rarely Rhinoestrus purpureus[1] [3]. Oestrus ovis is asmall gray fly 10 mm longwhose larval development necessarily takes place on intermediate hosts such as sheep and goats[1] [2].

Viviparous females of Oestrus ovis deposit first instar (L1) larvae directly into the nasal orifices of sheep and goats. The L1s actively penetrate through the nasal orifices and colonize the turbinates and the septum where they develop. Once located in the ethmoid, L1 molts into stage 2 (L2) larvae. L2 then ascend from the nasal cavity to the frontal sinuses where they molt to become instar 3 (L3) larvae. Subsequently, L3s are expelled from the host's nasal cavity by sneezing via nasal mucus which then contaminates the soils. Then L3 pupates within 12-24 h. Finally, when external conditions are favorable, the pupa molts into an adult fly in 30 to 34 days [10]. AT accidentally, females of Oestrusovis deposit first instar (L1) larvae directly on the human conjunctiva [1];[10] causing estrosis by larval deposition in the eye[11] [4], less frequently in the ears, nose or throat[4]. This is the case of our 2 observations.

Evolution in humansis self-limited, the larvae do not develop beyond the first instar [1] [4].

The circumstances of discovery are most often a notion of shock to the eye, followed by a sensation of a foreign body [1]; [13], as was the case in our observations.

On the other hand, Meusnier et al [5] reported an observation with no history or notion of trauma on a non-atopic site presenting with left ocular pruritus of suddenonset.

Clinically, conjunctival myiasis is manifested by superficial external forms (External Ocular Myiasis) classically associated with irritation, photophobia and pain, or deep internal forms (Internal Ocular Myiasis) potentially associated with blindness.[10], [14].

Our observations were conjunctival myiasis, associating a sensation of foreign bodies with irritation, photophobia, pain in one of our observations and conjunctival hyperemia.

In the case reported by Meusnier et al [5], the clinical signs were unilateral diffuse conjunctival hyperaemia associated with subpalpebral edema without chemosis or photophobia, whereas Narjisse et al found a foreign body sensation with pruritus and tearing in their observation [12].

Diagnosisis based on the detection of larvae on slit lamp examination, approximately 1 mm long, highly motile, which flee light to hide in the inner or outer corner of the eye. These larvae are white, translucent and ringed with a small head with a black anterior part (corresponding to the black hooks) [11] [10], [1], as was the case with our observations confirmed by the report from the parasitology department.

The treatment of human estrosis is based on the extraction of the larvae. For external ocular myiasis the extraction of the larvae is done manually and preferably under local anesthesia in order to immobilize them, because the larvae flee the light[5];[12]as was the case with our observations. Local antiseptics and

© 2023 Global Journals

antibiotics can be combined to avoid superinfection [5]; [10], as well as anti-inflammatory eye drops to treat inflammation [1]; [13]. We administered after the extraction of all the larvae ciprofloxacin eye drops for our first observation and rifamycin eye drops for our second observation.

The evolution of this pathology is most often benign and very rarely becomes complicated in a deep form. The serious forms are due to the ocular penetration of the larvae which can migrate into the vitreous, under the retina or in the choroid [1], [3], [5].

This intraocular migration of the larvae can be responsible for serious ocular lesions, a very significant inflammatory reaction in the form of panuveitis which can lead to blindness [7],[4], [12][15].and even orbital which resulted in the exenteration of the affected eye [16].

Prompt diagnosis and complete extraction can prevent these complications [5].; [12]. Our observations had complete healing without any complications.

IV. Conclusion

Conjunctival myiasis characterized by the accidental presence of fly larvae requires adequate and early treatment. Thus we can avoid the evolution towards the severe complications of internal ophthalmomyasis which can be potentially blinding. Hence the importance of a rapid ophthalmological consultation in the face of any sign of conjunctival irritation and the wearing of protective glasses when riding a motorcycle.

References Références Referencias

1. JW DIALLO, “OOestrus ovis external phthalmomyiasis: about 2 cases observed in BOBO DIOULASSO (BOURKINA FASO). », Rev. SOAO, no. 02, p. 22-26, 2013.
2. Rodhain F, Perez C (1985) Myiasigenic diptera, In: Precis of medical and veterinary entomology, Paris: Maloine ed.; 1985. P.249-65
3. Anane S. and Ben Hssine L., "Human conjunctival myiasis caused by Oestrus ovis in southern Tunisia",Bull. Pathol Company. Exot., flight. 103, No. 5, p. 299-304, 2010.
4. Brisou P, Menard G (2000) External ophthalmomyiasis caused by Oestrus ovis on a Var beach. Med Too 60(1): 64–6
5. Meusnier J.-G. • Cazes N.; External ophthalmomyiasis, Received December 13, 2018; accepted on February 20, 2019 Ann. Fr. Med. Emergency (2019) 9: 194-195 DOI 10.3166/afmu-2019-0148.
6. Yilma JM, Dorchies Ph (1991) Epidemiology of Oestrus ovis in south-west France, VetParasitol, 1991; 40: 3315-23
7. Khoumiri R, Gaboune L, Sayouti A Benfdil N., Ouaggag B., Jellab B. et al (2008) Internal ophthalmomyiasis: about two cases. J Fr Ophthalmol, 2008; 31, 3, 299-302.
8. Dorchies Ph (1977) Comparative pathophysiology of Oestrus ovis (Linné 1761) myiasis in humans and animals, Bull Acad Nat Méd, 1977;181:673-84
9. Stevens JD, McCartney ACE, Howes R (1991) Oestrus ovis ophthalmomyiasis acquired in the UK: case report and scanning electron microscopic study. Br J Ophthalmol 1991,75, 702-703
10. L. Basmaciyan et al., “Oestrus ovis external ophthalmomyiasis: a case report in Burgundy France”, BMC Ophthalmol, vol. 18, No. 1, p. 335, Dec. 2018, doi: 10.1186/s12886-018-1003-z.
11. Saadouli D, Ben Mansour K, S. Feki, H. Mlaouhia; Human conjunctival myiasis in the Béja region 30th congress of the Tunisian society of infectious pathology and 1st French-speaking congress of infectious pathology and clinical microbiology from September 9 to 11, 2021: P0675www.infectiology.org;
12. Narjisse Taouri, Alae El Bouaychi, Ouafae Cherkaoui, External human ophthalmomyiasis: about a case. PAMJ - Clinical Medicine. 2020;4:14. [doi: 10.11604/pamj-cm.2020.4.14.23708;
13. N. El Ouattassi || N.Laaribi || A.Alsubari || F. El Asri || K. Reda || A. Oubaaz, “External Ophthalmomyase In Urban Environments In Morocco”, IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS) (Mar. – Apr. 2018), Volume 13, Issue 2 Ver. VI, PP 01-02. DOI: 10.9790/3008-1302060102
14. BMS Venkatesh and PG Bhavani, “External ophthalmomyiasis by Oestrus ovis larvae: A Rare Case Report”, J Microbil Infect Dis, vol. 11, No. 03, Art. No. 03, Sep. 2021, doi: 10.5799/jmid.993982.
15. Edwards KM, Meredith TA, Hagler WS, Healy GR. Ophthalmomyiasis interna causing visual loss. Am J Ophthalmol. 1984May;97(5):605-10. PubMed| Google Scholar.
16. Y.-L. Huang et al., “Orbital myiasis: A case report and literature review”, Medicine, vol. 99, No. 4, p. e18879, Jan 2020, doi: 10.1097/MD.0000000000018879.

© 2023 Global Journals

This page is intentionally left blank

© 2023 Global Journals

Global Journal of Medical Research: F
Diseases
Volume 23 Issue 5 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Self-Perception of Social Participation Restrictions in Adults and Older Adults with Hearing Loss: A Systematic Review

By Israel Bispo dos Santos, Everton Adriano de Morais, Gloria Ravazzi, Flávio Magno Gonçalves, Cristiano Miranda de Araújo, Adriana Lacerda & Ana Cristina Guarinello

Universidade Tuiuti do Paraná

Abstract- *Introduction:* Hearing loss affects a large number of people worldwide, with a tendency to increase in the coming years. It is estimated that one in four people will be living with some degree of hearing loss by 2050. Many adults and elderly people report negative psychosocial and emotional consequences attributable to hearing loss, among them depression, feelings of loneliness, social isolation, and decreased quality of life. The use of hearing aids is indicated in these cases, not only to optimize communication but also to improve the quality of life and social participation of its users. Understanding self-perception of social participation restrictions and how the use of hearing aids can affect the lives of adults and the elderly is essential to minimize the consequences of these losses.

Objective: To analyze the self-perception of the effects of using hearing aids in adults and elderly with hearing loss on their social participation.

Keywords: *social participation, hearing loss, adult, elderly, hearing aids.*

GJMR-F Classification: *NLM: WV 270*

SELFPERCEPTIONOFSOCIALPARTICIPATIONRESTRICTIONSINADULTSANDOLDERADULTSWITHHEARINGLOSSASYSTEMATICREVIEW

Strictly as per the compliance and regulations of:

© 2023. Israel Bispo dos Santos, Everton Adriano de Morais, Gloria Ravazzi, Flávio Magno Gonçalves, Cristiano Miranda de Araújo, Adriana Lacerda & Ana Cristina Guarinello. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Self-Perception of Social Participation Restrictions in Adults and Older Adults with Hearing Loss: A Systematic Review

Israel Bispo dos Santos [α], Everton Adriano de Morais [σ], Gloria Ravazzi [ρ], Flávio Magno Gonçalves [ω], Cristiano Miranda de Araújo [¥], Adriana Lacerda [§] & Ana Cristina Guarinello [χ]

Abstract- Introduction: Hearing loss affects a large number of people worldwide, with a tendency to increase in the coming years. It is estimated that one in four people will be living with some degree of hearing loss by 2050. Many adults and elderly people report negative psychosocial and emotional consequences attributable to hearing loss, among them depression, feelings of loneliness, social isolation, and decreased quality of life. The use of hearing aids is indicated in these cases, not only to optimize communication but also to improve the quality of life and social participation of its users. Understanding self-perception of social participation restrictions and how the use of hearing aids can affect the lives of adults and the elderly is essential to minimize the consequences of these losses.

Objective: To analyze the self-perception of the effects of using hearing aids in adults and elderly with hearing loss on their social participation.

Method: This review was carried out using word combinations and truncations appropriate and adapted for each electronic database: PubMed/Medline, Scopus, Web of Science, Cochrane Library, Embase and Latin American and Caribbean Literature in Health Sciences (LILACS) and Grey Literature. To consider the eligibility of included/excluded studies the acronym "PECOS" was used, i.e. Population - Adults and elderly with hearing loss, Intervention or Exposure - Hearing Aid users, Comparison - Adults and elderly with hearing loss not using a hearing aid or comparison in a "before and after" format and for risk of bias the Joanna Briggs Institute (JBI) instrument was used.

Results: A total of 1424 references were retrieved by the search strategy, after that 113 articles were selected for full reading, resulting in 15 articles included for qualitative synthesis, however only 08 articles met all inclusion criteria.

Conclusion: The results indicate that elderly people with hearing loss who use hearing aids have better financial resources and higher level of education, they also perform better on some measures of socialization and social participation.

Corresponding Author α: Programa de Pós-graduação em Distúrbios de Comunicação, Universidade Tuiuti do Paraná, Curitiba, Brazil.
e-mail: israelbbispo@gmail.com
Author σ ρ ω ¥ § χ: Programa de Pós-graduação em Distúrbios de Comunicação, Universidade Tuiuti do Paraná, Curitiba, Brazil.
e-mails: demorais.neuropsicologia@gmail.com, gcortz87@hotmail.com, flaviomagno93@yahoo.com.br, cristiano.araujo@utp.br, adriana.lacerda@utp.br, acguarinello@gmail.br

Keywords: social participation, hearing loss, adult, elderly, hearing aids.

I. Introduction

The decade between 2021-2030 is considered by the United Nations as the era of healthy aging, precisely because promoting health and care for the elderly and their needs is a major global challenge, since the lack of resources and assistance to the elderly has been a constant in several countries around the world. Moreover, the increase in this population has raised numerous questions about the quality of life (QoL) and social participation of those who age (WHO, 2021). At the same time, study shows that the aging of the global population is the most important medical and social problem worldwide (MUIS et al, 2020).

It should be noted that the number of people over 60 is growing exponentially all over the world, because in recent decades there has been an increase in QoL in general, so that projections for the future indicate that the number of elderly people will increase dramatically by 2050, when it could reach 38% of the total population. Through this prospection it is possible to say that in the year 2050 there will be a greater number of elderly people aged 60 years or more, than there will be adolescents aged 10 to 24 years (2.1 billion against 2.0 billion).

The WHO shows that in underdeveloped countries, the increase in the elderly population may reveal serious problems, as there are fewer financial and health resources for this population, thus it is projected that 80% of elderly people will live in these places with minimal financial resources and with few conditions to afford their needs (WHO, 2018).

The document World Population Prospects (WPP, 2019) indicates that, especially in countries with great financial difficulties, the elderly may reach an older age, but with many economic difficulties, which will cause many to just "survive." It also highlights the importance of appropriate public policies that take into account the aging process and its various challenges (WPP, 2019).

In addition to the financial and resource challenge, it is estimated that the elderly will also have

© 2023 Global Journals

problems in their physical condition, which may result in sensory limitations, typical of aging, such as hearing impairment. This can progressively lead the elderly person to present a worsening in social performance and relationships that may become increasingly limited (NOREAU et al. 2002; LANE & CLARK, 2016).

It is understood that hearing is the sense that allows people to perceive sounds around them, and interact in their social environment. Globally, more than 1.5 billion people experience some decline in hearing ability during their lifetime, of which at least 430 million require care (WHO, 2021; WHO, 2018) with a tendency to increase in the coming years. It is estimated that one in four people will live with some degree of hearing loss by 2050 and more than 700 million will require rehabilitation (WHO, 2021).

Hearing loss requires appropriate interventions, and when not identified or treated early it can cause lifelong consequences, negatively affecting social interactions, causing social isolation, dependence and frustration, affecting memory, psychosocial well-being, QoL, and economic independence of these people (NORDVIK et al. 2018; CONVERY et al. 2019; BULĞURCU et al. 2020).

Social participation refers to a person's involvement in activities that provide interaction with others in society or the community. Most definitions state that to participate socially, a person must be involved in an activity and be in contact with others. Among the elderly, social participation is a reliable indicator of their health status, well-being, and QoL. It can be stated that social participation is a key determinant of successful healthy aging and is an important intervention goal for healthcare professionals (POLKU et al.2018).

Among several instruments used to verify the participation restrictions imposed by hearing impairment (hearing needs), one of the most used is the HHIE; This instrument is present in the review although some authors used others as evaluation protocol in this review. Thus, the studies on social participation restriction have grown and demonstrated a significant measurement of the self-perception of the elderly assessed (LOFT et al, 2009).

Therefore, understanding the self-perception of social participation restrictions and how the use of hearing aids can affect the lives of adults and the elderly is fundamental to minimize the consequences of these losses. It is conceived that understanding this problem can be a facilitator both for the realization of public policies and for the discussion about the rights of the elderly to a life with more quality, protagonism and social participation in society (WHO, 2018; WWP, 2019; WHO, 2021).

In view of this, the objective of this systematic review was to analyze the studies related to self-perception of social participation restriction in adults and elderly with hearing loss users of Individual Sound Amplification Device (ISAD). The research question was what are the effects of ISAD on social participation of adults with hearing loss?

II. Materials and Methods

a) Protocol and registration

This systematic review was registered on the PROSPERO website (International prospective register of systematic review - Centre for Reviews and Dissemination University of York) under number CRD42021249091 and was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses(PRISMA, 2021).

III. Eligibility Criteria

The Population, Exposure, Comparator, Outcome, and Study Characteristics (PECOS) strategy was used to delimit the scope of the review, given the importance of a well-formulated research question. This mnemonic assists in building the structure of the review by delineating the population, exposure, comparator, and outcome of interest, as well as stipulating possible study designs that might answer the research question. Studies that met the following criteria based on the acronym "PECOS" were considered eligible for this systematic review:

- P = population (adults and elderly with hearing loss);
- E = exposure (participants with hearing loss using ISADs);
- C =comparator (not comparable) Comparison - Adults and older adults with hearing loss not using a hearing aid or comparison in a "before and after" format and for risk of bias the Joanna Briggs Institute (JBI) instrument was used;
- O = outcome (effects of ISAD on social participation of adults with hearing loss);
- S = study design (cross-sectional, cohort, case-control).

IV. Information Sources and Search Strategy

The appropriate word combinations and truncations were selected and adapted specifically for each electronic database, i.e. PubMed/Medline, Scopus, Web of Science, Embase, PsycInfo, and Latin American and Caribbean Health Sciences Literature. Specific search strategies were used for each electronic database. Specific strategies were used in Google Scholar, Proquest, and OpenGrey, i.e., the gray literature. To avoid the likelihood of publication bias, a Latin American database was added to the search. Similarly, the EMBASE database, which is a repository of several journals not available in PUBMED/MEDLINE,

© 2023 Global Journals

mainly of European origin, was searched. In addition, the OpenGrey website, which promotes open access to 700,000 bibliographic references of grey literature produced in the European continent was also used to search for grey literature (MORGAN et al., 2018).

References cited in the included studies were searched manually and appropriate software was used to manage and remove duplicate references (EndNote® X7, Thomson Reuters, Philadelphia, PA, USA).

Electronic searches of the databases and gray literature were conducted on August 20, 2019 and updated in September 2020, then again the search was redone in October 2021. A researcher with expertise in the subject was consulted to assess the indication of any relevant articles on the topic to check for any relevant articles to be evaluated for inclusion in this review.

V. Selection Process

The articles were selected in two phases. During phase 1, four reviewers in two pairs independently reviewed the titles and abstracts of all references. Articles that did not meet the inclusion criteria were excluded. During phase 2, two reviewers independently read the selected articles in their entirety. If disagreement could not be resolved through discussion between the first and second reviewers, a third reviewer was involved in the final decision.

a) *Inclusion criteria*

The studies included in this review were: 1. studies published as articles, dissertations or theses with no language or publication time restrictions; 2. studies whose sample included adults and elderly individuals with hearing loss, with no gender restrictions; and 3. studies that presented a diagnosis of hearing loss by audiological screening, which evaluated the impact of social participation restriction associated with hearing loss in individuals whose hearing loss was diagnosed by audiological screening and use of hearing aids.

b) *Exclusion criteria*

The exclusion criteria were as follows: 1. studies including children and adolescents; 2. the study sample included individuals with syndromes and/or diseases related to hearing loss, in addition to those with visual impairment and cognitive problems; 3. studies that also included participants with normal hearing, but failed to present the results of participants with hearing and hearing loss separately; 4. studies whose participants were not diagnosed by audiological screening; 5. studies with missing or incomplete data; 6. reviews, reviews, letters, conference abstracts, expert opinions, case reports, and case-control studies and/or case-control studies. Studies whose participants were not diagnosed by audiological screening; 5. Studies with missing or incomplete data; 6. Reviews, letters, conference abstracts, expert opinions, case reports, and case-control studies and/or ethnographic studies; 7. Studies that did not assess the outcomes of interest; and 8. Non-accessiblestudies.

VI. Data Collection Process and Data Items

Two reviewers independently collected and discussed the information extracted from the included studies. Data were collected on study characteristics (authors, year of publication, country of origin, study design - quantitative and qualitative), population profile (sample size, sex and age), evaluation characteristics (questionnaires or interviews), outcome characteristics (results presented in relation to the outcome) and main conclusions.

Attempts were made to contact the authors to obtain pertinent unpublished information in the case of missing or incomplete data. Three contact attempts were made with the first author, corresponding author, and last author of the article, with a one-week interval. If there was no response, the study was excluded with an appropriate justification. All studies that did not meet the inclusion criteria were consensually excluded by both reviewers.

a) *Reporting Bias Assessment*

The methodology of the selected quantitative observational studies was assessed using the risk of bias tool of the Statistics Assessment and Review Instrument and the JBI critical appraisal tool for qualitative research. The risk of bias (methodological quality) was rated as "high" when the study obtained a "yes" response of less than 49%, "moderate" when the study obtained 50-69% "yes" responses, and "low" when the study obtained more than 70% "yes" responses on the risk of bias questionnaires.

b) *Synthesis Methods*

Population (P)

Studies in which the sample consisted of patients over 18 years of age with hearing loss were included. Studies in which the population consisted only of people without hearing loss, or studies in which the study population did not consist of adults (< 18 years) were excluded. Studies in which hearing loss was associated with mental disorder or disability, Alzheimer's disease, or dementia were also excluded. There was no exclusion based on gender or ethnicity of the population.

Intervention (I)

Studies in which the sample was an ISAD user were included. Studies in which users had undergone cochlear implant surgery were excluded. Studies in which ISAD was associated with another form of intervention were also excluded.

© 2023 Global Journals

Comparison (C)

Studies in which comparisons were made between at least two moments in time regarding ISAD use were included: comparisons between before and after ISAD fitting, and/or comparison between a group of adults and elderly that were not ISAD users. Studies in which the evaluation was done in only one moment, or studies that did not have a control group, were excluded.

Outcomes (O)

Only studies that assessed the degree of social participation of adults and older adults using validated instruments as the outcome of interest were included. Studies that did not use validated instruments or did not assess the outcome of interest were excluded.

Study design (S)

Randomized, pseudo-randomized, non-randomized, cohort, cross-sectional, and case-control clinical trials were included. Descriptive studies such as reviews, letters to the editor, case reports, case series, expert opinions, guidelines were excluded. Studies by publication date or language were not excluded.

c) Reporting Bias Assessment and Effect Measures and Certainty Assessment

To blind the reviewers in reading the references and to guarantee independence and confidentiality in both phases, the Rayyan website (http://rayyan.qcri.org) was used. The reviewers were blinded in all evaluations and one staff member (F.M.G), who did not participate in the selection, acted as moderator.

i. *Data collection process*

Three independent reviewers (I.B.S / E.A.M / G.R) collected information from the included studies, this information was discussed with two other team members (A.C.G / A.L). Data analysis initially consisted of characterizing the studies (author, year of publication, country, title, and study design), and when data were incomplete, attempts were made to contact the authors to obtain pertinent unpublished information.

Thus, the two reviewers independently collected and discussed the information extracted from the included studies. Data were collected on study characteristics (authors, year of publication, country of origin, study design; quantitative and qualitative studies were selected), population profile (sample size, sex and age), evaluation characteristics (questionnaires or interviews), outcome characteristics (results presented in relation to the outcome) and main conclusions.

Thus, attempts were made to contact the authors to obtain pertinent unpublished information in the case of missing or incomplete data. Three contact attempts were made with the first author, corresponding author, and last author of the article, one week apart. If there was no response, the study was excluded with an appropriate justification. All studies that did not meet the inclusion criteria were consensually excluded by both reviewers.

VII. Results

a) Study Selection

A total of 1424 references were retrieved by the search strategy. Of these, 113 articles were selected in phase 01 for full reading, leaving 15 articles included for qualitative synthesis, after a more thorough analysis in phase 02, only 08 articles met all the criteria of this research.

b) Study Characteristics

The 08 articles included in this systematic review were published in the period from 2013 to 2020, with 04 selected studies being cross-sectional studies that separated adults with hearing loss who used hearing aids from those who did not yet use hearing aids, and 04 studies were cohort studies with comparison of groups of hearing aid users and non-users. All studies were related to social participation and its relation to hearing loss in adults and the elderly.

The selected studies investigated the main social participation instruments used in adults and elderly with hearing loss, both hearing aid users and non-users. Among the instruments mentioned, eleven (11) were identified: (HHIE-S), (NHANES), (HHIE), (HHQ), (MARS-HA), (SOCACT), (LISPE), (IOI-HA), (HHIA), (ALDQ) and (SAC).

This variety of questionnaire use did not allow us to systematize the results in a quantitative analysis with meta-analysis, but it can be noted some trends in the eight selected articles. These were divided into two groups, in the first group we found four articles with cross-sectional studies that separated adults with hearing loss who used ISADs from those who did not yet use ISADs (MEYER et al. 2014; POLKU et al. 2018; CAMARGO et al. 2018; WELLS et al. 2020). The second group found four articles with cohort studies that analyzed the before and after the use of ISADs (MIZUTARI et al. 2013; PICININI et al. 2017; KWAK et al. 2020; SPRECKLEY et al. 2020).

All of the articles mentioned present studies that aimed to understand hearing loss its socio-determinant factors, and the effects of hearing aid use on the QoL and satisfaction of elderly and adult users. Some of these articles also discuss issues related to poverty and access to hearing health care in developing countries.

All articles highlight the importance of hearing health on the QoL and well-being of adults and older adults, as well as the need for access to effective and affordable hearing health care (MIZUTARI et al. 2013; MEYER et al. 2014; PICININI et al. 2017; POLKU et al. 2018; CAMARGO et al. 2018; WELLS et al. 2020; KWAK et al. 2020; SPRECKLEY et al. 2020).

© 2023 Global Journals

c) Risk of Bias in Studies

As for the risk of bias, the 08 articles chosen were classified as "low" risk of bias, 04 cross-sectional studies and 04 cohort studies. The methodological flaws identified concerned the shielding of outcome assessment and incomplete outcome data.

d) Results of Individual Studies

The following is a summary of the results of each article starting with the cross-sectional studies evaluating trends:

Meyer et al's (2014) article "On the investigation of factors that influence help-seeking for hearing impairment in older adults" investigated the factors that influence help-seeking for hearing loss in older adults. Participants in the study included 307 individuals aged 60 years and older who had uni- or bilateral hearing loss. ISAD users were assigned to either a group of users who had not sought hearing help (n=55) or a group of users who were already seeking hearing help (n=92); while new ISAD users were assigned to either the unsuccessful ISAD user group (n=75) or a successful ISAD user group (n=85).

The Health Belief Model (HBM) results show that many of the participants were delayed in seeking help for their hearing loss, with an average of seven years from initial awareness of the problem to seeking professional help. Reasons for the delay included lack of awareness about the severity of the problem, the perception that hearing loss was a normal part of aging, and the fear of using hearing aids.

Participants also reported having difficulty finding information about hearing health services and often turned to family and friends for help. The authors conclude that more information about the benefits of hearing care and available resources is needed to help older adults seek help sooner and improve their quality of life (MEYER et al. 2014).

The article by POLKU et al. (2018) entitled "Perceived benefit from hearing aid use and life-space mobility among community-dwelling older adults" investigated the use of hearing aids and the spatial mobility of community-dwelling older adults. Individual interviews were conducted with 702 Finnish older adults with a mean age of 78, of whom 180 reported using hearing aids.

The results of the Life-Space Assessment (LSA) questionnaire showed that the elderly who wore hearing aids reported greater perceived benefits from their use, such as improved communication with others and the ability to participate in social activities.

In addition, participants who wore hearing aids showed greater spatial mobility compared to those who did not, meaning that they moved around in a larger space and had an easier time participating in activities outside the home. The authors conclude that the use of hearing aids can improve the perceived benefits of ISADs and spatial mobility in older adults, and that it is important to encourage the use of these devices to improve QoL and social participation (POLKU et al. 2018).

The article "Perception of the elderly about participation restriction related to hearing loss" by Camargo et al. (2018) investigated the perception of the elderly about their social participation restriction due to hearing loss. The sample consisted of 46 individuals, with 43.48% (n=20) female and 56.52% (n=26) male. The mean age was 74.78 years, with a standard deviation of 7.96 years. The Hearing Handicap Inventory for the Elderly (HHIE) questionnaire was used to investigate hearing-related social participation, and the results indicated that the elderly perceived limitations in their social participation, such as difficulty following conversations in groups and in noisy environments, besides feeling embarrassed and isolated.

We noticed that the results of the reduced version of the Hearing Handicap Inventory for the Elderly (HHIE), participants who did not use hearing aids had greater restrictions in social participation and affected their self-esteem and emotional well-being. Overall, such restriction was greater in males. The authors conclude that hearing loss can lead to social exclusion and that support and resources need to be provided to help older adults cope with the consequences of hearing loss and maintain their social participation.

The last cross-sectional article by Wells et al. (2020) entitled" Characteristics and health outcomes associated with hearing loss and hearing aid use among older adults" investigated the characteristics and health outcomes associated with hearing loss and hearing aid use in older adults. The survey data was used to categorize 20,244 participants into five groups: no hearing loss, mild hearing loss without aid, mild hearing loss with aid, severe hearing loss without aid, and severe hearing loss with aid. The results showed that seniors with hearing loss were more likely to have other health conditions, such as diabetes and hypertension, compared to seniors without hearing loss.

So the National Health and Nutrition Examination Survey (NHANES) results used in the research showed that seniors who wore hearing aids showed improvements in physical and mental health compared to those who did not. These improvements included lower risk of depression, better quality of life, higher life satisfaction, and lower risk of falls. The authors concluded that hearing loss in the elderly is associated with worse health outcomes, but the use of hearing aids can help improve the health and quality of life of these individuals.

Regarding the four cohort study articles, it can be observed in the study conducted by Mizutari et al. (2013) entitled "Age-related hearing loss and the factors that determine the continued use of hearing aids among community-dwelling elderly" that an investigation was

© 2023 Global Journals

conducted about the factors that affect the continued use of hearing aids in community-dwelling elderly individuals suffering from age-related hearing loss.

After the primary screening, ISADs were loaned to 68 participants (4.8%) who did not already have them, 38 of whom (60.3% of users, representing 2.7% of the total elderly population) started using the ISAD continuously. The HHIE score was significantly high among these 38 participants.

In the same study, another group was formed with 110 participants, with a mean age of 78.7 years, who had been using hearing aids for at least 6 months. The results of the reduced version of the Hearing Handicap Inventory for the Elderly (HHIE), indicated that the average time of use of the devices was 6.7 years and that 68.2% of the participants reported the continuous use of the devices.

The factors that influenced the continued use of hearing aids were: the intensity of hearing loss, satisfaction with the devices, improvement in communication, and the presence of social support. In addition, it was observed that age and time of hearing loss were not significant factors in determining continued use of the devices.

The authors concluded that continued use of hearing aids in community-dwelling elderly may be influenced by factors such as hearing loss severity, satisfaction with the devices, improvement in communication, and social support, highlighting the importance of adequate support and good fitting of hearing devices.

The article by Picinini et al. (2017), "Restriction in social participation and satisfaction with hearing aids - a study on post-fitting" investigated the relationship between restriction in social participation and satisfaction with the use of hearing aids after fitting. Of the 42 participating individuals, 64.3% were elderly. Evaluation was carried out using validated follow-ups to measure restriction in social participation and satisfaction with hearing aids.

The results of the reduced version of the Hearing Handicap Inventory for the Elderly (HHIE-S) in the elderly was 10 points (P25 and P75: 6-16), and in adults, the HHIA score was 30 points (P25 and P75: 4-60). The emotional domain of the HHIA was 16 points (P25 and P75: 0-26) and the social domain was 14 points (P25 and P75: 2-26). The results indicated that 47.2% of the participants had restricted social participation, and the main factors associated with this restriction were the perception of their own hearing, self-esteem, and lack of social support.

Satisfaction with the hearing aids was also evaluated, and 66% of the participants were satisfied with the devices. The factors that positively influenced this level of satisfaction were the ease of use and comfort of the devices, while the restriction in social participation was a negative factor. The authors concluded that the restriction in social participation is a common problem in users of hearing aids and that can affect the satisfaction with the devices. They also highlighted the importance of evaluating the restriction in social participation and the adaptation of hearing aids to improve the quality of life of users.

In the article Kwak et al. (2020), "Evaluation of objective audiometry to predict subjective satisfaction in patients with hearing aids" investigated how objective audiometry could predict subjective satisfaction in patients who have worn hearing aids. The research included 40 patients who had previously worn hearing aids and were admitted to objective audiological estimates such as speech recognition threshold measurements, otoacoustic emissions testing, and tonal threshold audiometry.

In this Korean version of the HHIE (K-HHIE) we can note that the results show that no significant results were found between objective audiometry and subjective patient satisfaction, indicating that the subjective assessment of patient satisfaction is important and should be considered when evaluating the effectiveness of hearing aids. In addition, it was noted that age and duration of use of hearing aids were not factors described to determine satisfaction with the devices.

And finally in the article Spreckley et al. (2020), The article "Impact of hearing aids on poverty, quality of life and mental health in Guatemala: results of a before and after study" aims to investigate the impact of hearing aids on poverty, social participation and QL and mental health in a population in Guatemala. The authors interviewed 135 cases and 89 comparison subjects at baseline and follow-up who were assessed before and after hearing aid fitting. The participants were evaluated and checked for poverty, mental health, social life before and after fitting the hearing aids the WHOQOL-BREF, Questionnaire was used and they noted that as Quality of life significantly improved income after fitting the hearing aids, and an improvement in quality of life as well as social relationships and work performance. There was also a significant improvement in the mental health of the participants.

The authors concluded that hearing aid fitting can be an effective intervention in reducing poverty, improving social life and mental health for low-income, hearing-impaired adults and seniors. They highlighted the importance of access to hearing health care for populations in developing countries.

The studies also highlight the importance of personalized device adjustments to increase user satisfaction, in addition, they evaluated the effectiveness of hearing rehabilitation programs in device users and others explored the relationship between device use and cognition in the elderly providing important information for healthcare professionals working with elderly and

© 2023 Global Journals

adult hearing aid users (MEYER et al. 2014; POLKU et al. 2018; CAMARGO et al. 2018)

The eight articles, in general, highlight the benefits of using these devices and the need for personalized adjustments to meet the individual needs of each user and the significant improvement in their social participation, although using different questionnaires we found no ill effects of using ISADs, although complaints about noise and poor adaptations only, but mostly showing the benefits of ISADs in the autonomy and greater socialization of the adults and elderly surveyed (MIZUTARI et al. 2013; MEYER et al. 2014; PICININI et al. 2017; POLKU et al. 2018; CAMARGO et al. 2018; WELLS et al. 2020; KWAK et al.2020; SPRECKLEY et al.2020).

VIII. Discussion

The main goal of this systematic review was to investigate and analyze, based on the national and international literature, the self-perception about the effects of using hearing aids on the social participation of adults and elderly with hearing loss using and not using ISADs. Despite the scarcity of articles found, it can be inferred from their reading and analysis that there is evidence that the use of ISADs can contribute significantly to the communication of the elderly and improvement of their social participation (WITTICH et al. 2015; CHANG et al. 2018; ZENG et al. 2018; LAWRENCE et al. 2019).

Regarding hearing loss and family living together, no consensus was found in this review. In some studies, family members are more affected by the disability than the hearing impaired themselves and in others, hearing impaired people have lower satisfaction scores than their family members (WELLS et AL 2020; MIZUTARI et al.2013).

It was realized that the most frequent complaint of family members and adults and seniors with hearing loss was related to difficulty understanding speech and these researches have made it explicit that ISADs, in addition to alleviating hearing loss, can also improve the QL of those who use them by reducing caregiver and family stress, depressive symptoms, as well as the emotional and mental burden of those involved, resulting in a significant improvement in social participation as well (PICININI et al. 2017; KWAK et al.2020).

The study by Polku et al. (2018) and Camargo et al. (2018) showed the perceived benefit of using ISADs is associated with greater mobility within social space, having more safety to move around in the community.

Despite this, future studies are needed to examine whether appropriate ISAD use can promote greater mobility among those with hearing difficulties.

Spreckley et al.(2020) and Picininiet al.(2017), show that over the past 30 years, there have been many advances regarding technology and care for adults and older adults with hearing loss, ranging from improvements in cognitive performance, as cited in the study, to improvements in working memory performance and autonomy in middle-aged adults and older people who use ISADs.

In addition to these technologies the articles by Bulğurcu et al. (2020) and Spreckley et al. (2020) - have in common a focus on evaluating the effectiveness and satisfaction of hearing aid users with wireless technology. Both studies demonstrate that the use of hearing aids that allow connectivity with electronic devices such as smartphones can improve users' social participation by increasing ease of communication and facilitating speech understanding in noisy environments. Both Levasseur et al.'s (2020) and Picinini et al.'s (2017) studies have in common a focus on evaluating the effectiveness of auditory rehabilitation programs in hearing aid users seeking to improve speech perception in noisy environments. Levasseur et al. (2020) developed a game-based auditory training program for hearing aid users and evaluated its effectiveness in improving speech perception in noisy environments giving an aging with more QL actively within their families, neighborhoods, and civil society, as well as providing ample opportunities for elderly people with hearing loss to participate in the community (LEVASSEUR et al., 2020, 2017).

From this review it can be concluded that hearing loss is still a recurring health problem among the elderly, which affects most aspects of their lives, especially cognitive function, mental health, and well-being. The use of hearing aids can improve the lives of these individuals not only from the improvement of hearing, but also social interactions, mood, and cognitive functioning (CAMARGO et al. 2018; PICININI et al. 2017).

From this review one can understand the importance of guiding professionals who work with the elderly, especially those of speech therapy, in assisting with ISAD users during their adaptation of the devices and awareness of the best ways and actions to minimize the restrictions of social participation, which can result in a QL and decrease social isolation of these individuals (MIZUTARI et al.2020; KWAK et al. 2020; WELLS et al. 2020).

Chang, et al,(2018) The article investigated the risk of hospital readmission for elderly patients with self-reported hearing loss and communication problems. The study was treated based on a retrospective review of electronic medical records of elderly patients admitted to an academic hospital in New York City. The results appreciated that patients with hearing loss and communication problems have a higher risk of hospital readmission than those without these problems. The

© 2023 Global Journals

authors conclude that identifying and treating these problems may be important in reducing the risk of hospital readmission in elderly patients.

The article by Convery et al. (2019) investigates the factors that initiated for a successful setup of a self-adjusting ISAD (Individual Sound Amplification Device) and the need for personalized support. The authors followed up a study of 42 adults with mild to moderate hearing loss and concluded that age, time of device use, and hearing self-efficacy are associated with successful ISAD setup. The results suggest that older individuals and those with lower hearing self-efficacy may benefit from personalized support in ISAD fitting.

In Nordvik, et al (2018) review of generic quality of life in people with hearing loss, the results show that hearing has a significant impact on quality of life and that hearing aid use was associated with an improvement in overall quality of life. The authors conclude that early identification of hearing loss and effective treatment, such as the use of hearing aids, can improve the quality of life and social participation of these people.

In this systematic review, it was noted that adults and the elderly showed in their self-assessment a satisfaction with hearing aids, but as the degree of hearing loss increases, the self-perception of hearing decreases. The individuals who perceived more benefits from using hearing aids were those with less restricted social participation.

The evidence found suggests that hearing aid use may mitigate some of the adverse consequences of hearing loss, but further studies exploring hearing loss and its relationship to social participation are needed and may help to encourage hearing aid use to promote healthy aging.

It is important to mention that ISAD may favor the social participation of the elderly and improve their interactions with other people. Despite this, it is important to note that ISAD is not the only solution and depends on other factors such as level of education, professional occupation, financial resources among others, which may influence social participation during the process of more active aging (SANTOS I .2022).

It is suggested that further research be developed, especially in Brazil, where there is a shortage of material produced around this topic, which may contribute to the development of instruments that assess the social participation of adults and elderly individuals, specifically individuals with hearing loss of all degrees, users or non-users of hearing aids.

IX. Limitations

Among the limitations found in this study, we highlight the lack of literature related to the social participation of adults and elderly individuals with hearing loss. It is understood that more studies about this topic are necessary, with broader results and deeper discussions

Moreover, we noticed a great variety of questionnaires that evaluate social participation, but few focused on socialization, and many of the articles found focused on general health or mental health. There is a need for more studies in the area using validated instruments that assess adult social participation and specifically the elderly with hearing loss.

X. Conclusion

The results show that elderly people with hearing loss who use hearing aids have better resources, are better off financially, and show better performance in communication, understanding and listening for a more pleasant communication and social life with less isolation and more autonomy in social life. Research question that analyzed the effects of ISAD on the social participation of adults with hearing loss, showed that the effect was very positive for adults and older adults with hearing loss

Other Information

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES Brasil PROSUP/ CAPES 2020-2022 Scholarships.

Ethical approval: This article contains no studies with human or animal participants conducted by any of the authors.

Informed consent: For this type of study, formal consent is not required.

References Références Referencias

1. BULĞURCU et al, 202008BULĞURCU, S. et al. Hearing aid problems in elderly populations. EarNose & Throat Journal, 2020 Jun; 99(5):323-326. DOI:10.1177/0145561319883526. Disponível em: https://pubmed.ncbi.nlm.nih.gov/31637949/ Acesso em: 08/01/2022
2. CAMARGO, C. et al.Percepção de idosos sobre a restrição da participação relacionada à perda auditiva. Distúrbios da Comunicação, v. 30, n. 4, p. 736-747, 2018.DOI: 10.23925/2176-2724.2018v30i4p736-747. Disponível em: https://revistas.pucsp.br/index.php/dic/issue/view/2069 Acesso em: 04/12/2021
3. CHANG, J.E., WEINSTEIN, B., CHODOSH, J., & BLUSTEIN, J. (2018). Hospital readmission risk for patients with self-reported hearing loss and communication trouble. Journal of American Geriatric Society, 66(11), 2227-2228. https://doi.org/10.1111/jgs.15545
4. CONVERY et al, 201909 CONVERY, E. et al. Factors associated with successful setup of a self-fitting hearing aid and the need for personalized support.

© 2023 Global Journals

EarandHearingjul/aug.,40(4), 2019. Disponível em: https://pubmed.ncbi.nlm.nih.gov/30285978/ Acesso em:13/08/2021

5. IBGE. INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. Tabela de projeção da população 2010-2060 (revisão 2018). IBGE, 2018.Disponível em: https://agenciadenoticias.ibge.gov.br/media/com_mediaibge/arquivos/d59695440bbc3acfe1e1e1a56b9c14d8.xls. Acesso em: 20/12/2021.
6. JAISWAL, A.; FRASER, S.; WITTICH, W. Barriers and facilitators that influence social participation in older adults with dual sensory impairment frontiers in education. 2020. DOI:10.3389/feduc.2020.00127. Disponível em: https://www.frontiersin.org/article/10.3389/feduc.2020.00127 Acesso em: 05/12/2021
7. KWAK, M. Y. et al.Assessment of objective audiometry to predict subjective satisfaction in patients with hearing aids.Clinical and Experimental Otorhinolaryngology, v. 13, n. 2: 141-147, May 2020.DOI: 10.21053/ceo.2019.00871. Epub 2019 Nov 19.
8. LANE, K. R.; CLARK, M. K. Assisting older persons with adjusting to hearing aids. ClinNurs Res,2016 Feb;25(1):30-44. DOI:10.1177/1054773814563350. Epub, 2014, Dec 17. Disponível em: https://pubmed.ncbi.nlm.nih.gov/25520326/ Acesso em:05/12/2021
9. LAWRENCE, B.J., JAYAKODY, D.M.P, BENNETT, R. J., EIKELBOOM, R. H., GASSON, N., & FRIEDLAND, P.L., (2019).Hearing loss and depression in older adults: A systematic review and metaanalysis. The Gerontologist, 60(3), e137-e154. https://doi.org/10.1093/geront/gnz009
10. LOFT Y, MEHRKIAN S, MOOSSAVI A, FAGHUH-ZADELI S. Quality of life improvement in hearing-impaired elderly people after wearing a hearing aid. Arch Iranian Med. 2009;12(4): 365-70.
11. LEVASSEUR, M. et al.Capturing how age-friendly communities foster positive health, social participation and health equity: a study protocol of key components and processes that promote population health in aging Canadians.BMC Public Health, v. 17, n. 1, p. 502, 25 maio 2017. Disponível em: doi:10.1186/s12889-017-4392-7.
12. LEVASSEUR, M. et al.Environmental characteristics associated with older adults' social participation: the contribution of sociodemography and transportation in metropolitan, urban, and rural areas. Int J Environ Res Public Health, 2020,Nov 13;17(22):8399. DOI:10.3390/ijerph17228399. Disponível em: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7697474/ Acesso em: 02/11/2021
13. MEYER, C., HICKSON, L., LOVELOCK, K., LAMPERT, M., & KHAN, A. (2014). An investigation of factors that influence help-seeking for hearing impairment in older adults. International journal of audiology, 53(sup1), S3-S17.
14. MIZUTARI, K., MICHIKAWA, T., SAITO, H., OKAMOTO, Y., ENOMOTO, C., TAKEBAYASHI, T., ... & NISHIWAKI, Y. (2013). Age-related hearing loss and the factors determining continued usage of hearing aids among elderly community-dwelling residents. PLoS One, 8(9), e73622.
15. NORDVIK, Ø. et al.Generic quality of life in persons with hearing loss: a systematic literature review. BMCEarNoseThroatDisord, 2018,18:1. DOI: 10.1186/s12901-018-0051-6. Disponível em: https://pubmed.ncbi.nlm.nih.gov/29386982/ Acesso em: 07/12/2021
16. NOREAU, L., FOUGEYROLLAS, P., VINCENT, C. The LIFE-H: assessment of the quality of social participation. Technology and Disability, 2002; 14:113-8. DOI:10.3233/TAD-2002-14306Disponível em: https://www.researchgate.net/publication/282371563_The_LIFE-H_Assessment_of_the_ quality_ of_social_participation
17. OMS 2021. Organização Mundial da Saúde. OMS estima que 1 em cada 4 pessoas terão problemas auditivos até 2050 acesso 05/12/2021 https://www.paho.org/pt/noticias/2-3-2021-oms-estima-que-1-em-cada-4-pessoas-terao-problemas-auditivos-ate-2050
18. ORGANIZAÇÃO MUNDIAL DA SAÚDE. Estatísticas mundiais de saúde 2018: Monitoramento da saúde para os Objetivos de Desenvolvimento Sustentável (ODS). Genebra, Suíça, 2018. Disponível em: https://cisa.org.br/index.php/pesquisa/dados-oficiais/artigo/item/122-estatisticas-mundiais-de-saude-2018 Acesso em: 15/12/2021
19. PICININI, T. D. A., WEIGERT, L. L., NEVES, C. Z., & TEIXEIRA, A. R. (2017). Restriction in social participation and satisfaction with hearing aids-a study on post-fitting. Audiology-Communication Research, 22.
20. POLKU, H., MIKKOLA, T. M., GAGNÉ, J. P., RANTAKOKKO, M., PORTEGIJS, E., RANTANEN, T., & VILJANEN, A. (2018). Perceived benefit from hearing aid use and life-space mobility among community-dwelling older adults. Journal of Aging and Health, 30(3), 408-420.
21. PRISMA 2021. PRISMA STATEMENT EXTENSIONS AND SEARCHING http://www.prisma-statement.org/Extensions/Searchingacesso 02/01/2022
22. SPRECKLEY, M., MACLEOD, D., GONZÁLEZ TRAMPE, B., SMITH, A., & KUPER, H. (2020). Impact of hearing aids on poverty, quality of life and mental health in guatemala: results of a before and after study. International journal of environmental research and public health, 17(10), 3470.
23. Santos, Israel & Morais, Everton & Lacerda, Adriana &Guarinello, Ana. (2022). Fatores que interferem na participação social de idosos com perda auditiva.

© 2023 Global Journals

Research, Society and Development. 11. e510111234860. 10.33448/rsd-v11i12.34860.
24. VENTRY, I. M.; WEINSTEIN, B. E. The hearing handicap inventory for the elderly: a new tool. EarHear. 1982;3(3):128-34. DOI: 10.1097/00003446-198205000-00006. Disponível em: https://pubmed.ncbi.nlm.nih.gov/7095321/ Acesso em: 05/12/2021
25. WELLS, T. S., NICKELS, L. D., RUSH, S. R., MUSICH, S. A., WU, L., BHATTARAI, G. R., & YEH, C. S. (2020). Characteristics and health outcomes associated with hearing loss and hearing aid use among older adults. Journal of Aging and Health, 32(7-8), 724-734.
26. WHO, 2021.WORLD HEALTH ORGANIZATION (WHO). Ageing well: must be a global priority.World Health Organization, 2021. Disponível em: <https://bit.ly/3pKozDX>.02/12/2021
27. WITTICH, Barstow, E. A., Jarry, J., & Thomas, A. (2015). Screening for sensory impairment in older adults: Training and practice of occupational therapists in quebec. The Canadian Journal of Occupational Therapy, 82(5), 283-293. https://doi.org/10.1177/0008417415573076
28. WWP 2019- WORLD POPULATION PROSPECTS POPULATION DIVISION https://population.un.org/wpp/Download/Standard/CSV/ (2019). Accesso 14/02/2021.
29. Zeng, Y., Peng, J., & Zhao, L. (2018). Investigation of the acoustical environment of the elderly's living place. Archives of Acoustics, 43(2), 531-536. https://doi.org/10.24425/123924

Appendix 2: Table Articles

Author, Year, Country	Study design	Sample/Range or Mean Age	Classification	Questionnaire	Now and after	Outcomes	Conclusion
1-Kwak et al, 2020 Korea	This clinical prospective cohort study	n= 20 of the patients who Vinte pacientes (cinco homens; idade média, 62,5 anos; faixa etária, 37–79 anos) foram incluídos neste estudo. Destes, 12 pacientes tiveram perda auditiva	Hearing-impaired adult patients with PTA of 40–85 dB HL	Korean version of the HHIE (K-HHIE) andthe IOI-HA	before and after 6 months of wearing the hearing aid.	The mean K-HHIE score was 31.2 before wearing the hearing aid and 39.4 after 6 months of wearing the hearing aid, which showed a significant increase over the 1, 3, and 6 month results (P<0.05).	Audiometric results, K-HHIE, and K-IOI-HA scores after hearing aid fitting showed a statistically significant improvement over a period of time compared to those before hearing aid fitting.
2-PICININI,ET al 2017BR	This study is based clinical prospective cohort stud	N=50 Of the 42 participating individuals, 64.3% were elderly.	The study included individuals of both sexes, adults over 18 years of age followed up in a public hospital	*Hearing Handicap Inventory for Adults* (HHIA	The participants were asked to rate their hearing from 1 to 10, before and after fitting an HAD. The following instruments were used to measure social participation restriction	Of the 42 participating individuals, 64.3% were elderly. The scores of the total IOI-HA instrument, its factors 1 and 2 and the HHIE-S correlated with the Numerical Rating Scale (NRS) before amplification. There was correlation between the total IOI-HA instrument and its factor 2 with the HHIE-S, total HHIA and emotional and social domains.	Adults and elderly people showed satisfaction with their ISADs, and there was no difference between the groups. The higher the degree of hearing loss, the better the self-perception of hearing after ISAD fitting. The lower the participation restriction, the more the benefits of using ISADs were perceived by users.

© 2023 Global Journals

3-Meyer et al , 2013 Australia	The study was retrospective in nature in that participants were assessed after they had consulted with a health professional two years and were either successful or unsuccessful with them.	The final sample consisted of 307 participants. Once enrolled in the study, participants were assigned to one of four groups: a non-consulter group (n55); a consulter group (n92); an unsuccessful hearing aid owner group (n75); or a successful hearing aid owner group (n85).	with greater than 25 dB HTL (averaged over 0.5, 1, 2, and 4 kHz or 2, 3, and 4 kHz)	The Cognistat (Kiernan et al, 1995) The HHQ (Gatehouse & Noble, 2004)The SAC (Schow&Nerbonne, 1982) A modified version of the attitude questionnaire (van den Brink,1995) was used as it assesses elements of the HBM he MARS-HA (West & Smith, 2007) The CSI (Amirkhan, 1990 The LOC scales (Levenson, 1981; Presson et al, 1997 The ALDQ is a 25-item questionnaire that was developed by Gatehouse et al (1999) The SOCACT was developed by Cruice (2001) to examine the extentof social participation	comparação entre varios grupos	The final model (log likelihood 148.39, LR χ2(14)239.65, pseudo r20.45, p 0.0001) was based on a sample of 245 participants as there was incomplete data for seven participan	In summary, an older adult with HI was more likely to seek help for HI if they perceived there to be many benefits of hearing aids, possessed a positive attitude to hearing aids, perceived they were capable of managing a hearing aid, received a pension, and acknowledged experiencing communication difficulties as a result of their HI (important for consultation for HI only). Less negative support (and more positive support) from significant others also prompted helpseeking for HI. With the exception of retired employment status, good health, and cognitive reasoning skills, other non-audiological factors associated with client demographics, psychological profile (e.g. source of personal control), and ageing (e.g. visual disability, finger dexterity), did not appear to be important. Of the audiological factors studied, higher levels of HI was the only factor that appeare to influence help-seeking for HI
4-Polku et al, 2016 Finland	This study is based on cross-sectional analyses of the data	Of those participants who had returned the postal questionnaire (n = 712), 584 reported that they did not have a HA and, 127 reported having a HÁ	none	Life-Space Assessment (LSA) questionnaire (Baker et al., 2003)	is a 2-year prospective cohort study of community-dwelling Finnish olderadults.	The mean age of the participants was 82 years (SD = 4.2) and 63% were women. The mean life-space mobility score was 63 (SD = 21.7), ranging from 6 to 120. Of the participants, 18% reported having a HA. The sample characteristics categorized according to perceived benefit from HA use are presented in Table 1. Among the participants	Conclusion, our results indicate that perceived benefit from HA use is associated with better life-space mobility. The current result serves as a justification for future studies examining whether use of a proper HA will promote life-space mobility and participation among those with difficulties in hearing

						who perceived more benefit from HA, 81 % reported using the HA daily and on average 9 hr/day. Among those who perceived less benefit from HA, 49% reported daily use and on average 6 hr/day. Of the 127 participants who reported having a HA, five participants (4%) reported having a HA in both ears (binaural fitting). Distributions of the unaided and aided hearing scores by categories of HA use are shownin Figure 2.	
5-Spreckley et al 2020 Uk	A nonrandomised before and after study was conducted, with a comparison group to assess for secular trends.	We interviewed 135 cases and 89 comparison subjects at baseline and follow-up	mild hearing loss (26–40 db) were included.	WHOQOL-BREF, Patient Health Questionnaire	(6–9 months later)	At baseline, cases were poorer than comparison subjects with respect to individual income (p = 0.01), household income (p = 0.02), and per capita expenditure (PCE) (p = 0.003). After provision of hearing aids, median household income improved among cases (p = 0.03). In the comparison group, median individual income (p = 0.01) and PCE (p = 0.03) fell between baseline at follow-up.	At follow-up, there were also improvements in productive time use, quality of life, and depressive symptoms among cases, but these were less apparent in the comparison group. In conclusion, this study has demonstrated a positive effect of hearing aids in improving quality of life, economic circumstances and mental health among Guatemalan adults.

© 2023 Global Journals

6-Wells et al, 2019 USA	transversal study	n=20,244 participants	none	The HL question is a modified version of one from the National Health and Nutrition Examination Survey (NHANES) (Centers for Disease Control and Prevention, National Center for Health Statistics, 2018).	12 monthscontinuousplancoverage	Among those contacted, 24,893 individuals (18%) returned the survey (Table 1). Nonrespondents were more likely to live in Texas, or in a zip code characterized as being high income or with a moderate percentage of minority residents. After cleaning the data and removing exclusions, 20,244 survey participants were included in this study, of which 41% (8,313) had selfreported HL, and 15% of all participants used hearing aids. When looking at the categories of HL from the survey, 77% of those with "A Lot of Trouble" hearing used hearing aids, followed by 50% of those with "Moderate Trouble" and 16% of those with "A Little Trouble" (data not shown).possible combinations of HL and hearing aid use, 18% (3,574) had unaided mild HL, 3% (699) had aided mild HL, 9% (1,759) had unaided severe HL, and 11% (2,281) had aided severe HL.	In several instances, hearing aid use reduced associations between HL and negative psychosocial and physical

© 2023 Global Journals

7 Mizutani et al 2019	cohort studies	aged 65 years or older and identified 1,437 of them as eligible for participation in this study, after excluding	none	HHIE	103 (7.3%) were already using hearing aids at the start of the study. After the primary screening, hearing aids were lent to 68 participants (4.8%) who did not already have one, 38 of whom (60.3% of the borrowers, representing 2.7% of the total aged population) went on to wear the hearing aid continuously	This study indicated that hearing aids are of potential benefit to many local residents. Multivariate logistic regression revealed that HHIE scores were associated with the extent of HA usage	We were able to identify subjects in need of HAs and increase usage of the devices. Programs such as ours, in which the HHIE is used to screen elderly people for ARHL in their local communities so that appropriate assistance can be provided, should prove useful in all societies with aging populations.
8-Camargo et al 2016	transversal	46 individuals, elderly people over 60 years old who have hearing loss, using or not hearing aids.	NONE	HHIE		being 43.48% (n=20) female female and 56.52% (n=26) male. The mean age was 74.78 years, with a standard deviation of 7.96 years. The most frequent hearing loss, in 73.91% (n=34) of the sample, was the sensorineural type	The perception of participation restriction is not significantly significantly related to gender, age type, degree and configuration of hearing loss, nor the the use of hearing aids, but it is higher among men, in sensorineural hearing loss, of descending configuration, and and among the elderly who do not use individual hearing individual sound amplification devices, regardless of the degree of restriction

Appendix 4: Excluded Articles and Reasons for Exclusion (N=07)

Author, Year	Exclusion Grounds
BULG˘URCU, 2019	7,9
CHIA, 2007	7,9
CARTER, 2017	7,9
CHANG, 2018	5,7,9
CONVERY, 2019	7,9
ECKERT, 2016	7,9
FUENTES-LÓPEZ, 2017	5,7,9

Key: 1. studies in children and adolescents; 2. Patients with syndrome and/or diseases associated with hearing loss, as wellas visual impairment and cognitive problems; 3. Participants who have normal hearing and the results were not detailed separately in the studies; 4. Studies that the sample was not diagnosed with audiological tests; 5. Studies that the sample was not diagnosed with audiological tests; 5. Studies with missing or incomplete data; 6. Reviews, letters, conference abstracts, expert opinions, case reports and case control studies, ethnographic and/or netnographic; 7. Studies that did not assess the outcome of interest; 8. Study not available for access. 9 No comparisons of groups or before and after

© 2023 Global Journals

Appendix 5 A - Database Search Strategy.

Database	Search
Lilacs	("Social Participation" OR "Social Engagement" OR "Social Citizenship" OR "Participación social" OR "Compromiso social" OR "Ciudadanía social" OR "Participação social" OR "Engajamento social" OR "Cidadania social" AND "Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment" OR "Aparelhosauditivos" OR "Aparelhoauditivo" OR "Moldes auriculares" OR "Molde auricular" OR "Perdaauditiva" OR "Perda de audição" OR "Hipoacusia" OR "Hipoacus" OR "Deficiênciaauditiva" OR "Pessoas com deficiênciaauditiva" OR "Distúrbios da audição" OR "Disacusia" OR "Presbiacusia" OR "Deficiênciaauditivarelacionada à idade" OR "Audífonos" OR "Moldes para losoídos" OR "Pérdidaauditiva" OR "Pérdida de audición" OR "Hipoacusia" OR "Discapacidadauditiva" OR "Personas con discapacidadauditiva" OR "Trastornos de la audición" OR "Presbiacusia" OR "Presbicia" OR "Deficienciaauditivarelacionada con la edad")
PubMed	1. ("Social Participation"[MeSH Terms] OR "Social Participation"[All Fields] OR "Social Engagement"[All Fields] OR "Social Citizenship"[All Fields]) 2. ("Hearing Aids"[MeSH Terms] OR "hearing aids"[All Fields] OR "Hearing Aid"[All Fields] OR "Ear Molds"[All Fields] OR "Ear Mold"[All Fields] OR "Hearing Loss"[MeSH Terms] OR "Hearing Loss"[All Fields] OR "Hypoacusis"[All Fields] OR "Hypoacuses"[All Fields] OR "Hearing impairment"[All Fields] OR "Persons with hearing impairments"[MeSH Terms] OR "Persons with hearing impairments"[All Fields] OR "Hearing impaired persons"[All Fields] OR "Hearing impaired person"[All Fields] OR "hearing disabled persons"[All Fields] OR "Hearing disabled person"[All Fields] OR "Hearing disorders"[MeSH Terms] OR "Hearing disorders"[All Fields] OR "Hearing disorder"[All Fields] OR "Dysacusis"[All Fields] OR "Presbycusis"[MeSH Terms] OR "Presbycusis"[All Fields] OR "Presbycuses"[All Fields] OR "Age related hearing impairment"[MeSH Terms] OR "Age related hearing impairment"[All Fields]) 3. 4. #1 AND #2
SCOPUS	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND "Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")
Web of Science	1. TS=("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship") 2. TS=("Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment") 3. #1 AND #2
Embase	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND "Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")

© 2023 Global Journals

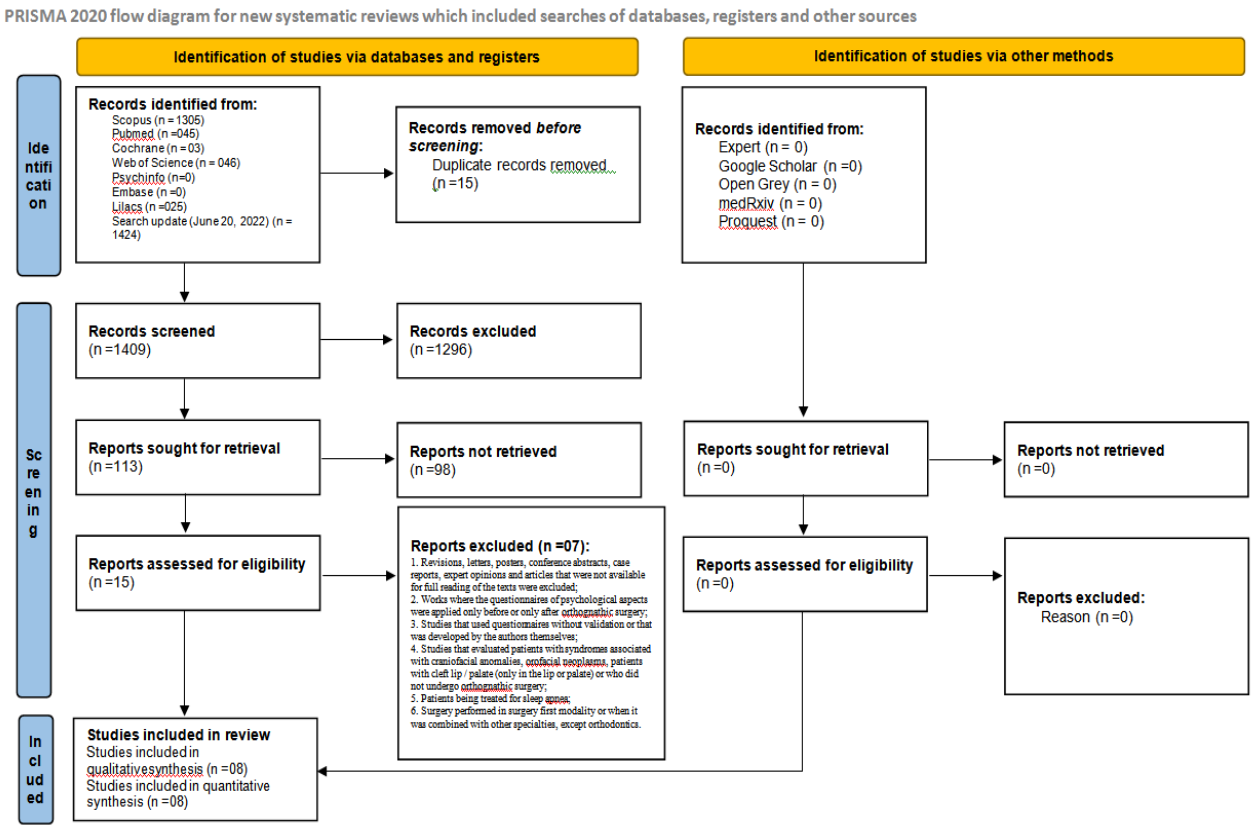
LIVIVO	TI=("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship") AND TI=("Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")
Cochrane Library	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND "Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")
Google Scholar	("Social Participation" AND "Hearing Aids" OR "Hearing Loss" OR "Persons with hearing impairments" OR "Hearing disorders" OR "Presbycusis" OR "Age related hearing impairment")
Open Grey	("Social Participation" AND "Hearing Aids" OR "Hearing Loss" OR "Persons with hearing impairments" OR "Hearing disorders" OR "Presbycusis" OR "Age related hearing impairment")
ProQuest	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND "Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")

PubMed	5. ("Social Participation"[MeSH Terms] OR "Social Participation"[All Fields] OR "Social Engagement"[All Fields] OR "Social Citizenship"[All Fields]) 6. ("Hearing Aids"[MeSH Terms] OR "hearing aids"[All Fields] OR "Hearing Aid"[All Fields] OR "Ear Molds"[All Fields] OR "Ear Mold"[All Fields] OR "Hearing Loss"[MeSH Terms] OR "Hearing Loss"[All Fields] OR "Hypoacusis"[All Fields] OR "Hypoacuses"[All Fields] OR "Hearing impairment"[All Fields] OR "Persons with hearing impairments"[MeSH Terms] OR "Persons with hearing impairments"[All Fields] OR "Hearing impaired persons"[All Fields] OR "Hearing impaired person"[All Fields] OR "hearing disabled persons"[All Fields] OR "Hearing disabled person"[All Fields] OR "Hearing disorders"[MeSH Terms] OR "Hearing disorders"[All Fields] OR "Hearing disorder"[All Fields] OR "Dysacusis"[All Fields] OR "Presbycusis"[MeSH Terms] OR "Presbycusis"[All Fields] OR "Presbycuses"[All Fields] OR "Age related hearing impairment"[MeSH Terms] OR "Age related hearing impairment"[All Fields]) 7. 8. #1 AND #2
SCOPUS	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND "Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")
Web of Science	4. TS=("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship") 5. TS=("Hearing Aids" OR "hearing aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hearing Loss" OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR "Hearing disorders" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR "Age related hearing impairment" OR "Age related hearing impairment")

© 2023 Global Journals

	6. #1 AND #2
Embase	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND “Hearing Aids” OR “hearing aids” OR “Hearing Aid” OR “Ear Molds” OR “Ear Mold” OR “Hearing Loss” OR “Hearing Loss” OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR “Persons with hearing impairments” OR “Persons with hearing impairments” OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR “Hearing disorders” OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR “Age related hearing impairment” OR “Age related hearing impairment”)
LIVIVO	TI=("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship") AND TI=(“Hearing Aids” OR “hearing aids” OR “Hearing Aid” OR “Ear Molds” OR “Ear Mold” OR “Hearing Loss” OR “Hearing Loss” OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR “Persons with hearing impairments” OR “Persons with hearing impairments” OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR “Hearing disorders” OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR “Age related hearing impairment” OR “Age related hearing impairment”)
Cochrane Library	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND “Hearing Aids” OR “hearing aids” OR “Hearing Aid” OR “Ear Molds” OR “Ear Mold” OR “Hearing Loss” OR “Hearing Loss” OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR “Persons with hearing impairments” OR “Persons with hearing impairments” OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR “Hearing disorders” OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR “Age related hearing impairment” OR “Age related hearing impairment”)
Google Scholar	("Social Participation" AND “Hearing Aids” OR “Hearing Loss” OR “Persons with hearing impairments” OR “Hearing disorders” OR "Presbycusis" OR “Age related hearing impairment”)
Open Grey	("Social Participation" AND “Hearing Aids” OR “Hearing Loss” OR “Persons with hearing impairments” OR “Hearing disorders” OR "Presbycusis" OR “Age related hearing impairment”)
ProQuest	("Social Participation" OR "Social Participation" OR "Social Engagement" OR "Social Citizenship" AND “Hearing Aids” OR “hearing aids” OR “Hearing Aid” OR “Ear Molds” OR “Ear Mold” OR “Hearing Loss” OR “Hearing Loss” OR "Hypoacusis" OR "Hypoacuses" OR "Hearing impairment" OR “Persons with hearing impairments” OR “Persons with hearing impairments” OR "Hearing impaired persons" OR "Hearing impaired person" OR "hearing disabled persons" OR "Hearing disabled person" OR “Hearing disorders” OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Presbycusis" OR "Presbycuses" OR “Age related hearing impairment” OR “Age related hearing impairment”)

© 2023 Global Journals



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

Figures 01

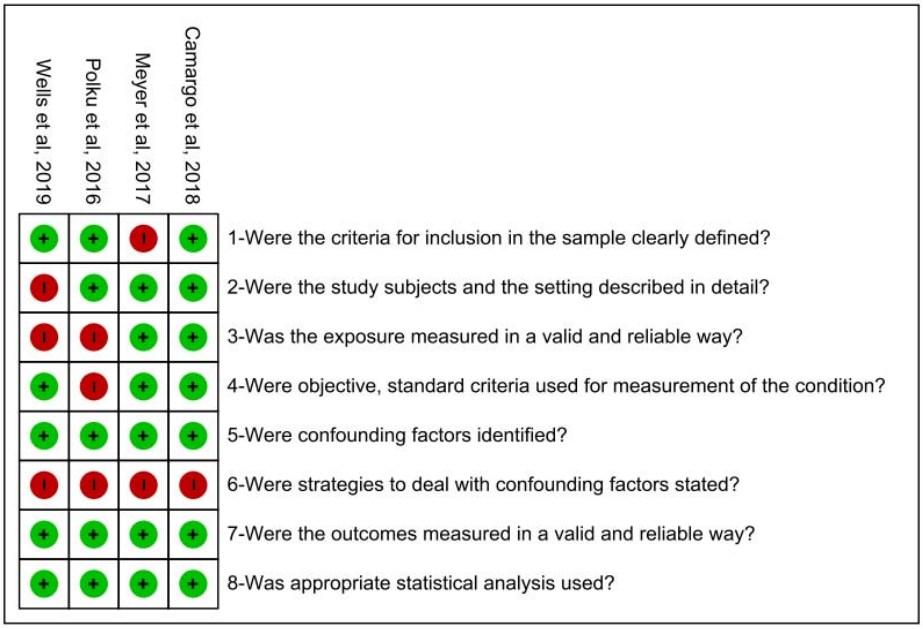


Figure 2: Risk of Trend Assessment Cross-Sectional Studies

© 2023 Global Journals

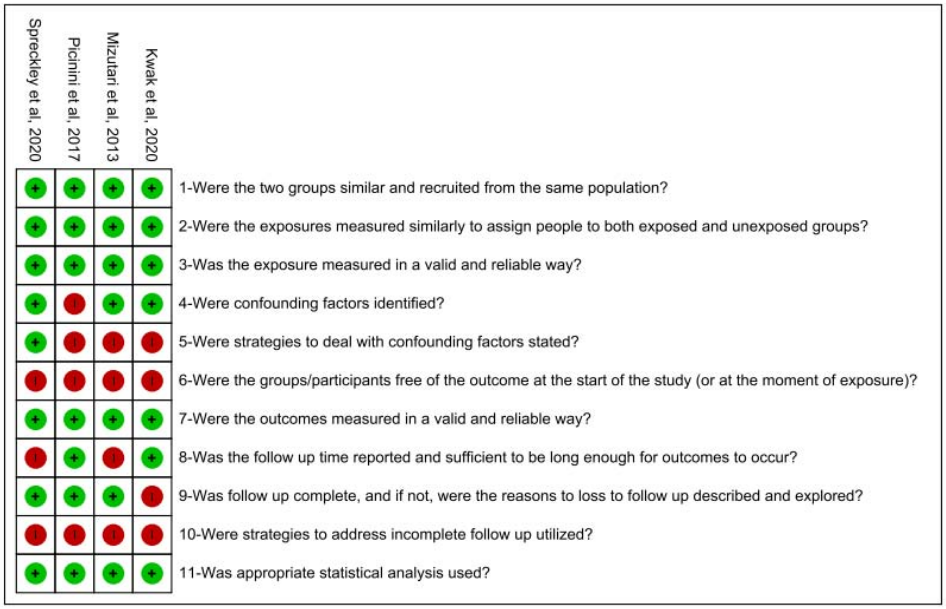
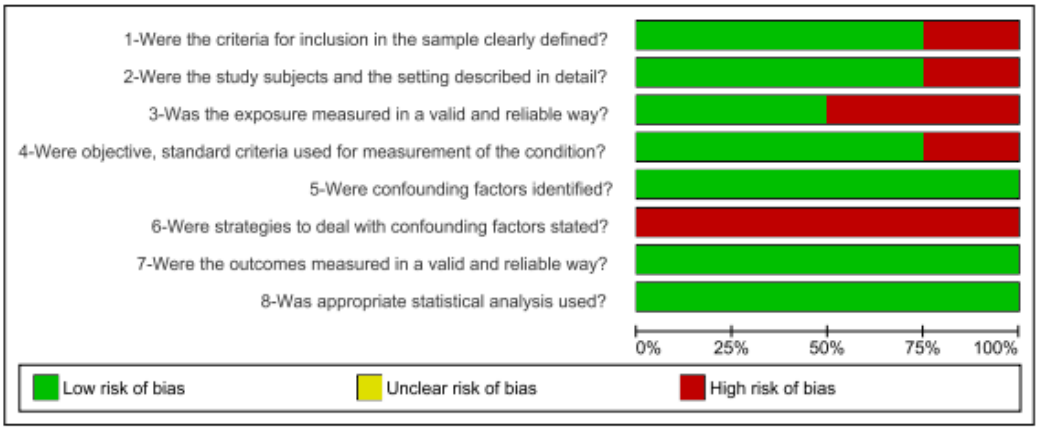
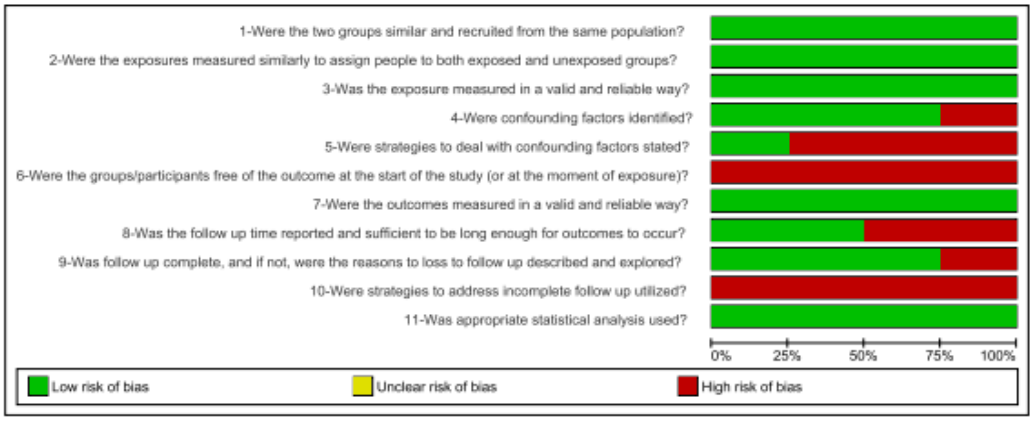


Figure 3: Assessment of the Risk of Biased Cohort Studies

04 Appendix 01 - Bias

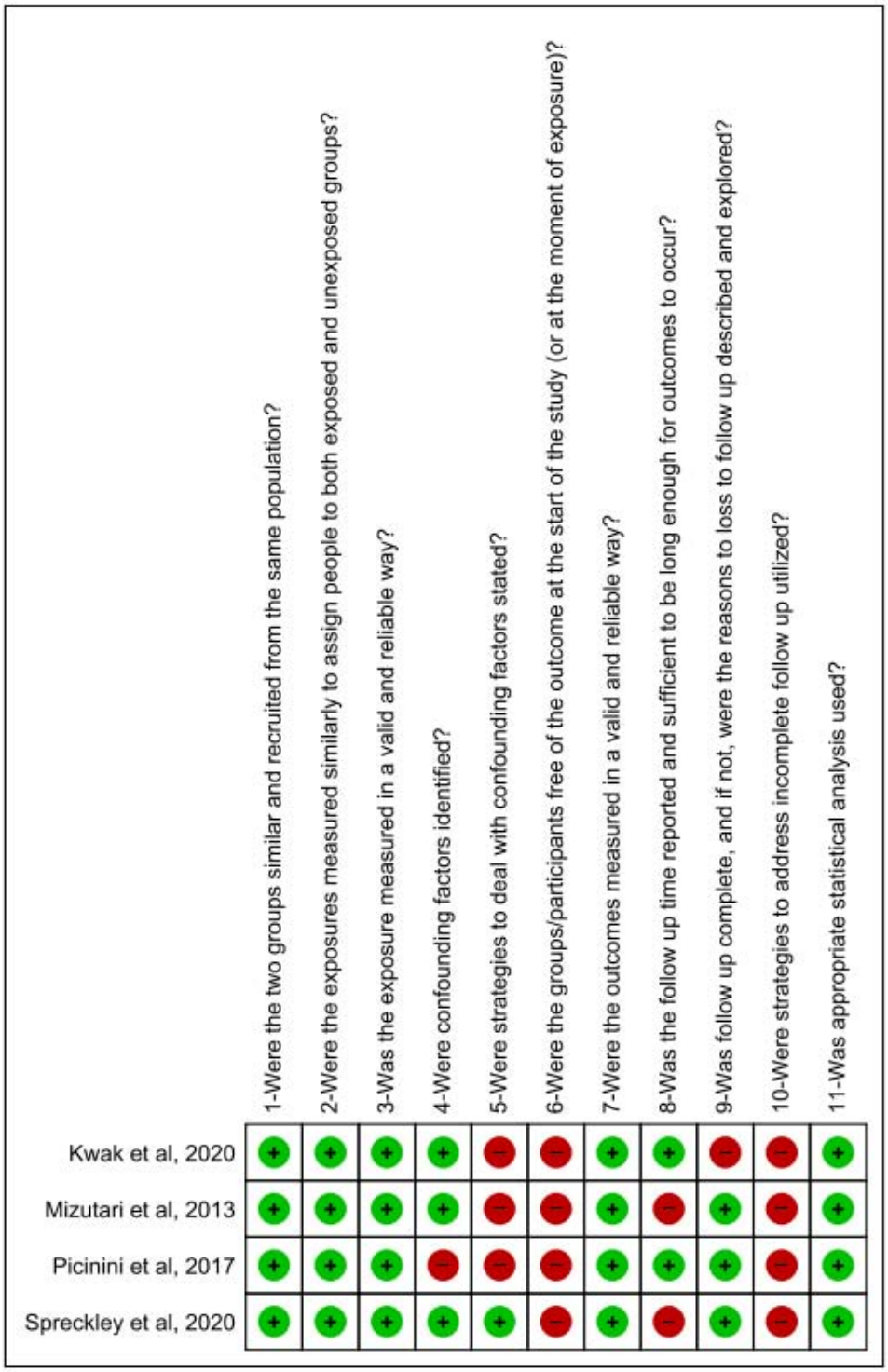




© 2023 Global Journals



© 2023 Global Journals



© 2023 Global Journals

This page is intentionally left blank

© 2023 Global Journals

Global Journal of Medical Research: F
Diseases
Volume 23 Issue 5 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Diagnostic and Therapeutic Approach to Epidermoid Cysts in the Gluteal Region: A Rare Case and Review of the Literature

By Ouhammou Yousra, Laamri Imad, Maouni Ilyass, Boussaidane Mohammed, Elmoukhtari Kamal & Abou Elalaa Khalil

Abstract- Epidermoid cysts of the gluteal region are rare benign tumors that are often difficult to diagnose. However, the diagnosis depends mainly on histology, which remains the most reliable diagnostic tool for epidermoidcysts. We present the case of a 63-year-old woman with no notable pathological history who presented with a right gluteal mass. The cystwas surgically excised and the diagnosis was confirmed by histopathologic examination.

We discuss the clinical features and possible etiology of this rare condition, as well as the importance of medical imaging for an accurate diagnosis. Epidermoidcysts are often asymptomatic, but may cause discomfort or pain in the area where they are found. When they are located in the gluteal area and can be confused with other types of cysts, such as lipomas or sebaceous cysts.

Keywords: epidermoid cyst, gluteal region, excision surgery, histology, medical imaging, diagnosis.

GJMR-F Classification: LCC: RD557



Strictly as per the compliance and regulations of:

© 2023. Ouhammou Yousra, Laamri Imad, Maouni Ilyass, Boussaidane Mohammed, Elmoukhtari Kamal & Abou Elalaa Khalil. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Diagnostic and Therapeutic Approach to Epidermoid Cysts in the Gluteal Region: A Rare Case and Review of the Literature

Ouhammou Yousra [α], Laamri Imad [σ], Maouni Ilyass [ρ], Boussaidane Mohammed [ω], Elmoukhtari Kamal [¥] & Abou Elalaa Khalil [§]

Abstract- Epidermoid cysts of the gluteal region are rare benign tumors that are often difficult to diagnose. However, the diagnosis depends mainly on histology, which remains the most reliable diagnostic tool for epidermoidcysts. We present the case of a 63-year-old woman with no notable pathological history who presented with a right gluteal mass. The cystwas surgically excised and the diagnosis was confirmed by histopathologic examination.

We discuss the clinical features and possible etiology of this rare condition, as well as the importance of medical imaging for an accurate diagnosis. Epidermoidcysts are often asymptomatic, but may cause discomfort or pain in the area where they are found. When they are located in the gluteal area and can be confused with other types of cysts, such as lipomas or sebaceous cysts.

Treatment of epidermoid cysts is usually surgical, as in our patient's case. Complete excision of the cystis necessary to avoid recurrence. In addition, histologyis essential to confirm the diagnosis and exclude any potential malignancy.

Epidermoidcysts of the gluteal region are a rare but important condition to consider when a mass is present in this region. Medical imaging and histology are important tools for the accurate diagnosis and appropriate treatment of this benign condition.

Keywords: epidermoid cyst, gluteal region, excision surgery, histology, medical imaging, diagnosis.

I. Introduction

Epidermoid cysts in the gluteal region are rare benign tumors that can develop from epithelial cells of the skin. They generally have a good prognosis and are often discovered incidentally. However, their symptomatology can vary depending on their size and location. Although they can appear any where on the body, they are rare in the gluteal region. Diagnosis is based primarily on clinical examination, but ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are the most commonly used imaging modalities to characterize these cysts and assess their locoregional extension. Definitive diagnosisis based on histology and immunohistochemistry.

Epidermoidcysts are rare and represent less than 1% of all skin tumors. They occur most commonly on the head, neck, and trunk and are rare in the gluteal region. They occur more frequently in young and middle-aged adults, with a slight predominance in women. In a review of review of 432 cases of epidermoid cysts, only seven cases were reported in the gluteal region (1)

II. Case Report

We report the case of a 63-year-old woman, without any notable pathological history, who presented for one year with a bulging right gluteal mass that was progressively increasing in size. This mass was palpable to the firm touch, sensitive to the contact and was bleeding. It was located in the right lower gluteal quadrant and fixed relative to the gluteal muscle (Figure 1). Helical imaging was performed after intravenous contrast injection, revealing a large hypodense tissue mass occupying the right gluteal region, measuring 12 x 8.1 cm with no other secondary locations (Figure 2).

Author σ ρ: Department of VisceralSurgery, Military Hospital Mohammed V, Faculty of Medicine and Pharmacy of Rabat, Morocco.
Author ω ¥: Department of Traumato OrthopedicSurgery, Military Hospital Mohammed V, Faculty of Medicine and Pharmacy of Rabat, Morocco.
Author §: Department of Anesthesiology and Intensive Care, Head of the Operating Room TheatreMilitary Hospital Mohammed V, Faculty of Medicine and Pharmacy of Rabat, Morocco.
Corresponding Author α: Department of visceralSurgery, Military Hospital Mohammed V, Faculty of Medicine and Pharmacy of Rabat, Morocco. e-mail: ouhammouyousra2017@gmail.com

© 2023 Global Journals



Figure 1: Preoperative image of a giant right gluteal mass

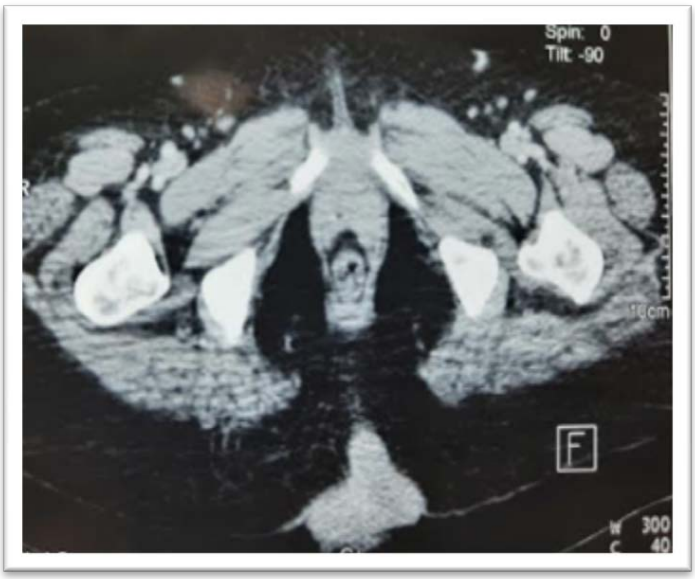


Figure 2: Computed tomography scan showing gross mass of the region Gluteal

Surgical excision was proposed to the patient, who accepted the procedure. A carcinological resection was performed (Figure 3). Histopathological examination on section revealed a mammariescystic formation, the wall of which is made of stratified, keratinized epithelium delimiting a cavity where degradation products of desquamated epithelial cells accumulate in the form of an amorphous material, rich in keratin and cholesterol (Figure 4).

© 2023 Global Journals



Figure 3: Image showing the surgical specimen of the right gluteal region

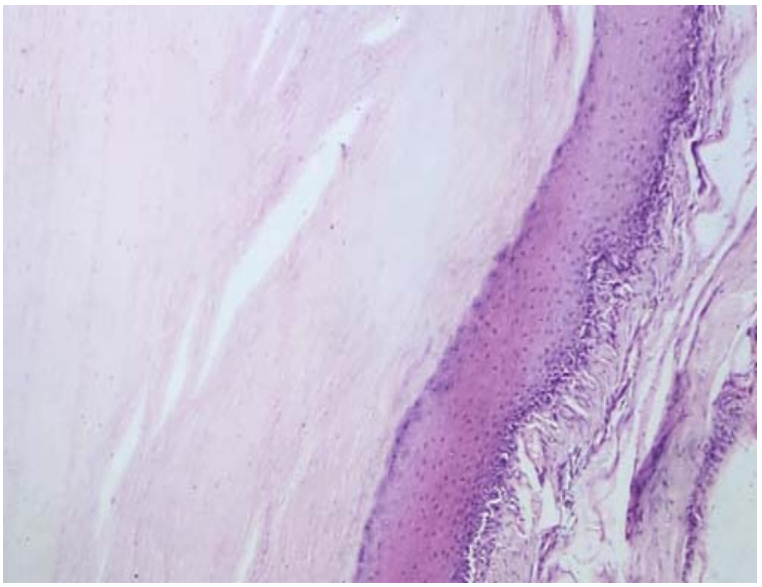


Figure 4: Pathological specimen demonstred a mammaries cystic formation with a stratified, keratinized epithelium in the wal. (coloration HE Gx100)

III. Discussion

The circumstances of discovery may vary for an epidermoid cyst of the buttock. Their growth is very slow and symptoms occurlate (2). Symptoms vary depending on the tumor location (3). In this particular case, the patient presented with a painful mass in the right but tock, which led to imaging to evaluate the cause of the pain. Possible clinical presentations include a painful mass, pain on palpation, and discomfort with walking or physical activities (4).

The diagnosis of epidermoidcyst of the right buttock can be established by imaging, such as ultrasound or computed tomography (CT). In this case, CT was used to confirm the diagnosis and locoregional extension. On CT, the epidermoid cyst typically presents as an iso or hypodense, heterogeneous, irregularly contoured mass without any contrast and without peri-lesionaledema (5). The diagnosisis confirmed by MRI and in particular by their hyper signal on diffusion sequences. Diffusion sequences are essential to confirm the diagnosis on MRI (6). The evolution of gluteal

© 2023 Global Journals

epidermoid cysts is very slow. They are usually monitored by regular MRI. Surgical treatment is proposed if symptoms are present. If symptoms are moderate and the risk of surgery is considered significant, surveillance may be preferred initially (7). The recommended surgical procedure for an epidermoid cyst of the buttock depends on several factors, such as the size and location of the lesion, as well as the experience and preference of the surgeon. The treatment of choice for squamous cystis total resection of the tumor including the cyst capsule that produces the cyst contents (8). But sometimes, total resection is not possible because of the location of the cyst and its close relationship with critical nerve or vascular structures. In this case, part of the capsule is left in place with a high risk of recurrence (9).

The diagnosis is essentially established by histopathological examination, which objectifies the tumor as a "pearly" tumor because of its pearly white color and nippled appearance (10). The differential diagnosis is essentially with its rarer dermoid cyst counterpart, which usually does not have the milky white appearance so characteristic of its epidermoid counterpart. It is more variable, more heterogeneous, due to the diversity of the Several studies have examined the outcomes of surgical excision for epidermoid cysts of the buttock, with high success rates and low recurrence rates (11). One study reported a 98% success rate for surgical excision of epidermoid cysts of the buttock, with a recurrence rate of only 1% (12). Another study reported a success rate of 95.8% with a mean follow-up of 31 months (13).

IV. Conclusion

Epidermoid cyst of the buttockis a rare benign tumor, whose diagnosisis established by imaging and confirmed by histopathological examination. Epidermoid cysts are treated surgically, with complete resection of the tumor and its capsule, if possible. Follow-up isnecessary to monitor for recurrence, although this is rare. Surgeries have a high success rate and are considered the treatment of choice for squamous cysts of the buttock.

Consent

Written informed consent was obtained from the patient for publication of this case and for the accompanying images.

Ethical Approval

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

References Références Referencias

1. Choon Soo Kim, Young Cheon Na, Chi Sun Yun,1 Woo Hoe Huh, and Bo Ra Lim: Epidermoid cyst: A single-center review of 432 cases Arch Craniofac Surg. 2020 Jun; 21(3): 171–175.
2. Denison CM, Ward VL. Epidermal inclusion cysts of the breast: Three lesions with calcifications. *Radiology.* 1997; 204: 493–496.
3. Fujimoto T, Murakami K, Kashimada A. Large epidermoid cyst involving the ischiorectal fossa: MR Demonstration. *Clin Imaging.* 1993; 17: 146–148.
4. Handa U, Chhabra S. Epidermal inclusion cyst: Cytomorphological features and differential diagnosis. *Diagn Cytopathol.* 2008; 36: 861–863.
5. Momeni MG, Anavim A. Giant epidermal inclusion cyst of buttock. *Skeletal Radiol.* 2006; 35: 864–866.
6. Shibata T, Hatori M. Magnetic resonance imaging features of epidermoid cyst in the extremities. *Arch Orthop Trauma Surg.* 2003; 123: 239–241.
7. Patel K, Bhuiyu T. Epidermal inclusion cyst of phalanx: A case report and review of the literature. *Skeletal Radiol.* 2006; 35: 861–863.
8. Weedon D. *Weedon's skin pathology*. 3rd Edition. Elsevier; 2010. pp. 442–446.
9. Hong SH, Chung HW. MRI findings of subcutaneous epidermal cysts: Emphasis on the presence of rupture. *Am. J. Rotengenol.* 2006; 186: 961–966.
10. Bauer BS, Lewis VL., Jr. Carcinoma arising in sebaceous and epidermoid cysts. *Ann Plast Surg.* 1980; 5: 222–226.
11. Lin CY, Jwo SC. Squamous cell carcinoma arising in an epidermal inclusion cyst. *Chang Gung Med J.* 2002; 25: 279–282.
12. Pandya KA, Radke F. Benign skin lesions: Lipomas, epidermal inclusion cysts, muscle and nerve biopsies. *Surg Clin North Am.* 2009; 89: 677–687. [PubMed] [PubMed] [Google Scholar]
13. Tokunaga M, Toya M, Endo Y, Fujisawa A, Tanioka M, Kato M, Miyachi Y: A case of an undifferentiated squamous cell carcinoma arising from an epidermal cyst. Case Rep Dermatol Med. 2013, 2013: 469516. 10.1155/2013/469516

© 2023 Global Journals

Global Journal of Medical Research: F
Diseases
Volume 23 Issue 5 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

One Step to a Cure: Outcomes of Experimental Treatments for Non-Hodgkin's Lymphomas, A Systematic Review

By Gilberto A. Neto & Maria L. Cascudo

Abstract- Non-Hodgkins lymphomas are malignant lymphatic tumors, mainly affecting B cells. Generally occur in children and young adults with different forms of treatment, however most treatments are accompanied by tumoral relapse. Recently, many researches have been made to identify the best treatment with positive long-term outcomes. In that regard, CAR-T cell treatment has been recognized for its accessibility and effect, it utilizes T cells with chimeric antigen receptors, facilitating cancerous cells detection after non-response to the regular R-CHOP treatment. As data-base 26 research papers were found, with 23 of them being utilized.

Keywords: *non-hodgkins lymphoma, treatment, CAR-T.*

GJMR-F Classification: *LCC: RC271.L9, NLM: WH 525*



Strictly as per the compliance and regulations of:

© 2023. Gilberto A. Neto & Maria L. Cascudo. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

One Step to a Cure: Outcomes of Experimental Treatments for Non-Hodgkin's Lymphomas, A Systematic Review

Um Passo Para a Cura: Resultado De Tratamentos Experimentais De Linfomas Não-Hodgkin, Uma Revisão Sistemática

Gilberto A. Neto [α] & Maria L. Cascudo [σ]

Abstract- **Linfomas não hodgkins são tumores malignos do sistema linfático, acometendo principalmente linfócitos B. Geralmente ocorrem em crianças e jovens, possuem diversas formas de tratamento, entretanto a maioria das formas utilizadas apresentam uma alta recidiva tumoral. Dessa forma, diversas pesquisas procuram novos tratamentos com resultados positivos a longo prazo. Entre os tratamentos expostos um se destacou pela facilidade e efetividade, o tratamento utiliza Linfócitos T com receptores de antígenos quiméricos facilitando a detecção de células tumorais, atualmente utilizado quando não há resposta ao tratamento quimioterápico(R-CHOP). Como fonte de dados foram encontrados 26 artigos, dos quais 23 foram utilizados.**

Palavras-chave: linfoma não-hodgkins, tratamento, CAR-T.

Abstract- **Non-Hodgkins lymphomas are malignant lymphatic tumors, mainly affecting B cells. Generally occur in children and young adults with different forms of treatment, however most treatments are accompanied by tumoral relapse. Recently, many researches have been made to identify the best treatment with positive long-term outcomes. In that regard, CAR-T cell treatment has been recognized for its accessibility and effect, it utilizes T cells with chimeric antigen receptors, facilitating cancerous cells detection after non-response to the regular R-CHOP treatment. As data-base 26 research papers were found, with 23 of them being utilized.**

Keywords: non-hodgkins lymphoma, treatment, CAR-T.

I. Introdução

Os linfomas não hodgkin são um grupo de tumores malignos que caracterizam 90% dos linfomas conhecidos. Nesse viés, eles podem comprometer linfócitos B, linfócitos T ou linfócitos NK, sendo divididos também por essas mesmas células. (24,25)

A presença desse tipo de tumor está ligado a diversos fatores, como estados de imunossupressão, infecções por vírus (Vírus Epstein-Barr (EBV), Vírus Linfotrópico de Células T Humanas (HTLV-1), Vírus da Hepatite C (VHC), etc), tabagismo, etilismo, ingestão excessiva de carne vermelha e gordura, obesidade, além de fatores genéticos, principalmente as mutações que ocorrem com as proteínas de HLA, situadas no cromossomo 6 (24)

Sendo marcado principalmente pela presença de linfadenopatia, sua sintomatologia varia dependendo se o linfoma se encaixa em agressivo ou indolente. Nesse viés, seu estadiamento é feito pela classificação de Ann Arbor e em sua avaliação utilizamos ressonância magnética, tomografia computadorizada e biópsia (25)

Quando pensamos em tratamento, vários tratamentos já vem sendo testados e utilizados, como agentes monoclonais e imunomoduladores, contudo, a terapia com células CAR-T vem se destacando cada vez mais no cenário (2, 19)

Inglês

Non-Hodgkin lymphomas are a group of malignant tumors that account for 90% of known lymphomas. In this context, they can affect B lymphocytes, T lymphocytes, or natural killer (NK) cells, and are also divided based on these same cells. (24,25)

The presence of this type of tumor is associated with various factors, such as immunosuppression, viral infections (Epstein-Barr virus (EBV), Human T-lymphotropic virus type 1 (HTLV-1), Hepatitis C virus (HCV), etc.), smoking, alcohol consumption, excessive intake of red meat and fat, obesity, as well as genetic factors, particularly mutations that occur in HLA proteins located on chromosome 6. (24)

Marked mainly by the presence of lymphadenopathy, its symptoms vary depending on whether the lymphoma is aggressive or indolent. In this regard, staging is performed using the Ann Arbor classification, and magnetic resonance imaging, computed tomography, and biopsy are used for evaluation. (25)

When it comes to treatment, various methods have been tested and used, such as monoclonal antibodies and immunomodulators. However, CAR-T cell therapy has been increasingly prominent in the field. (2, 19)

Author: e-mail: gilperesneto@gmail.com

© 2023 Global Journals

II. Funcionamento de Células CAR-T

Atualmente, para o tratamento de Linfomas Não-Hodgkins têm sido utilizados Receptores de Antígenos Quiméricos de Linfócitos T(CAR-T) por apresentarem resultados positivos com redução tumoral, as moléculas CAR permitem que os linfócitos identifiquem as células tumorais independente do antígeno leucocitário e as destroem(2).

A molécula CAR possui uma estrutura semelhante a anticorpos monoclonais para identificação de antígenos específicos. A quarta e última geração da molécula CAR, além de possuir, sinais de ativação e duração do período proliferativo, garantindo o efeito de lise tumoral já presentes na terceira geração. Também contam com uma expressão transgênica que possibilita a síntese e modulação de citocinas irrestritas por antígeno(TRUCK) para destruição de células tumorais e normais próximas aos tumores (2, 23).

No contexto do tratamento de Linfomas Não-Hodgkins, o principal alvo das células CAR-T são os marcadores de membrana CD19, presentes nas células B, dessa forma, são efetivos no tratamento de linfomas agressivos de Linfócitos B, apresentando remissão completa em 54% dos casos e parcial 28%.(2)

English

Currently, for the treatment of Non-Hodgkin lymphomas, Chimeric Antigen Receptor T-cell (CAR-T) therapies have been used due to their positive results in tumor reduction. CAR molecules allow lymphocytes to identify tumor cells independently of leukocyte antigens and destroy them. (2)

The CAR molecule has a structure similar to monoclonal antibodies for the identification of specific antigens. The fourth and latest generation of CAR molecules, in addition to having activation signals and duration of the proliferative period, ensures the effect of tumor lysis already present in the third generation. They also have transgenic expression that enables the synthesis and modulation of antigen-unrestricted cytokines (TRUCK) for the destruction of tumor cells and normal cells near the tumors. (2, 23)

In the context of Non-Hodgkin lymphoma treatment, the primary target of CAR-T cells is the CD19 membrane marker present in B cells. Therefore, they are effective in the treatment of aggressive B-cell lymphomas, achieving complete remission in 54% of cases and partial remission in 28%. (2)

III. Eficácia do Tratamento

Para que o tratamento possua resultados positivos, é importante analisar a situação do paciente, assim como os resultados de tratamentos convencionais. Pois tratamentos com células CAR-T possuem altíssimas chances de gerarem efeitos colaterais, principalmente pela produção exacerbada de citocinas geradoras de lise celular independente de antígeno, podendo gerar dano tecidual sistêmico, além do elevado valor para utilização de células CAR-T.(23)

Dessa forma, linfomas com pior prognóstico, ou que não apresentaram uma resposta esperada ao tratamento quimioterápico habitual como R-CHOP se beneficiariam da utilização de células CAR-T se utilizados sob monitoramento profissional.

A utilização de células CAR-T é uma alternativa com efeito curativo importante, mesmo para diferentes tipos de linfomas mais variados, mas para mantê-lo como essa ferramenta importante no combate a Linfomas Não-Hodgkins é importante monitorar seus efeitos e, principalmente as respostas desenvolvidas pelas células tumorais.

English

For the treatment to have positive results, it is important to analyze the patient's situation as well as the results of conventional treatments. CAR-T cell therapies have a high chance of causing side effects, mainly due to the excessive production of cytokines that induce cell lysis independent of antigens, which can lead to systemic tissue damage, in addition to the high cost of CAR-T cell therapy. (23)

Therefore, lymphomas with a worse prognosis or those that did not respond as expected to conventional chemotherapy treatments like R-CHOP would benefit from the use of CAR-T cells if used under professional monitoring.

The use of CAR-T cells is an important curative alternative, even for different types of diverse lymphomas. However, to maintain it as an important tool in the fight against Non-Hodgkin lymphomas, it is important to monitor its effects and, most importantly, the responses developed by the tumor cells.

IV. Resistência ao Tratamento

Sob o contexto evolucionário, é importante regular a utilização do tratamento com células CAR-T, almejando evitar o desenvolvimento de uma resistência tumoral ao fator anticorpo do CAR, o qual poderia inutilizar o tratamento com estas células.(23)

Assim como uma molécula viral, um fator de acelerada reprodução celular possui tendências a mutações, assim, uma mutação aleatória que dificultasse o contato entre células CAR e as células tumorais, ou desenvolvimento de outro mecanismo de sobrevivência celular prolongada, poderia dificultar os tratamentos por diferentes mecanismos e inutilizar as células CAR-T, abalando a estrutura e meios de tratamento de diferentes neoplasias.

Originalmente, o tratamento com receptores CAR era utilizado para leucemias variadas, mas com o desenvolvimento das diferentes gerações de moléculas CAR, almejando torná-lo cada vez mais efetivo. Entretanto, as células tumorais também podem evoluir,

© 2023 Global Journals

desenvolvendo resistências variadas, que poderiam inutilizar anos de pesquisa. Portanto, levando em consideração os riscos, é essencial que o tratamento seja monitorado e utilizado quando viável, e estritamente necessário.

English

Under the evolutionary context, it is important to regulate the use of CAR-T cell therapy in order to prevent the development of tumor resistance to the CAR antibody factor, which could render the treatment with these cells ineffective. (23)

Similar to a viral molecule, a factor that promotes accelerated cell reproduction tends to mutate. Therefore, a random mutation that hinders the interaction between CAR cells and tumor cells, or the development of another mechanism for prolonged cell survival, could make the treatment more challenging through different mechanisms and render CAR-T cells useless, undermining the structure and means of treating various neoplasms.

Originally, CAR receptor therapy was used for various leukemias, but with the development of different generations of CAR molecules, the goal was to make it increasingly effective. However, tumor cells can also evolve and develop various forms of resistance, which could nullify years of research. Therefore, considering the risks involved, it is essential that the treatment be monitored and used when viable and strictly necessary.

V. Toxicidade

O tratamento com células CAR-T vem demonstrando toxicidade importante, sendo as principais consequências a síndrome de tempestade de citocinas (STC) e a neurotoxicidade (NT). Esses fatores vem se comportando como barreiras para esse tipo de tratamento (5,13, 23).

A STC é causada por um grande aumento de células CAR-T no indivíduo e sua posterior ativação, que leva a uma consequente liberação de citocinas, gerando uma resposta inflamatória sistêmica. Entre seus sintomas estão presentes hipertermia, rebaixamento de estado geral e fadiga, podendo evoluir com hipotensão, insuficiência respiratória e lesão de órgãos alvo (13,23).

Em relação a NT, os mecanismos fisiopatológicos da mesma não são muito bem conhecidos, entretanto tem se mostrado relacionado a condições neurológicas pré-existentes, pacientes jovens, uso de fludarabina para possível linfodepleção e aumento da dose do tratamento com células CAR. Foi evidenciado também sua ligação com a própria STC, pois é necessário o pré-estabelecimento da inflamação sistêmica para a manifestação da NT. Nesse viés, encefalopatia, ataxia, convulsões, letargia, psicose, afasia, estupor podem ser vistos como sinais de uma toxicidade estabelecida. Ademais, no SNC podem estar presentes disfunções da barreira hematoencefálica, necrose vascular, microtrombos, micro hemorragias, edema e inflamação. Contudo, a maioria dos casos pode ser revertida com medicação, como Anakinra, Defibrotida e anticorpos anti-GM-CSF (13, 23).

English

Treatment with CAR-T cells has demonstrated significant toxicity, with the main consequences being cytokine release syndrome (CRS) and neurotoxicity (NT). These factors have been acting as barriers to this type of treatment. (5, 13, 23)

CRS is caused by a large increase in CAR-T cells in the individual and their subsequent activation, leading to the release of cytokines and resulting in a systemic inflammatory response. Symptoms of CRS include fever, decreased general well-being, and fatigue, which can progress to hypotension, respiratory failure, and organ damage. (13, 23)

Regarding NT, the underlying pathophysiological mechanisms are not well understood. However, it has been shown to be associated with pre-existing neurological conditions, young patients, the use of fludarabine for possible lymphodepletion, and higher CAR-T cell doses. NT has also been linked to CRS itself, as the establishment of systemic inflammation is necessary for NT to manifest. In this regard, encephalopathy, ataxia, seizures, lethargy, psychosis, aphasia, and stupor can be seen as signs of established toxicity. In addition, dysfunctions of the blood-brain barrier, vascular necrosis, microthrombi, microhemorrhages, edema, and inflammation may occur in the central nervous system. However, the majority of cases can be reversed with medication, such as Anakinra, Defibrotide, and anti-GM-CSF antibodies. (13, 23)

References Références Referencias

1. Denlinger N, Bond D, Jaglowski S. CAR T-cell therapy for B-cell lymphoma. Curr Probl Cancer. 2022 Feb; 46(1): 100826. doi: 10.1016/j.currproblcancer.2021.100826. Epub 2021 Dec 25. PMID: 35012754; PMCID: PMC9284423.
2. Marofi F, Rahman HS, Achmad MH, Sergeevna KN, Suksatan W, Abdelbasset WK, Mikhailova MV, Shomali N, Yazdanifar M, Hassanzadeh A, Ahmadi M, Motavalli R, Pathak Y, Izadi S, Jarahian M. A Deep Insight Into CAR-T Cell Therapy in Non-Hodgkin Lymphoma: Application, Opportunities, and Future Directions. Front Immunol. 2021 Jun 23; 12: 681984. doi: 10.3389/fimmu.2021.681984. PMID: 34248965; PMCID: PMC8261235.
3. Siddiqi T, Wang X, Blanchard MS, Wagner JR, Popplewell LL, Budde LE, Stiller TL, Clark MC, Lim L, Vyas V, Brown CE, Forman SJ. CD19-directed CAR T-cell therapy for treatment of primary CNS lymphoma. Blood Adv. 2021 Oct 26; 5(20): 4059-

© 2023 Global Journals

4063. doi: 10.1182/bloodadvances.2020004106. PMID: 34492703; PMCID: PMC8945630.
4. Hirayama AV, Gauthier J, Hay KA, Voutsinas JM, Wu Q, Gooley T, Li D, Cherian S, Chen X, Pender BS, Hawkins RM, Vakil A, Steinmetz RN, Acharya UH, Cassaday RD, Chapuis AG, Dhawale TM, Hendrie PC, Kiem HP, Lynch RC, Ramos J, Shadman M, Till BG, Riddell SR, Maloney DG, Turtle CJ. The response to lymphodepletion impacts PFS in patients with aggressive non-Hodgkin lymphoma treated with CD19 CAR T cells. Blood. 2019 Apr 25; 133(17): 1876-1887. doi: 10.1182/blood-2018-11-887067. Epub 2019 Feb 19. PMID: 30782611; PMCID: PMC6484391.
5. Cairo MS, Beishuizen A. Childhood, adolescent and young adult non-Hodgkin lymphoma: current perspectives. Br J Haematol. 2019 Jun; 185(6): 1021-1042. doi: 10.1111/bjh.15764. Epub 2019 Feb 6. PMID: 30729513; PMCID: PMC6897376.
6. Pereg D, Koren G, Lishner M. The treatment of Hodgkin's and non-Hodgkin's lymphoma in pregnancy. Haematologica. 2007 Sep; 92(9): 1230-7. doi: 10.3324/haematol.11097. Epub 2007 Aug 1. PMID: 17666365.
7. Ansell SM, Armitage J. Non-Hodgkin lymphoma: diagnosis and treatment. Mayo Clin Proc. 2005 Aug; 80(8): 1087-97. doi: 10.4065/80.8.1087. PMID: 16092591.
8. Reagan PM, Friedberg JW. Advancing radioimmunotherapy and its future role in non-Hodgkin lymphoma. Future Oncol. 2015; 11(10): 1543-53. doi: 10.2217/fon.15.1. PMID: 25963431.
9. Hunter BD, Chen YB, Jacobson CA. Allogeneic Stem Cell Transplantation and Chimeric Antigen Receptor (CAR) T-Cell Therapy for the Treatment of Non-Hodgkin Lymphoma. Hematol Oncol Clin North Am. 2019 Aug; 33(4): 687-705. doi: 10.1016/j.hoc.2019.03.005. Epub 2019 May 10. PMID: 31229163.
10. Silverman DH, Delpassand ES, Torabi F, Goy A, McLaughlin P, Murray JL. Radiolabeled antibody therapy in non-Hodgkins lymphoma: radiation protection, isotope comparisons and quality of life issues. Cancer Treat Rev. 2004 Apr; 30(2): 165-72. doi: 10.1016/j.ctrv.2003.07.006. PMID: 15023434.
11. Lugtenburg PJ, Lyon AR, Marks R, Luminari S. Treatment of aggressive non-Hodgkin's lymphoma in frail patients: cardiac comorbidities and advanced age. Future Oncol. 2019 Apr; 15(11): 1197-1205. doi: 10.2217/fon-2019-0019. Epub 2019 Feb 7. PMID: 30730219.
12. Al-Juhaishi T, Ahmed S. CAR-T in B-Cell Lymphomas: The Past, Present, and Future. Clin Lymphoma Myeloma Leuk. 2022 Apr; 22(4):e261-e268. doi: 10.1016/j.clml.2021.10.003. Epub 2021 Oct 15. PMID: 34782260.
13. Hunter BD, Rogalski M, Jacobson CA. Chimeric antigen receptor T-cell therapy for the treatment of aggressive B-cell non-Hodgkin lymphomas: efficacy, toxicity, and comparative chimeric antigen receptor products. Expert Opin Biol Ther. 2019 Nov; 19(11): 1157-1164. doi: 10.1080/14712598.2019.1644316. Epub 2019 Jul 25. PMID: 31342797.
14. Copelan EA. CAR T-Cell Therapy in Non-Hodgkin Lymphoma Patients. Oncology (Williston Park). 2019 Feb 15; 33(2): 73-4, 77. PMID: 30784033.
15. Chu Y, Gardenswartz A, Termuhlen AM, Cairo MS. Advances in cellular and humoral immunotherapy - implications for the treatment of poor risk childhood, adolescent, and young adult B-cell non-Hodgkin lymphoma. Br J Haematol. 2019 Jun; 185(6): 1055-1070. doi: 10.1111/bjh.15753. Epub 2019 Jan 6. PMID: 30613939; PMCID: PMC6555680.
16. Imber BS, Yahalom J. Radiotherapy for Non-Hodgkin Lymphomas. Cancer J. 2020 May/Jun; 26(3): 217-230. doi: 10.1097/PPO.0000000000000453. PMID: 32496455; PMCID: PMC8436835.
17. Strati P, Patel S, Nastoupil L, Fanale MA, Bollard CM, Lin AY, Gordon LI. Beyond Chemotherapy: Checkpoint Inhibition and Cell-Based Therapy in Non-Hodgkin Lymphoma. Am Soc Clin Oncol Educ Book. 2018 May 23; 38: 592-603. doi: 10.1200/EDBK_200549. PMID: 30231316.
18. Messéant O, Houot R. CAR-T cells dans les lymphomes: actualités récentes [CAR-T cells in lymphomas: Current and evolving role]. Bull Cancer. 2021 Oct; 108(10S): S28-S39. French. doi: 10.1016/j.bulcan.2021.04.022. PMID: 34920805.
19. Klener P, Klanova M. Drug Resistance in Non-Hodgkin Lymphomas. Int J Mol Sci. 2020 Mar 18; 21(6): 2081. doi: 10.3390/ijms21062081. PMID: 32197371; PMCID: PMC7139754.
20. Hauke RJ, Armitage JO. Treatment of non-Hodgkin lymphoma. Curr Opin Oncol. 2000 Sep; 12(5): 412-8. doi: 10.1097/00001622-200009000-00005. Erratum in: Curr Opin Oncol 2000 Nov; 12(6): 598. PMID: 10975547.
21. McDaniel KD, Chakrabarty S, Parsons L, MacCuaig WM, McNally LR. Multimodal Tracking of Theranostic Nanoparticles with CAR T Immunotherapy for Non-Hodgkin Lymphoma. Radiol Imaging Cancer. 2022 Jul; 4(4): e229015. doi: 10.1148/rycan.229015. PMID: 35866889; PMCID: PMC9358486.
22. Nademanee A. Transplantation for non-Hodgkin lymphoma. Expert Rev Hematol. 2009 Aug; 2(4): 425-42. doi: 10.1586/ehm.09.24. PMID: 21082947.
23. Huang Z, Chavda VP, Bezbaruah R, Dhamne H, Yang DH, Zhao HB. CAR T-Cell therapy for the management of mantle cell lymphoma. Mol Cancer. 2023 Mar 31; 22(1): 67. doi: 10.1186/s12943-023-01755-5. PMID: 37004047; PMCID: PMC10064560.

© 2023 Global Journals

Global Journal of Medical Research: F
Diseases
Volume 23 Issue 5 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Nutritional Status in Adults with Disabilities Secondary to Cardiovascular Diseases in a Colombian Municipality: A Cross-Sectional Study

By Diana María Igua Ropero

Universidad Pedagógica y Tecnológica de Colombia (UPTC)

Abstract- *Introduction:* Patients with disabilities have limitations in basic daily activities and social participation, so they have late-diagnosed comorbidities such as malnutrition.

Objective: To describe the nutritional status of adults with deficiencies and disability secondary to cardiovascular diseases (CVD) in Motavita-Colombia from January to December 2021.

Methodology: A quantitative, observational, cross-sectional, descriptive study. Ten patients were included and the information was collected with: a structured nutritional survey; Washington questionnaire; body mass index, percentage of body fat, and short battery of physical performance. The literature search was conducted in PubMed, EMBASE, Web of Science, UpToDate, Scopus, and Google Scholar; as well as international guidelines, resolutions, theses, and nutrition chapters. The descriptive statistical analysis was performed with the Excel program.

Keywords: *disability; malnutrition; stroke; exercise; adult.*

GJMR-F Classification: *LCC: RC667. NLMC Code: WT 155*



Strictly as per the compliance and regulations of:

© 2023. Diana María Igua Ropero. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Nutritional Status in Adults with Disabilities Secondary to Cardiovascular Diseases in a Colombian Municipality: A Cross-Sectional Study

Diana María Igua Ropero

Abstract- *Introduction:* Patients with disabilities have limitations in basic daily activities and social participation, so they have late-diagnosed comorbidities such as malnutrition.

Objective: To describe the nutritional status of adults with deficiencies and disability secondary to cardiovascular diseases (CVD) in Motavita-Colombia from January to December 2021.

Methodology: A quantitative, observational, cross-sectional, descriptive study. Ten patients were included and the information was collected with: a structured nutritional survey; Washington questionnaire; body mass index, percentage of body fat, and short battery of physical performance. The literature search was conducted in PubMed, EMBASE, Web of Science, UpToDate, Scopus, and Google Scholar; as well as international guidelines, resolutions, theses, and nutrition chapters. The descriptive statistical analysis was performed with the Excel program.

Results: The median age was 58 years; women (80%), living in rural areas (70%), unemployed (70%), with subsidized health insurance (60%), low educational level (80%); with CVD risk factors: arterial hypertension (100%) and dyslipidemia (60%); and involvement of the cognitive (100%) and visual (50%) domains; there was sarcopenic obesity with the tests applied (60-90%) due to excess kilocalories (100%), sarcopenia in half of the population due to low consumption of proteins (90%) micronutrients and vitamins (80-100%).

Conclusion: The highest proportion of patients with disabilities have malnutrition with a sarcopenic obesity profile; intervention should be carried out with a comprehensive approach that includes evaluation of anthropometric measurements in outpatient clinics (abdominal circumference, calf circumference, short battery of physical performance) and nutritional care plans adjusted to individual needs.

Keywords: *disability; malnutrition; stroke; exercise; adult.*

I. Introduction

Cardiovascular diseases (CVD) are a global problem in adulthood and old age due to the inversion of the population pyramid [1,2]. According to the International Classification of Functioning, these CVDs can cause mainly motor deficiencies due to amputation, paresis, plegia, visual, auditory, cognitive, language, and disabilities when they affect social participation [3,4,5,6,7]. CVDs are those diseases that arise from physiologic disturbances of the heart and blood vessels and include coronary heart disease, stroke, peripheral vascular disease, heart failure, and heart disease; these are more prevalent in Western consumer societies, due to common preventable risk factors such as arterial hypertension, alcohol consumption, dyslipidemia, diabetes mellitus, obesity, smoking, sedentary lifestyle, high salt intake; inadequate therapeutic adherence and hypovitaminosis D[8.9,10,11,12,13,14,15,16,17,18].

The disability affects the nutritional balance, which depends on the balanced intake of food and its physiological, biochemical, and metabolic use, and leads to malnutrition (body mass index less than 25 kg/m2) due to low intake of macronutrients and vitamins; or overweight (25-29.9 kg/m2) and obesity (greater than 30kg/m2) due to associated complications such as a sedentary lifestyle, sarcopenia, swallowing disorders, among others [19,20,21,22,23]. Malnutrition increases the risk of osteoporosis, falls, fractures, sarcopenia, limited transfers, immobilization, spasticity, joint contractures, pressure ulcers, cognitive deficits, institutionalization, prolonged hospital stay, high health cost, feeding difficulties, dysphagia, use of a nasogastric tube, loss of well-being, years of productive life lost due to disability; mood disorder, low self-esteem, poverty, social exclusion and mortality [4,9,12,13,23,24].

In the world, close to 1,000,000,000 people have disabilities, and 200,000,000 have functional and nutritional alterations; this situation is more prevalent in southern countries [2]; the region of the Americas reports high rates of productive years of life lost due to disability due to CVD [25] and mortality due to CVD with 18,000,000 per year (33%) [26]. In Colombia, by 2021, 1,555,708 people with disabilities were reported [27], and the Situational Chamber attributes 15% of morbidity in this population to nutritional and endocrine-metabolic pathologies; there are no nutritional classification data [28].

The World Health Organization (WHO) invites us to understand this problem through the approach of social determinants in health [29,30,31,32,33]. Colombia has implemented this guideline through the community-based rehabilitation strategy [7,34] although a

Author: *Physician. Family Medicine Specialist. Certificate Exercise is medicine, American College of Sports Medicine. Graduate teacher. Family Medicine Department, Universidad Pedagógica y Tecnológica de Colombia (UPTC), Tunja, Colombia. e-mail: dianitx128@gmail.com*

© 2023 Global Journals

preventive nutritional evaluation is necessary [4,29,35,36,37] under the approach of specialties such as family medicine and nutrition based on the care model primary care in health, the ecological theory of systems and the regulatory framework of health care for people with disabilities[7,38,39,40,41,42,43,44,45,46]. The study´s objective was to describe the nutritional status of the adult population with deficiencies and disability associated with CVD between January and December 2021, based on the hypothesis that patients with disability associated with CVD frequently have malnutrition.

II. Materials and Methods

An observational, cross-sectional, descriptive quantitative study was carried out. The total population was 11 adults with deficiencies or disabilities secondary to CVD. One person was not included because informed consent was not requested. The patients were located by the databases of the mayor's office and the Motavita Health Center. The data was collected in the period from January to December 2021.

Inclusion criteria: people with deficiencies and disabilities secondary to CVD according to the domains of the International Classification of Functioning (mobility, hearing, vision, cognitive, language, and personal care); age from 29 to 59 years, inhabitants of Motavita-Colombia.

Exclusion criteria: Patients with terminally ill, in palliative care, with a gastrostomy tube for enteral nutrition, not signing the informed consent to participate in the research.

Variables and data analysis: 1. Nutritional practices: there are no validated questionnaires on nutritional requirements for adults; therefore, a structured nutritional questionnaire (designed by the researcher) was prepared and applied, validated after a pilot study. 2. Washington Questionnaire, to define the type of disability and functional limitations 3. Anthropometric nutritional, medical assessment, assessed with body mass index and percentage of body fat (CUN-BAE formula and skin folds); and physical test evaluated with the short physical performance battery (SPPB). For the analysis, a calibrated tape measure, adipometer, and digital scale, a chair, and a stopwatch were used. 4. Sociodemographic. 5. Cardiovascular risk factors and CVD. To carry out the descriptive statistical analysis, the Excel program was used. The variables were classified, and the measures of central tendency, dispersion, relative frequencies (%) for the qualitative variables, and standard deviations (SD) for the quantitative ones were calculated.

III. Ethical Considerations

This research was previously authorized by the Ethics Committee of the Pedagogical and Technological University of Colombia, following medical bioethical principles, Colombian regulations (Resolution 008430/1993, article 6, literal e), and confidentiality regulated by the Law on Data Protection (Law 1581/2012, Decree 1377/2013) [47,48,49]. All participants were informed about the objectives, methodology, risks, voluntary and anonymous participation, and the right to withdraw from the study at any time.

IV. Results

Ten adults with deficiencies and secondary disability to CVD from Motavita-Colombia were included during the collection period. The sociodemographic characteristics showed a median age of 58 years (48-59 years), female (80%), living in rural areas (70%), unemployed (70%), with subsidized health insurance (60%) and with a low educational level, being primary the most frequent level (80%). Secondary the highest level reached (20%). Table 1 describes other sociodemographic characteristics.

Table 1: Sociodemographic characteristics of the study population.

Variable		Absolute frequency (n= 10)	Relative frequency (%)
Civil status	Single	2	20%
	Married	7	70%
	Divorced	1	10%
Economic income	Own income	4	40%
	Family income	5	50%
	Subsidy income	1	10%
Living place	Own living place	6	60%
	Family living place	3	30%
	Geriatric home	1	10%
Social security	Stated subsidy	9	90%
	Contributory	1	10%

Source: Own elaboration, adapted from clinical history and direct collection.

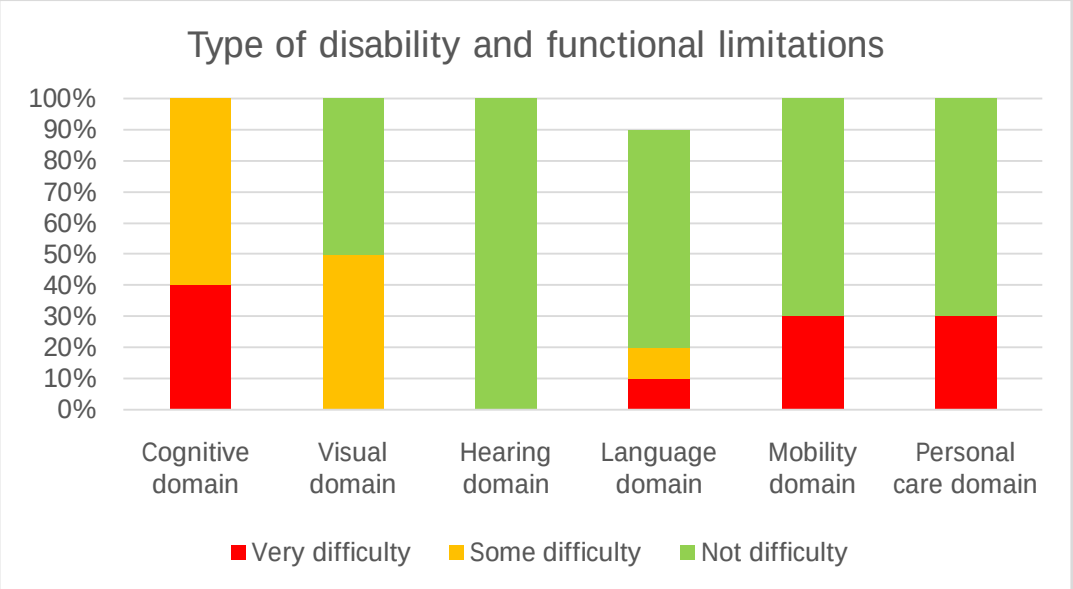
© 2023 Global Journals

The most frequent CVD risk factors were arterial hypertension (100%) and dyslipidemia (60%); Table 2 shows other CVD risk factors. The entire population had stroke-type CVD, and some patients had aortic aneurysm (10%) and peripheral arterial disease (10%). With the Washington questionnaire, it was found that all the patients can execute the functions of walking, vision, hearing, language, and mental processes; personal care and communication, although they do it with difficulty; the cognitive (100%) and visual (50%) domains being the most affected (Figure 1). In the levels of independence to carry out the feeding process, no patient requires total assistance, and the highest proportion can feed themselves (80%).

Table 2: CVD risk factors in the study population.

CVD risk factors			
Variable		Absolute frequency (n=10)	Relative frequency (%)
Type 2 Diabetes	Yes	1	10%
	Not	9	90%
Chronic kidney disease	Yes	2	20%
	Not	8	80%
Previous problematic alcohol use	Yes	3	30%
	Not	7	70%
Ex -smoking	Yes	1	10%
	No	9	90%

Source: self-made. Information adapted from clinical history and direct collection.

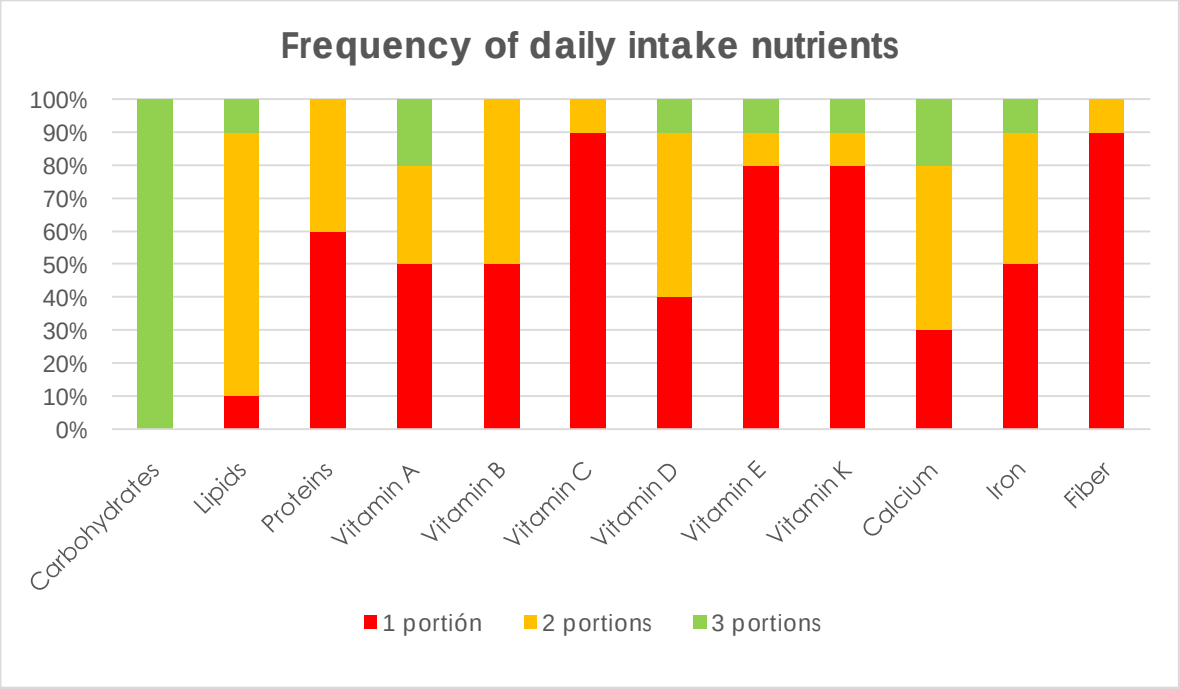


Source: own elaboration, direct collection.

Figure 1: Washington scale of domains and functional limitation in the target population.

At the healthy practices, the nutritional test found an inappropriate intake of macro and micronutrients (Figure 2) and a dietary regimen based on high consumption of carbohydrates and lipids (100% and 90%, respectively)and low protein consumption (10%).; In addition, the consumption of calcium, iron, and fiber did not meet the nutritional requirements in the majority of the population (80%, 90%, and 100% respectively), a similar situation with vitamins, since the most significant proportion did not meet the nutritional requirements of vitamins A either. (80%) D, E, K (90%), B and C (100%); In addition, the most significant proportion does not meet the daily requirements for water consumption (80% distributed as follows: 50% consume less than 30ml/kg/day and 30% consume more than these requirements). Some patients consume drugs that induce overweight (30%).

© 2023 Global Journals



Source: own elaboration, direct collection.

Figure 2: Frequency of daily consumption of nutrients in the target population.

In the anthropometric tests, the average weight was 67.02 +/- 8.56 (range: 53 to 81.5 kg), and the median height was 1.58 (range: 1.48-1.62)., the median BMI was overweight (BMI: 27.59; range: 20.2-32.65), and the median percentage of body fat by CUN-BAE formula and by summation of skin folds was obesity (CUN-BAE: 40.32; range: 24.9-46.29; skinfolds: 39.05; range: 24.7-45.7). In addition, the majority of patients had malnutrition of the sarcopenic obesity type in all the tests applied (Figure 3); With the Sheldon somatotype, most patients were classified as having an endomorph profile (70%), followed by an ectomorph profile (20%); with BMI, the highest proportion was overweight (30%) or obese (30%); with the CUN-BAE formula and with skin folds, the majority of patients had a high (40%) and very high (50%) percentage of body fat; with waist circumference, the highest proportion had abdominal obesity (90%) and with calf circumference, half of the population had sarcopenia.

© 2023 Global Journals

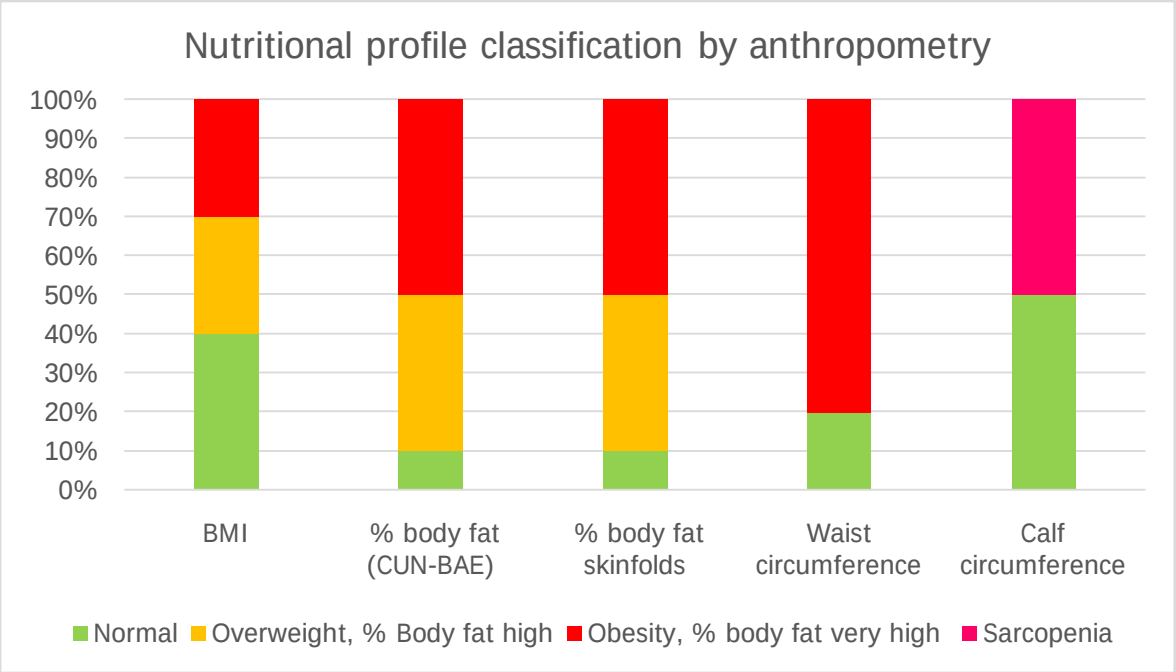


Figure 3: Classification of the nutritional profile of the population studied by anthropometry.

*Reference values: **BMI: body mass index.**WHO criteria for BMI classification: malnutrition: <18.5 kg/m2, normal weight: 18.5-24.9 kg/m2, overweight: 25-29.9 kg/m2, grade I obesity: 30- 34.9 kg/m2, grade II obesity: 35-39.9 and grade III obesity: >40 kg/m2. **Body fat percentage (by CUN-BAE formula and by skinfolds): In women aged 40 to 59: low: less than 23%; normal: 23-33.9%; high: 34-39.9%; very high: >40.0%. In men 40 to 59 years: low: < 11%; normal: 11-21.9%; high: 22-27.9%; very high: >28.0%. [50,51,52,53,54] Source: Own elaboration. Information adapted from direct collection*

To evaluate physical performance, the short physical performance battery was applied, which allows classifying the degree of limitation as minimal (10-12 points), mild (7-9), moderate (4-6), or severe (0- 4), and optimal muscle status (>8 points) or sarcopenia (<8). [53,55,56,57,58,59]. In this study, the average score was 7.7 +/- 2.3 (range: 3-10); the highest proportion of physical limitation was mild (40%) and minimal (30%), and the least amount of those affected had severe physical restriction (10%); in addition, half of the population had sarcopenia. Although the most significant proportion reported doing some daily physical activity (70%), none of them have a structured exercise plan or comply with the physical activity recommendations of the American College of Sports Medicine. In addition, no patient had nutritional consultation or received nutritional supplements in the last year.

Finally, a nutritional care plan was prepared for each patient to improve the situation of sarcopenic obesity and reduce the risk of anemia, osteoporosis, and metabolic dysfunction; this included the intervention of all the variables studied based on the social determinants of health found, the fundamental nutritional requirements (the healthy plate), care practices for the promotion and maintenance of nutritional health and general recommendations for physical activity of safely following the current algorithm of the American College of Sports Medicine.

V. Discussion

In this study, obesity-type malnutrition (60-90%) sarcopenic (50%) was found in the majority of patients with all the tests applied and nutritional regimens that exceeded the nutritional requirements of carbohydrates (100%) and lipids (90%). , with a deficit in protein intake (60%) micronutrients and vitamins [46,60,61], which increases the risk of musculoskeletal and endocrine-metabolic complications [62,63,64,65]; This percentage is higher compared to the result of the meta-analysis by *Su Y et al.* (2020), in which they compiled cross-sectional and observational studies that recorded 42% of sarcopenic obesity [66].

For the analysis of the results, the theory of social determinants in health was used; which are the conditions in which a person is born, lives, and develops. In individual sociodemographic determinants, the median age was 58, and the most affected sex was female (80%). These data are similar to the results of the European prospective study *Mini Nutritional Assessment International* Group et al., which registered many female patients with malnutrition (75.2%) [67]. This gender behavior may be due to the culture of self-care, which is higher in women than in men, as evidenced by *Wallis* (2017) in his cohort study [68] and *Alvarez* (2020) in their review article [69]; where they describe that men have less self-care and consult health services late, which decreases the survival rate

© 2023 Global Journals

According to the meta-analysis by *Gao* et al. (2021) [70], the most critical risk factors for CVD are arterial hypertension (OR = 0.98, 95% CI: 0.84-1.14) and hyperlipidemia (OR = 1.14, 95% CI: 0. 89-1.47), similar results to those found in this study (arterial hypertension: 100%; dyslipidemia: 60%). Other factors described were diabetes (OR = 1.40, 95% CI: 1.18-1.66), chronic kidney disease (OR = 2.52, 95% CI: 0.19-33.30), and smoking (OR = 1.20, 95% CI: 1.10-1.21); all of them present in the population object of this study[71,72,73,74,75,76,77,78,79,80].

Of the CVDs, stroke was the most frequent (100%), and there was a low percentage of aneurysmal disease (10%) and peripheral arterial disease (10%); there were no patients with disability due to coronary artery disease; these data are heterogeneous compared to the literature [81,82,83,84,85,86], and those of the PAHO observatory (2021), which indicates that in 2019, in Colombia, stroke caused 625.5 years disability-adjusted life per 100,000 inhabitants; and ischemic coronary artery disease caused 1327.7 disability-adjusted life years per 100,000 inhabitants [87].

The type of disability is a risk factor for malnutrition [88]; In this study, with the Washington questionnaire, the most affected domains were cognitive (100%) and visual (50%); percentages higher than those found in the US Framingham cohort study by *Hayes* et al., who evaluated 220 stroke survivors and found a large proportion of patients with cognitive deficit such as aphasia (65%) followed by motor deficit (50%) and sensory (15%), which was one of the least affected domains [89]; however, the meta-analysis by *Doyle* et al., also reported a large percentage of involvement of the sensory domain (94%) in CVD survivors [90]. Cognitive sequelae limit understanding of the nutritional therapeutic plan, and visual and motor sequelae limit its execution [91].

In the anthropometric profile, malnutrition due to excess kilocalories was diagnosed with all the tests used. However, the rate was higher with waist circumference (90%: abdominal obesity), the percentage of body fat with the CUN-BAE formula and skinfolds (90%: high or very high) and lower with the Sheldon somatotype (70%: endomorph) and BMI (60% overweight or obese); these differences are similar to those found in the prospective cohort study by *XiangfengCong* et al. (2022), which reports 11.8% obesity with BMI (95% CI: 11.2-12.3%) and 40.1% obesity with waist circumference (95% CI: 39.2-41 .0 %) [92]. The percentage of muscle mass is a protective factor for cardiovascular disease, while the percentage of body fat is a risk factor for cardiovascular disease [51,54,92,93]; these percentages should be investigated in the nutritional medical consultation. In this study, participants had a higher risk nutritional classification with percentage body fat, calf circumference, and abdominal circumference compared with BMI.

With the circumference of the calf and short battery of physical performance; sarcopenic obesity was diagnosed in 50% of the population; a percentage similar to the meta-analysis by *Su Y* et al. (2020) of cross-sectional and observational studies, which recorded a similar prevalence broken down by sex in women (39%; 95% CI: 25%-55%) and men (45%; 95% CI 28%-62%) [66] Two factors that explain sarcopenia were identified: the metabolic state after the stroke and the low protein intake in the majority of the population studied (90%) [50,53,55,56,62,94,95]; these data are related to the meta-analysis by *Negm* (2022), which concludes that an adequate dietary protein intake or protein supplementation are the most effective interventions to improve muscle strength and physical performance in sarcopenia [96].

With the short battery of physical performance, a physical limitation was determined in all the patients; and it was mild (40%) and minimal (30%) in the majority, and to a lesser extent severe (10%); these data show one face of nutritional condition [59], as concluded in the cross-sectional study by *Carvalho* (2022), in which the risk of malnutrition was associated with low total scores with the short battery of physical performance (OR = 0.682, P = 0.011) [83]. In addition, a sedentary lifestyle causes sarcopenia due to decreased musculoskeletal mechanical stimulation, hypovitaminosis D, and osteoporosis [12,36,97,98.99]; In this study, the majority of participants reported doing daily physical activity such as short walks (70%), but none of them met the recommendations of the American College of Sports Medicine, the WHO, and didn´t have a structured exercise plan [100,101,102,103,104, 105,106,107,108]. One strategy to improve physical performance is a structured exercise plan, according to the meta-analysis by *Negm* (2022), which included 3649 participants and 11 interventions and concluded that mixed exercise (aerobic and resistance) was the most effective intervention (93.94%) to increase muscle mass and physical performance [96].

In the interpersonal determinants, the study found a low educational level (80%), which limits knowing nutritional requirements and adopting good eating practices and leads to malnutrition. *Figueroa* (2020),recognizes in their study that people with a low educational level (71%), little knowledge about healthy eating (78.4%), food groups (59.8%), exercise (50.5%), and comorbidities(58.8%), are more likely to be malnourished [109]; hence the importance of educating the patient about healthy nutritional and physical activity behaviors[110,111,112,113,114,115,116]. To achieve nutritional health goals, a family support network is necessary [117,118,119].In this study, the most significant proportion had a household (70% married); this resource was investigated in the Australian study by *Curryer* (2018), and it was concluded that three characteristics must be identified for family support:

© 2023 Global Journals

centrality, the experience of self-determination and limitations for selection and control, in addition, the environment of trust allows receiving guidance on choice and decision-making, which favors health objectives [120].

In addition, the doctor-patient-family relationship makes it possible to achieve these nutritional objectives [121]. In this study, no patient had nutritional consultation or received nutritional supplement formulation in the last year, although most have free health insurance (60%). Some causes described in the literature for this situation are a distant doctor-patient relationship, or perception of discrimination, as *Moscoso* refers. (2018), in their cross-sectional study, in which people with disabilities with a perception of discrimination avoid consulting health care services (78.8% in discriminated against vs. 86.1% in non-discriminated; PR = 1.15; 95% CI: 1.04-1.28) [122]

The level of independence to execute the feeding process determines the possibility of consuming food on time; in this study, no patient required total assistance, and the most significantproportion could feed themselves (80%); however, some require assisted feeding (10%); therefore, they have a greater need for family integration into the care plan [118, 120]. This degree of dependency is explained by *Andrade Q.* (2022) in his observational study, and he concludes that functional capacity is inversely proportional to the degree of family dependency; there is a mild dependence (100%) when the functional capacity is minimally compromised and severe (95.83%) when the usableability is highly compromised ($p<0.001$) [118]. Functional dependence and social restriction affect self-esteem and the sphere emotionally and negatively influences the nutritional situation[123,124,125,126,127, 128,129,130,131,132].

In the contextual determinants, people with disabilities have restricted participation [133,134,135], and a higher poverty rate [136,137,138,139, 140,141,142,143], this study shows these consequences in unemployment (70%) and economic dependence (60%), results similar to *Mitra's* findings (2018), where 20 studies from 10 high-income countries were analyzed and it was determined that the health cost is higher in people with severe disabilities or when they live alone or belong to small households, because they are economically dependent [144,145]. *Pinilla (2018),* studied the Multidimensional Poverty Index in families with and without people with disabilities in five Latin American countries and found that in all countries the households of people with disabilities had a higher incidence, intensity and levels of multidimensional poverty, due to the high health cost and economic dependence [146]. This limits the acquisition of nutrients, for this study there was a protein deficit (90%); calcium (80%), iron (90%), fiber (100%) and vitamins A (80%) D, E, K (90%), B and C (100%); all of them of high economic value within the family basket [4,60,63,147,148,149,150].

A limitation of the study is the sample size, because this limit making statistical association and calculating prevalence. However, the findings correspond to the complete population to investigate according to inclusion and exclusion criteria. This study differs from the case series because its intervention was based on diagnostic exploration.

VI. Conclusions

This innovative study concludes that the adult population with disabilities secondary to CVD has a profile of sarcopenic obesity with all the diagnostic tools applied, with excess kilocalories and deficit in the consumption of proteins, micronutrients, vitamins, fiber, and water; it also makes it possible to demonstrate the expression of vulnerability of the population with disabilities.

To evaluate the nutritional condition in patients with disabilities, it is necessary to use pragmatic outpatient nutritional tools, such as abdominal circumference or the CUN-BAE formula, to assess abdominal fat percentage and calf circumference or the short physical performance battery to investigate sarcopenia. In addition, a comprehensive approach based on the social determinants model contributes to creating nutritional care plans adjusted to personalized needs to prevent the appearance of malnutrition, detect it in time, and intervene to avoid musculoskeletal, joint, metabolic, endocrine and cardiovascular complications. The family physician must identify individual, interpersonal, and contextual problems, establish a management plan, provide health education for the patient and their family, and locate family resources to strengthen behaviors to promote and maintain nutritional and mental health. In addition, risk factors must be identified and intervened to avoid restricting the patient's social participation.

It is the job of the state to implement policies, strategies (such as community-based rehabilitation), and social inclusion plans to improve population nutritional health since there is a social debt, taking into account that aging with high allostatic load in people from countries "from the south" is an expression of the geographical pattern of human development and a social disadvantage reflected in people with disabilities.

Competing interests: None declared

Data availability statement All data relevant to the study are included in the article or uploaded as supplemental information.

Bibliography

1. World health organization -WHO- Cardiovascular diseases. 2022.

© 2023 Global Journals

2. Heart Disease and Stroke Statistics. American Heart Association AHA– 2021.
3. Chuter, Vivienne, et al. Australian guideline on diagnosis and management of peripheral artery disease: part of the 2021 Australian evidence-based guidelines for diabetes-related foot disease. Journal of foot and ankle research. 2022, 15, (1): 1-25.
4. Arnett DK, Blumenthal RS, Albert MA, et al. ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019; 140 (11):e596-e646.
5. García Alfonso C, Martínez Reyes A, García V, Ricaurte Fajardo A, Torres I, Coral J. Diagnosis and Treatment of Acute Ischemic Stroke: An Update. Universitas Medica, 2019; 60, 3. 1-17.
6. Organización Mundial De La Salud (OMS), Banco Mundial. Informe mundial sobre la discapacidad. 2011.
7. Ministerio de salud y Protección Social de Colombia. Resolución 3280 de 2018.
8. Martínez Pérez, Héctor Florencio. Comunicación, desempeño laboral y discapacidad auditiva. Orbis. Revista Científica Ciencias Humanas, 2015; 11(32), 23-43.
9. Bowen KJ, Sullivan VK, Kris-Etherton PM, Petersen KS. Nutrition and cardiovascular disease—an update. Curr Atheroscler Rep. 2018; 20:8.
10. American Diabetes Association (ADA) Professional Practice Committee. 1. Improving care and promoting health in populations: Standards of Medical Care in Diabetes—2022. Diabetes Care; 2022; 45(1): S8–S16
11. Visseren, Frank L.J.; Mach, Franc¸ois; Smulders, Yvo M.; Carballo, David; Koskinas, Konstantinos C.; Back, Maria; Benetos, Athanase; Biffi, Alessandro; Boavida, Jose´-Manuel; Capodanno, David; Cosyns, Bernard; Crawford, Carolyn; Davos, Constantinos H. Desormais, Ileana; Di Angelantonio, Emanuele; Franco, Oscar H; Halvorsen, Sigrun; Richard Hobbs, F. D.; Hollander, Monika; Jankowska, Ewa A.; Michal, Matthias; Sacco, Simona; Sattar, Naveed; Tokgozoglu, Lale; Tonstad, Serena; Tsioufis, Konstantinos P.; Van Dis, Ineke; Van Gelder, Isabelle C.; Wanner, Christoph; Williams, Bryan. Task Force Members. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. Developed by the Task Force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies. With the special contribution of the European Association of Preventive Cardiology (EAPC). European Journal of Preventive Cardiology. 2022; 29, 5115.
12. Pelliccia A, Sharma S, Gati S, Back M, Borjesson M, Caselli S, Collet JP, Corrado; D, Drezner JA, Halle M, Hansen D, Heidbuchel H, Myers J, Niebauer J, Papadakis M, Piepoli MF, Prescott E, Roos-Hesselink JW, Graham Stuart A, Taylor RS, Thompson PD, Tiberi M, Vanhees L, Wilhelm M, ESC Scientific Document Group. 2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease. Eur Heart J; 2021, 42: 1796.
13. Virani SS, Alonso A, Benjamin EJ, et al. American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2020 update: a report from the American Heart Association. Circulation. 2020; 141(9):e139-e596.
14. Thomas Unger, Claudio Borghi, Fadi Charchar, et al. International Society of Hypertension Global Hypertension Practice Guidelines. Journal of Hypertension. Hypertension. American Heart Association, Inc; 2020, 75: 1334-1357.
15. Benjamin EJ, Muntner P, et al. American Heart Association AHA Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. 2020.
16. Chaloupka FJ, Powell LM, Warner KE. The use of excise taxes to reduce tobacco, alcohol, and sugary beverage consumption. Annu Rev Public Health. 2019; 40: 187-201.
17. Huang J, Walton K, Gerzoff RB, King BA, Chaloupka FJ. State Tobacco Control Program Spending – United States, 2011. MMWR Morb Mortal Wkly Rep. 2015; 64: 673–8.
18. Husain K, Ansari RA, Ferder L. Alcohol-induced hypertension: Mechanism and prevention. *World J Cardiol. 2014,6* (5), 245–252.
19. Canicoba, M., Mauricio, S. Valoración del estado nutricional en diversas situaciones clínicas. Los Olivos, Lima: Universidad Privada del Norte S. A. C. 2017.
20. WHO 2022. Disponible en: https://www.who.int/es
21. Shinta Nishioka, Hidetaka Wakabayashi, Interaction between malnutrition and physical disability in older adults: is there a malnutrition-disability cycle?, Nutrition Reviews, 2022;, nuac047, https://doi.org/10.1093/nutrit/nuac047
22. Robertson J, Emerson E, Baines S, Hatton C. Obesity and health behaviours of British adults with self-reported intelectual impairments: cross sectional survey. BMC Public Health; 2014, 14: 219
23. Ocres, Carlos H. Vitamin D concentrations among older adults according to physical disability status:NHANES 2007-2014 *Nutr Hosp. 2019, 36* (3), 571-577.
24. Bise, Takahiro; Nagano, Fumihiko; Wakabayashi, Hidetaka; Shimazu, Sayuri; Shiraishi, Ai; Yoshimura,

© 2023 Global Journals

Yoshihiro. Chair-stand exercise improves post-stroke dysphagia. 2020, 20 (10), 885-891
25. Banco Mundial, 2020. https://www.bancomundial.org/es/topic/disability
26. Organización Mundial de la Salud OMS. Global health estimates 2016: deaths by cause, age, sex, by country and by region, 2000– 2016. Ginebra. 2018.
27. Ministerio de Salud y Protección Social, Dirección de Epidemiología y Demografía. Análisis de Situación de Salud (ASIS) Colombia, 2022. 2023
28. Ministerio de Salud y Protección Social. Oficina de Promoción Social y la Sala situacional de las Personas con Discapacidad. Obtenido de Registro de Localización y Caracterización de Personas con Discapacidad RLCPD. 2017.
29. United States Preventive Services Task Force (USPSTF). Behavioral Counseling Interventions to Promote a Healthy Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Cardiovascular Disease Risk Factors: Updated Systematic Review for the U.S. Preventive Services Task Force. JAMA. 2022 (328), 4
30. Alessandro, L; et al. Rehabilitación multidisciplinaria para pacientes adultos con accidente cerebrovascular. Medicina-Buenos Aires; 2019; 80: 54-68.
31. Quevedo, Paula. "La malnutrición: más allá de las deficiencias nutricionales". U.Nal. Trabajo Social. 2019, 21 (1): 219-239.
32. Organización Panamericana de la Salud OPS. Determinantes Sociales De La Salud En La Región De Las Américas. 2017
33. Gómez, F., Osorio-García, D., Panesso, L., & Curcio, C. L. Healthy aging determinants and disability among older adults: SABE Colombia. Revista Panamericana de Salud Pública, 2021; 45.
34. Ruiz, Fernando, et al. Ministerio de Salud y Protección Social. Plan Decenal de Salud Pública 2022-2031. 2022.
35. Anderson CAM, Thorndike AN, Lichtenstein AH, et al. Innovation to create a healthy and sustainable food system: a science advisory from the American Heart Association. Circulation; 2019, 139: e1025-e1032.
36. American College of Sports Medicine. Exercise Is Medicine: a global health initiative. 2018.
37. Frank L J Visseren, et al. ESC Guidelines on cardiovascular disease prevention in clinical practice: Developed by the Task Force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies With the special contribution of the European Association of Preventive Cardiology (EAPC). European Heart Journal; 2021, 42 (34): 3227–3337.
38. WHO. Malnutrition. 2021. https://www.who.int/news-room/fact-sheets/detail/malnutrition
39. United Nations (UN). The Sustainable Development Goals Report. 2020
40. Cárdenas-Cepero, Yara Luisa, et al. La enseñanza de la biología desde la teoría general de sistemas: mirada bioética. Rev. Órbita Científica. 2022
41. Xia, Mu; Li, Xueliu; Tudge, Jonathan RH. Operationalizing Urie Bronfenbrenner's process-person-Context-time model. Human Development, 2020; (64): 10-20.
42. Bravo-Andrade, H., Ruvalcaba, N., Orozco, M., González-Gaxiola, Y., Hernández-Paz, M. Introducción al modelo ecológico del desarrollo humano. 2018
43. Gendron T, Van Aartrjik A, Carpenter K, Backer R, Applewhite A. Ageism Interventions: The Need for An Ecological Perspective. J Aging Soc Policy. 2022, (8): 1-12.
44. Schenck AP, Meyer AM, Kuo TM, Cilenti D. (2015) Building the evidence for decision-making: the relationship between local public health capacity and community mortality. American Journal of Public Health; 105 Suppl 2: S211-6.
45. The Mental State of the World report for 2021. The Mental Health Million Project.
46. Ministerio de salud y Protección Social de Colombia. Resolución 3803 de 2016.
47. Ministerio de salud y Protección Social de Colombia. Resolución 008430 de 1993
48. Ministerio de salud y Protección Social de Colombia. Ley 1581 de 2012
49. Ministerio de salud y Protección Social de Colombia. Decreto 1377 de 2013
50. Cruz-Jentoft A, Bahat G, Bauer J, Boirie Y, Buryère O, Cederholm T et al. Sarcopenia: revised European consensus on definition and diagnosis. Age Ageing.; 2019, 48(1):16–31
51. Ordóñez Molina JE, Duque Ossman JJ, Rosero Revelo RJ, Palacio Uribe JI. Recomendaciones de la Asociación Colombiana de Endocrinología, Diabetes y Metabolismo para el manejo de la obesidad. Bogotá: Grupo Distribuna; 2019
52. Casadei K, Kiel J. Anthropometric Measurement. United States: StatPearls; 2022.
53. Petermann-R F, Balntzi V, Gray SR, Lara J, Ho FK, Pell JP, et al. Global prevalence of sarcopenia and severe sarcopenia: a systematic review and meta-analysis. J Cachexia Sarcopenia Muscle. 2022; 13(1): 86–99.
54. Vahlberg, Birgit., Zetterberg, Lena., Lindmark, Birgitta., Hellström, Karin., y Cederholm, Tommy. Functional performance, nutritional status, and body composition in ambulant community-dwelling individuals 1-3 years after suffering from a cerebral infarction or intracerebral bleeding. *BMC Geriatr. 2022, 16*(48), 1-9.

© 2023 Global Journals

55. Ecarnot F, Rogoli D, Maggi S. Epidemiology of Sarcopenia. En: Veronese N, Beaudart C, Sabico S. Sarcopenia, Research and Clinical Implications. Practical Issues in Geriatrics. Switzerland: Springer Cham; 2021. 1-16.
56. Inoue T, Maeda K, Nagano A, Shimizu A, Ueshima J, Murotani K, et al. Related Factors and Clinical Outcomes of Osteosarcopenia: A Narrative Review. Nutr J. 2021; 13(2): 1-14.
57. Dent E, Martin FC, Bergman H, Woo J, Romero-Ortuno R, Walston JD. Management of frailty: opportunities, challenges, and future directions. Lancet. 2019; 394: 376-86.
58. Strini V, Schiavolin R, Prendin A. Fall Risk Assessment Scales: A Systematic Literature Review. Nurs Rep. 2021; 11(2): 430-43.
59. Instituto Nacional de Geriatría [Internet]. México D.F.: Batería corta de desempeño físico; 2018. Disponible: http://inger.gob.mx/pluginfile.php/1690/mod_resource/content/4/Archivos/Instrumentos/03_SPPB.pdf
60. Willett W, Rockstrom J, et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet; 2019, 393: 447-492.
61. Sunada, Yoshihide. "A Potential Nutritional Indicator Predictable for Stroke-Related Sarcopenia." JMA journal 5.1 2022: 72-73.
62. Scherbakov N, Doehner W. Sarcopenia in strokefacts and numbers on muscle loss accounting for disability after stroke. J Cachexia Sarcopenia Muscle. 2011; 2 (1): 5–8.
63. Robert Wood Johnson Foundation. Trust for America's Health. The State of Obesity 2018: Better Policies for a Healthier America. 2018.
64. Rodríguez VM, Simon E. Bases de la Alimentación Humana. Editorial Netbiblo. 2008.
65. Serra MC. The Importance of Assessing Nutritional Status to Ensure Optimal Recovery during the Chronic Phase of Stroke. Stroke Res Treat 2018: 1297846.
66. Su Y, Yuki M, Otsuki M. Prevalence of stroke-related sarcopenia: A systematic review and meta-analysis. J Stroke Cerebrovasc Dis. 2020 Sep; 29(9): 105092.
67. Kaiser, M. J., Bauer, J. M., Rämsch, C., Uter, W., Guigoz, Y., Cederholm, T., Mini Nutritional Assessment International Group. Frequency of malnutrition in older adults: a multinational perspective using the mini nutritional assessment. Journal of the American Geriatrics Society, 2010, 58(9), 1734-1738.
68. Wallis, C.J.D., Ravi, B., Coburn, N., Nam, R.K., Detsky, A.S. and Satkunasivam, R.. Comparison of postoperative outcomes among patients treated by male and female surgeons: a population based matched cohort study. BMJ, 2017, 359, p.j4366
69. Álvarez-Díaz, J. A. La necesaria perspectiva de género para el análisis de problemas de salud. Cirugía y cirujanos, 2020, 88(3), 383-388.
70. Gao Qian Qian, Hu K, Yan C, Zhao B, Mei F, Chen F, Zhao L, Shang Y, Ma Y, Ma B. Associated Factors of Sarcopenia in Community-Dwelling Older Adults: A Systematic Review and Meta-Analysis. Nutrients. 2021, 27; 13(12): 4291.
71. De Winter, C.F., Bastiaanse, L.P., Hilgenkamp, T.I.M., Evenhuis, H.M., y Echteld, M.A. (2012). Cardiovascular risk factors (diabetes, hypertension, hypercholesterolemia and metabolic syndrome) in older people with intellectual disability: Results of the HA-ID study. *Research in Developmental Disabilities 33,* 1722-1731.
72. Bourel MAR. Contenu en sel de l'alimentation et hypertension arte´ rielle. Bull Acad Natl Med; 2004, 188: 317–29.
73. Quiroga de Michelena, María Isabel. Hipertensión arterial. Aspectos genéticos. *An Fac med, 2010,71* (4), 231-235.
74. Ramírez Bello, Julián, Pérez-Méndez, Oscar, Ramírez-Fuentes, Silvestre, Carrillo-Sánchez, Silvia, Vargas-Alarcón, Gilberto, & Fragoso, José Manuel. Genética y genómica de la hipertensión arterial: una actualización. *Archivos de cardiología de México, 2011, 81* (3), 240-250.
75. Mudau M, Genis A, Lochner A, Strijdom H. Endothelial dysfunction: The early predictor of atherosclerosis. *Cardiovasc J Afr. 2012, 23,* 222-231
76. ESC/EAS (2020) Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. Eur Heart J. 1; 41(1): 111-188.
77. Hackshaw A, Morris JK, Boniface S, Tang JL, Milenković D. Low cigarette consumption and risk of coronary heart disease and stroke: meta-analysis of 141 cohort studies in 55 study reports. *BMJ. 2018, 360.*
78. WHO. Tobacco breaks hearts. Choose health, not tobacco. Ginebra: 2018. (WHO/NMH/PND/18.4).
79. Department of Health and Human Services of the United States of America. (2010). How Tobacco Smoke Causes Illness: The Biological and Behavioral Basis of Smoking-Attributable Illnesses: A Surgeon General's Report. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, US Office on Tobacco and Health.
80. Fernandez-Sola J. (2015). Cardiovascular risks and benefits of moderate and heavy alcohol consumption. Nat Rev Cardiol; 12:576–87.
81. Heart disease and stroke statistics update: a report from the American. 2020.
82. Heart Association. Circulation. 2019; 139(10):e56-e528.

© 2023 Global Journals

83. Carvalho, J., Correia, M. A., Kanegusuku, H., Longano, P., Wolosker, N., Ritti-Dias, R. M., & Cucato, G. G. Association between the risk of malnutrition and functional capacity in patients with peripheral arterial disease: A cross-sectional study. *PloS one*, 2022, *17*(9), e0273051
84. Centers for Disease Control and Prevention (CDC). Million Hearts. 2022.
85. Organización mundial de la salud (2021). Boletín discapacidad y salud.
86. Pan American Health Organization. Cardiovascular disease. 2020.
87. Cardiovascular disease burden in the Region of the Americas, 2000-2019. (2021) ENLACE data portal. Pan American Health Organization.
88. Martínez-Leal R, Salvador-Carulla L, Ruiz Gutiérrez-Colosía M, Nadal M, Novell-Alsina R, Martorell A, et al. La salud en personas con discapacidad intelectual en España: estudio europeo POMONA-II. Rev Neurol 2011; 53: 406-14.
89. Hayes M, Kelly; Beiser A, Kase CS, et al. The influence of gender and age on disability following ischemic stroke: the Framingham study. J Stroke Cerebrovasc Dis; 2003, 12:119.
90. Doyle S, Bennett S, Fasoli SE, McKenna KT. Interventions for sensory impairment in the upper limb after stroke. Cochrane Database Syst Rev 2010; :CD006331.
91. Suárez Escudero, Juan Camilo (2011). Discapacidad visual y ceguera en el adulto: revisión de tema. *Revista medicina Universidad Pontificia Bolivariana UPB*. 30 (2), 170-180.
92. Cong, Xiangfeng., Liu, S., Wang, W., Ma, J., & Li, J. (2022). Combined consideration of body mass index and waist circumference identifies obesity patterns associated with risk of stroke in a Chinese prospective cohort study. *BMC public health*, *22*(1), 1-11.
93. Jensen MD, Ryan DH, Apovian CM, et al. (2013). AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. Circulation 2014; 129: S102.
94. Mill-Ferreyra, E., Cameno Carrillo, V., Saúl Gordo, H., y Camí Lavado, M.C. (2018). Estimación del índice de masa corporal con base en la circunferencia braquial, para pacientes con discapacidad permanente o transitoria. *Medicina de Familia. SEMERGEN*. *44*(5), 304-309.
95. Cong, Xiangfeng., Liu, S., Wang, W., Ma, J., & Li, J. Combined consideration of body mass index and waist circumference identifies obesity patterns associated with risk of stroke in a Chinese prospective cohort study. *BMC public health*, 2022, *22*(1), 1-11.
96. Negm, A. M., Lee, J., Hamidian, R., Jones, C. A., & Khadaroo, R. G. Management of sarcopenia: a network meta-analysis of randomized controlled trials. Journal of the American Medical Directors Association. 2022.
97. Izquierdo-Gómez R, Martínez-Gómez D, Acha A, Veiga OL, Villagra A, Díaz-Cueto M. (2014) Objective assessment of sedentary time and physical activity throughout the week in adolescents with Down syndrome. The Up&Down study. Res Dev Disabil; 35: 482-489.
98. Wilmot EG, Edwardson CL, Achana FA, et al. (2012) Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. Diabetologia.; 55: 2895-2905.
99. Manson JE, Cook NR, Lee IM, et al. (2019) Vitamin D supplements and prevention of cancer and cardiovascular disease. N Engl J Med; 380: 33-44.
100. American College of Sports Medicine. General Exercise Guidelines. 2022
101. WHO guidelines on physical activity and sedentary behavior. 2020.
102. Lobelo F, Rohm Young D, Sallis R, et al; (2018) American Heart Association Physical Activity Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Epidemiology and Prevention; Council on Clinical Cardiology; Council on Genomic and Precision Medicine; Council on Cardiovascular Surgery and Anesthesia; and Stroke Council. Routine assessment and promotion of physical activity in healthcare settings: a scientific statement from the American Heart Association. Circulation.; 137(18): e495-e522.
103. Hernández Martínez, Blanca Estela., Caballero Lambert, Ana Olivia., Estrada Salas, Ana Karen., Guevara Sanginés, Martha Leticia., y Orozco Méndez, Judith. (2013). Nutrición y rendimiento en atletas con discapacidad intelectual y conocimientos de sus cuidadores. *Enf Neurol (Mex)*. *12*(3), 141-146.
104. Brooker K, Van Dooren K, McPherson L, Lennox N, Ware R. (2014) A systematic review of interventions aiming to improve involvement in physical activity among adults with intelectual disability. J Phys Act Health.;(12):434-44.
105. Pelliccia et al. Guía ESC 2020 sobre cardiología del deporte y el ejercicio en pacientes con enfermedad cardiovascular. Rev Esp Cardiol. 2021; 74(6): 545.e1–545.e73
106. Preston E, Ada L, Stanton R, et al. (2021) Prediction of Independent Walking in People Who Are Nonambulatory Early After Stroke: A Systematic Review. Stroke; 52: 3217.
107. San Mauro-Martín I, Onrubia- González-De la Aleja J, Garicano- Vilar E, Cadenato-Ruiz C, Hernández-Villa I, Rodríguez-Alonso P, et al. (2016). Nutrición y

© 2023 Global Journals

actividad física en personas con discapacidad intelectual (DI). *Revista Neurológica.62*: 493-501.
108. Patnode CD, Redmond N, Iacocca MO, Henninger M. (2022) Behavioral Counseling to Promote a Healthy Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Known Cardiovascular Disease Risk Factors: Updated Systematic Review for the U.S. Preventive Services Task Force: Evidence Review No. 217. Agency for Healthcare Research and Quality
109. Figueroa, G., Muñoz, L., Villamil, K., & Rosero, G. (2020). Estrategia educativa para modificar estilos de vida no saludables en adultos jóvenes con malnutrición. *Redieluz*, 107.
110. Cadenato-Ruiz C, Garicano Vilar E, Hernández Villa I, Onrubia González-De la Aleja J, Rodríguez - Alonso P, San Mauro-Martín I, et al. Análisis del estado nutricional y composición corporal de personas con discapacidad intelectual. Rev Neurol, 2016, 62, 493-501.
111. Tafur Castillo, Janery., Guerra Ramírez, Merilyn., Carbonell, Aidee., y López, María Ghisays. Factores que afectan el estado nutricional del adulto mayor. *Revista Latinoamericana de Hipertensión. 2018,13*(5), 361-366.
112. Tsutsumiuchi, K., Wakabayashi, H., Maeda, K. et al. Impact of malnutrition on post-stroke cognitive impairment in convalescent rehabilitation ward inpatients. Eur Geriatr Med. 2020
113. Wang J, Luo B, Xie Y, Hu HY, Feng L, Li ZN. Evaluation methods on the nutritional status of stroke patients. Eur Rev Med Pharmacol Sci.; 2014, 18(24): 3902–3907
114. Wong HJ, Harith S, Lua PL, Ibrahim KA. Prevalence and predictors of malnutrition risk among post-stroke patients in outpatient setting: a cross-sectional study. Malays J Med Sci.; 2020, 27(4):72–84.
115. Bodde AE, Seo DC, Frey GC, Van Puymbroeck M, Lohrmann DK. The effect of a designed health education intervention on physical activity knowledge and participation of adults with intellectual disabilities. Am J Health Promot; 2012, 26: 313-6.
116. Sayinzoga, A., Lefèvre-Dognin, C., Bourget Massari, A., Paquereau, J., y Crenn, P. État nutritionnel et profil métabolique du patient handicapé neuro-moteur adulte à l'admission et à la sortie de rééducation post-réanimation. *ELSEVIER. 2018, 32*(4), 292-293
117. Libbon, R., Triana, J., y Heru, A. Family Skills for the Resident Toolbox: the 10-min Genogram, Ecomap, and Prescribing Homework. Acad Psychiatry, 2019, (43), 435- 439.
118. Andrade Quiñones, L. J. Relación entre la capacidad funcional de pacientes con accidente cerebrovascular y repercusión en sus familias. Instituto Nacional de Rehabilitación, 2018. 2022
119. Caro CC, Costa JD, Da Cruz DMC. Burden and Quality of Life of Family Caregivers of Stroke Patients. Occup Ther Health Care. 2018, 32(2): 154-171.
120. Curryer B, Stancliffe RJ, Dew A, Wiese MY. Choice and Control Within Family Relationships: The Lived Experience of Adults With Intellectual Disability. Intellect Dev Disabil. 2018; 56(3): 188-201.
121. Forguione-Pérez VP. Comunicación entre médico y paciente: más allá de una consulta, un proceso educativo. Méd.Uis, 2015, 28 (1), 7-13.
122. Moscoso-Porras MG, Alvarado GF. Association between perceived discrimination and healthcare-seeking behavior in people with a disability. Disabil Health J. 2018 Jan; 11(1): 93-98.
123. Caner, A. Happiness and Life Satisfaction in Turkey in Recent. Social Indicators Research, 2016, *127 (1),* 361-399.
124. Asociación Mundial WIN-Gallup y Centro Nacional de Consultoría (CNC). Encuesta de felicidad 2019.
125. Brucker, Debra L., Supplemental nutrition assistance program participation among working-age adults with disabilities who experience employment exits and entries. *Journal of Hunger & Environmental Nutrition. 2020, 15* (1), 51-61.
126. European Psychiatric Association (EPA). (2022) Mental Health.
127. Helliwell, John F; et al. World Happiness Report. 2019.
128. Kennedy, Sidney H., et al. "Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 clinical guidelines for the management of adults with major depressive disorder: section 3. Pharmacological treatments." The Canadian Journal of Psychiatry 2016, 61.9: 540-560
129. Kim Y, Kim MC, Park HS, Cho IH, Paik JK. Association of the anxiety/depression with nutrition intake in stroke patients. Clin Nutr Res; 2018, 7(1): 11–20.
130. Lupien, S. J., Juster, R.-P., Raymond, C., & Marin, M.-F. The effects of chronic stress on the human brain: From neurotoxicity, to vulnerability, to opportunity. Frontiers in Neuroendocrinology; 2018, 49, 91–105.
131. Newson, J.J., Hunter, D., and Thiagarajan, T.C. The Heterogeneity of Mental Health Assessment. Frontiers in Psychiatry; 2020, 11(76).
132. Gottschalk, Michael G., and Katharina Domschke. "Genetics of generalized anxiety disorder and related traits." Dialogues in clinical neuroscience. 2022; 159-168.
133. Organización Mundial De La Salud (OMS), (2012) Banco Mundial. Rehabilitación basada en la comunidad: Guías para la RBC para el desarrollo

© 2023 Global Journals

inclusivo basado en la comunidad. Folleto introductorio.
134. Mikulovic J, Vanhelst J, Salleron J, Marcellini A, Compte R, Fardy PS, et al. Overweight in intellectually-disabled population: physical, behavioral and psychological characteristics. Res Dev Disabil. 2014;(35):153-61
135. Banco Mundial. Informe Del Banco Mundial, 2019. https://www.bancomundial.org/es/topic/disability
136. Blas E, Ataguba JE, Huda TM, Bao GK, Rasella D, Gerecke M. The feasibility of measuring and monitoring social determinants of health and the relevance for policy and programme – a qualitative assessment of four countries. Global Health Action; 2016, 9: 29002
137. Cutillas Orgilés, Ernesto Distribución mundial de la población con discapacidades en relación con los patrones geográficos del desarrollo humano. Documents d'Anàlisi Geogràfica. 2017, 63(1), 29-53.
138. Gil Obando, Lida Maritza., López López, Alexandra. Aguas de la Ossa, María Margarita., y Hernández Blanco. Adultos en situación de discapacidad, Calidad de vida y características sociodemográficas en Sincelejo (Sucre, Colombia). *Revista Areté, Fonoaudiología. 2017, 18*(1), 1657-2513
139. Grech, Shaun. The spaces of poverty: Renegotiating place and disability in the global south. En: Soldatic, Karen; Morgan, Hannah y Roulstone, Alan (ed.). Disability, spaces and places of policy exclusion. Oxford: Routledge, 2014, 48-63.
140. Grupo Banco Mundial. https://datos.bancomundial.org/indicador/sh.med.phys.zs
141. Kickbusch I. Global health governance challenges 2016- are we ready? International Journal Health Policy Management; 2016, 5(6):349–353.
142. Kickbusch I, Allen L, Franz C. The commercial determinants of health. The Lancet Global Health; 2016, 4(12): 895–896.
143. Palmer, Michael. Disability and poverty: A conceptual review. Journal of Disability Policy Studies, 2011, 21 (4), 210-218.
144. Mitra S, Palmer M, Kim H, Mont D, Groce N. (2017). Extra costs of living with a disability: A review and agenda for research. Disabil Health J.;10(4):475-484
145. Mitra, Sophie; Posarac, Aleksandra y Vick, Brandon (2013). «Disability and poverty in developing countries: A multidimensional study». World Development, 41, 1-18.
146. Pinilla-Roncancio M. The reality of disability: Multidimensional poverty of people with disability and their families in Latin America. Disabil Health J. 2018 Jul; 11(3): 398-404.
147. Hebert D, Lindsay MP, McIntyre A, et al. (2016) Canadian stroke best practice recommendations: stroke rehabilitation practice guidelines, update 2015. Int J Stroke; 11: 459-84.
148. Choi S-H, Choi-Kwon S, Kim M-S, Kim J-S. (2015). Poor nutrition and alcohol consumption are related to high serum homocysteine level at poststroke. Nutr Res Pract.; 9(5): 503–510.
149. Paquereau J, Allart E, Romon M, Rousseaux M. (2014) The long-term nutritional status in stroke patients and its predictive factors. J Stroke Cerebrovasc Dis.; 23(6): 1628–1633.
150. Mogamiya, Takuma; et al. Association of Activities of Daily Living with Body Weight Change 3 Months after Stroke Onset. Journal of Stroke and Cerebrovascular Diseases, 2022, (31); 8: 1052-3057.

© 2023 Global Journals

Global Journals Guidelines Handbook 2023

www.GlobalJournals.org

Memberships

Fellows/Associates of Medical Research Council

FMRC/AMRC Memberships



Introduction

FMRC/AMRC is the most prestigious membership of Global Journals accredited by Open Association of Research Society, U.S.A (OARS). The credentials of Fellow and Associate designations signify that the researcher has gained the knowledge of the fundamental and high-level concepts, and is a subject matter expert, proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice. The credentials are designated only to the researchers, scientists, and professionals that have been selected by a rigorous process by our Editorial Board and Management Board.

Associates of FMRC/AMRC are scientists and researchers from around the world are working on projects/researches that have huge potentials. Members support Global Journals' mission to advance technology for humanity and the profession.

FMRC

Fellow of Medical Research Council

FELLOW OF MEDICAL RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.

To the institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.



Exclusive Network

Get access to a closed network

A FMRC member gets access to a closed network of Tier 1 researchers and scientists with direct communication channel through our website. Fellows can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation



Certificate

Certificate, LoR and Laser-Momento

Fellows receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation



Designation

Get honored title of membership

Fellows can use the honored title of membership. The “FMRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FMRC or William Walldroff, M.S., FMRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Fellow members of FMRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All fellows get a dedicated page on the website with their biography.

Career | Credibility | Reputation

© Copyright by Global Journals | Guidelines Handbook

Future Work

Get discounts on the future publications

Fellows receive discounts on the future publications with Global Journals up to 60%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial



GJ Internal Account

Unlimited forward of Emails

Fellows get secure and fast GJ work emails with unlimited storage of emails that they may use them as their primary email. For example,
john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation



Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows receive access to all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Fellows are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same 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. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All fellows receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive

© Copyright by Global Journals | Guidelines Handbook



Publishing Articles & Books

Earn 60% of sales proceeds

Fellows can publish articles (limited) without any fees. Also, they can earn up to 70% of sales proceeds from the sale of reference/review books/literature/publishing of research paper. The FMRC member can decide its price and we can help in making the right decision.

Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

Access to Editorial Board

Become a member of the Editorial Board

Fellows and Associates may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer.

Career | Credibility | Exclusive | Reputation

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

© Copyright by Global Journals | Guidelines Handbook

ASSOCIATE OF MEDICAL RESEARCH COUNCIL

ASSOCIATE OF MEDICAL RESEARCH COUNCIL is the membership of Global Journals awarded to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Associate membership can later be promoted to Fellow Membership. Associates are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Associate Members.

To the institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.



Exclusive Network

Get access to a closed network

A AMRC member gets access to a closed network of Tier 2 researchers and scientists with direct communication channel through our website. Associates can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation



Certificate

Certificate, LoR and Laser-Momento

Associates receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation



Designation

Get honored title of membership

Associates can use the honored title of membership. The “AMRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., AMRC or William Walldroff, M.S., AMRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Associate members of AMRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation.

Career | Credibility | Reputation

© Copyright by Global Journals | Guidelines Handbook

Future Work

Get discounts on the future publications

Associates receive discounts on future publications with Global Journals up to 30%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial



GJ Account

Unlimited forward of Emails

Associates get secure and fast GJ work emails with 5GB forward of emails that they may use them as their primary email. For example,
john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation



Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows receive access to almost all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Associates are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same 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. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All associates receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive



Publishing Articles & Books

Earn 60% of sales proceeds

Associates can publish articles (limited) without any fees. Also, they can earn up to 30-40% of sales proceeds from the sale of reference/review books/literature/publishing of research paper

Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Associate members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

© Copyright by Global Journals | Guidelines Handbook

Associate	Fellow	Research Group	Basic
$4800 **lifetime designation**	$6800 **lifetime designation**	$12500.00 **organizational**	APC **per article**
Certificate, LoR and Momento **2** discounted publishing/year **Gradation** of Research **10** research contacts/day **1 GB** Cloud Storage **GJ** Community Access	**Certificate,** LoR and Momento **Unlimited** discounted publishing/year **Gradation** of Research **Unlimited** research contacts/day **5 GB** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**Certificates,** LoRs and Momentos **Unlimited** free publishing/year **Gradation** of Research **Unlimited** research contacts/day **Unlimited** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**GJ** Community Access

Preferred Author Guidelines

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

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

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

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

Before and during Submission

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

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

Declaration of Conflicts of Interest

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

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

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

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

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



© Copyright by Global Journals | Guidelines Handbook

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

Authorship Policies

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

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

Changes in Authorship

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

Copyright

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

Appealing Decisions

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

Acknowledgments

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

Declaration of funding sources

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

Preparing your Manuscript

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

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

Manuscript Style Instruction (Optional)

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

Structure and Format of Manuscript

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

A research paper must include:

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

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

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

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

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



© Copyright by Global Journals | Guidelines Handbook

Format Structure

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

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

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

Abstract

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

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

Keywords

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

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

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

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

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

Numerical Methods

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

Abbreviations

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

Formulas and equations

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

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

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

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Medical Research Paper

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

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

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

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

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



© Copyright by Global Journals | Guidelines Handbook

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Informal Guidelines of Research Paper Writing

Key points to remember:

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

Final points:

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

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

The discussion section:

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

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

General style:

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

To make a paper clear: Adhere to recommended page limits.



© Copyright by Global Journals | Guidelines Handbook

Mistakes to avoid:

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

Title page:

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

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

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

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

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

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

Methods:

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

Approach:

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

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

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



© Copyright by Global Journals | Guidelines Handbook

Results:

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

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

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

Content:

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

What to stay away from:

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

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

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

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

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

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

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

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

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

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

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

INDEX

A

Alleviating · 16
Amputation · 43

C

Cephalic · 3, 5
Contoured · 36

D

Delimiting · 34
Delineating · 10
Desquamated · 34
Dispersed · 1, 2

E

Emissions · 15
Excision · 32, 34, 38

I

Infestations · 1

M

Mitigate · 17

P

Pertinent · 11, 12
Prospection · 8

S

Scarcity · 16
Sclerotic · 3
Stipulating · 10
Summation · 46

T

Tapered · 3

U

Usableability · 49

W

Worsening · 9





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