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

Global Journal

of Medical Research: K

Interdisciplinary

Community Health Insurance Scheme

Erudite Women's Outstanding Contribution

Highlights

Therapy to Immunocompromised Patients

Radioactivity Properties of Natural Salts

Discovering Thoughts, Inventing Future

VOLUME 21 ISSUE 1 VERSION 1.0

Global Journal of Medical Research: K
Interdisciplinary

Global Journal of Medical Research: K
Interdisciplinary

Volume 21 Issue 1 (Ver. 1.0)

Open Association of Research Society

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. 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

Global Journal of Medical Research: K
Interdisciplinary
Volume 21 Issue 1 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Mathematical Modeling for the Development of a Multilevel "Electronic Physician Assistant" and Simplified Assignment of Corrective Therapy to Immunocompromised Patients

By Zemskov V.M., Zemskov A.M., Neymann V., Kozlova M.N., Alekseev A.A., Pronko K.N., Zemskova V.A., Demidova V.S. & Revishvili A. Sh.

Abstract- The development of a multilevel "electronic doctor's assistant" for identifying immunologically compromised persons and the choice of optimal differentiated immunotherapy for pyo-inflammatory and other diseases is outlined.

Keywords: *mathematical modeling, pre-laboratory analysis, immunopathological syndrome, immune correction.*

GJMR-K Classification: *NLMC Code: QW 501*

Strictly as per the compliance and regulations of:

Mathematical Modeling for the Development of a Multilevel "Electronic Physician Assistant" and Simplified Assignment of Corrective Therapy to Immunocompromised Patients

Zemskov V.M. [α], Zemskov A.M. [σ], Neymann V. [ρ], Kozlova M.N. [ω], Alekseev A.A. [¥], Pronko K.N. [§], Zemskova V.A. [χ], Demidova V.S. [ν] & Revishvili A. Sh. [Θ]

Abstract- **The development of a multilevel "electronic doctor's assistant" for identifying immunologically compromised persons and the choice of optimal differentiated immunotherapy for pyo-inflammatory and other diseases is outlined.**

Keywords: mathematical modeling, pre-laboratory analysis, immunopathological syndrome, immune correction.

I. Introduction

One of the achievements of modern medicine is the development of principles for prescribing immunotherapy to patients, consisting of assessing the immune status, verifying the diagnosis of the underlying disease, comparing the signaling mechanisms of pathology and targets of the modulator, and testing the correction option in practice. Considering the certain complexity of the implementation of the above technologies, permission was given to develop a simplified algorithm for identifying the main immunopathological syndromes by the questionnaire method, to carry out auxiliary corrective therapy with traditional drugs, and to simplify the appointment of targeted immunotherapy to patients based on a set of programs for the Electronic Computing Machine, taking into account the laboratory examination of patients.[1,2,3,4]

II. Pre-Laboratory Analysis

a) Identification of immunocompromised persons by the method of pre-laboratory analysis

Table 1 shows questionnaires for identifying 11 immunopathological syndromes, which include a predisposition to immune disorders, secondary immunodeficiency, infectious bacterial, viral, allergic, pseudo-allergic, metabolic, autoimmune and immunocomplex, lymphoproliferative, other syndromes, and concomitant chronic and combined diseases and conditions.[5]

Author α: Professor of allergology and immunology, PhD, MD, Chief of Clinical Immunology Group AV Vishnevski National Medical Research Center of Surgery, Moscow, Russia. e-mail: arturrego@yandex.ru
Author σ: Professor of allergology and immunology, PhD, MD, Chief of Department of Microbiology NN Burdenko Voronezh State Medical University, Russia.
Author ρ: CEO VRFD SA, Shwitzerland.
Author ω: Senior Researcher of allergology and immunology, MD, of Clinical Immunology Group AV Vishnevski National Medical Research Center of Surgery, Moscow, Russia.
Author ¥: Professor of surgery, PhD, MD, Chief of the burn center, Deputy Director AV Vishnevski National Medical Research Center of Surgery, Moscow, Russia.
Author §: Doctor of clinical psychology, Facecontrol, Systems, Moscow, Russia.
Author χ: Assistant professor of Department of Pathophysiology of Burdenko, Voronezh State Medical University, Voronezh, Russia.
Author ν: Doctor of biological sciences, PhD, MD, Chief of Clinical Laboratory Diagnostics AV Vishnevski National Medical Research Center of Surgery, Moscow, Russia.
Author Θ: Academician of RAS, Professor of cardiac surgery, PhD, MD, Director AV Vishnevski National Medical Research Center of Surgery, Moscow, Russia.

Table 1: Immunopathological syndromes

I. Immune Disorder Predisposition Syndrome
1. Professional harm. 2. Bad habits: smoking, alcohol, drug addiction, substance abuse, etc. 3. Frequent cooling, overheating, change of climatic zones. 4. Metabolic disorders, obesity. 5. Transfer in the last 3-6 months of great stress, burns, poisoning, physical exertion, radiation. 6. Risk groups - childhood, pregnancy, childbirth, menopause, old age. 7. Long-term stay in isolated spaces (prisons, submarines, spaceships). 8. Transplantation of foreign organs, tissues, implants.
II. Secondary Immunodeficiency Syndromes
1. Syndrome of immune deficiency in children 1 year of life, is manifested by frequent, chronic infectious lesions of opportunistic pathogens, low virulent flora, viruses, chlamydia. 2. The syndrome of immunodeficiency in the elderly is manifested by frequent viral, bacterial, fungal infections of the bronchopulmonary, digestive, and genitourinary systems. 3. Syndrome of general variable immunodeficiency, which implies protracted recurrent bacterial infections of the respiratory, intestinal tracts, paranasal sinuses. 4. Post-tonsillectomy syndrome, which is characterized by recurrent infections of the nasopharynx, upper respiratory tract, hyperplasia of the lymphoid tissue of the nasopharynx. 5. Post-splenectomy syndrome with increased sensitivity to a wide range of infections. 6. Post-appendicectomy syndrome, manifested by chronic infections of the intestinal tube, dysbiosis. 7. Medical factors, which include surgery, anesthesia, antibiotics, nitrofurans, alkylating derivatives, corticosteroids, antimetabolites, drugs.
III. Infectious Bacterial Syndrome
1. The frequency of infectious diseases is more than 3-4 times a year in adults, more than 6 times in children. 2. Atypical temperature reaction in case of an infectious disease. 3. Chronic pustular diseases of the skin, subcutaneous fatty tissue, soft tissues (furunculosis, sycosis, abscesses, lymphadenitis, phlegmons, proctitis, paraproctitis). 4. Gastrointestinal infections (gastroenteropathy, chronic diarrhea, dysbiosis, cholecystitis, pancreatitis). 5. Chronic lesions of the urogenital tract (pyelonephritis, cystitis, chlamydia, gardnerellas, mycoplasmosis, Reiter's syndrome). 6. Chronic infections of ENT organs (sinusitis, frontal sinusitis, gaymority, purulent otitis media). 7. Purulent keratoconjunctivitis. 8. Torpid to treatment recurrent aphthous stomatitis. 9. Specific infections tuberculosis, toxoplasmosis, brucellosis, leprosy, syphilis, malaria. 10. Sepsis, septicopyemia, peritonitis, abscesses of the lungs, and other organs.
IV. Infectious Viral Syndrome
1. Frequent relapses of viral infections. 2. Refractoriness, i.e. resistance of viral diseases to traditional therapy. 3. Prolonged low-grade fever, unmotivated lymphadenopathy, chronization of infectious processes. 4. Persistent viral infections - cytomegalovirus, herpes, caused by the Epstein-Barr virus, Dengue fever, chronic viral hepatitis (B and C). 5. Persistently recurrent clinical manifestations of papillomatosis and candilomatosis against the background of ongoing standard therapy. 6. Chronic fatigue syndrome, which occurs in young women and men. 7. Risk groups of ARVI. These include newborn babies, early age, with late-onset of reactivity, low body weight, and those born during pathological pregnancy. These are older children with chronic diseases of the heart, lungs, kidneys, etc.
V. Other Infectious Syndromes
1. Mycoses (superficial, subcutaneous, systemic, opportunistic). 2. Lesions with protozoa (trypanosomes, leishmania, lamblia, trichomonad, malaria plasmodium, toxoplasma, intestinal balantidia). 3. Defeats by intracellular parasites (chlamydia, gardnerella, mycoplasma, ureaplasma).

4. Lesions by helminths- intestinal (ascariasis, trichinosis, trichocephalus), extraintestinal (opisthorchiasis, fascioliasis, paragonimiasis), larval (echinococcosis, cysticercosis, toxocariasis), tropical (strongyloidiasis, ankylostomids), schistosomiasis.
VI. Allergic Syndrome
1. Food intolerance. 2. Drug intolerance, vaccination reactions, iatrogenic diseases (serum sickness, D-penicillamine nephropathy, drug thrombocytopenia). 3. Transfer in anamnesis of anaphylactic shocks, Quincke's edema, Lyell's syndrome, Stephen-Johnson's, drug-disease, and other allergic reactions. 4. Allergic reactions to insect bites, contact with plants, odors, dyes, cosmetics, house dust, chemicals, bio-preparations, precious metals. 5. Helminthic invasion. 6. Cold allergy.
VII. Pseudo-allergic Syndrome
1. Violations of the diet (citrus fruits, fish, potatoes, cheese, chocolate).
2. Violations of histamine inactivation in the body.
3. Disorders of intestinal absorption.
4. Insufficiency of the hepatobiliary system (liver cirrhosis, cholecystitis, cholangitis).
5. Dysbacteriosis.
6. Activation of the complement system with accumulation (C3a, C2в, C4a, C5a).
7. Reaction to medications - local anesthetics, X-ray contrast agents, carrying out physiotherapy procedures (inhalation, electrophoresis).
VIII. Metabolic Syndrome
1. The actual metabolic syndrome (abdominal obesity, type 2 diabetes mellitus or impaired glucose tolerance, arterial hypertension, dyslipidemia). 2. Dysnucleotidosis. 3. Disorders of free radical oxidation of lipids and proteins. 4. Disorders of the antioxidant system.
IX. Autoimmune, Immunocomplex Syndrome
1. Diseases with an autoimmune component (hemolytic anemia, systemic lupus erythematosus, pernicious anemia, Sjogren's syndrome, Behcet's disease, Goodpasture's syndrome, systemic vasculitis, Wegener's granulomatosis). 2. Diseases with the presence of immune complexes (rheumatoid arthritis, ankylosing spondylitis, essential cryoglobulinemia, scleroderma, etc.) 3. Renal diseases (acute glomerulonephritis, Berger's disease, renal transplant). 4. Skin diseases (dermatitis herpetiformis, pemphigus, pemphigoid). 5. Diseases of the gastrointestinal tract (Crohn's disease, ulcerative colitis, active hepatitis, primary biliary cirrhosis). 6. Neurological diseases (subacute sclerosing panencephalitis, amyotrophic lateral sclerosis, multiple sclerosis, etc.). 7. Diseases of the endocrine system (chronic autoimmune thyroiditis).
X. Lymphoproliferative Syndrome
1. Symptomatic (secondary) lymphoproliferative syndrome. 2. Lymphadenopathy, chronic tonsillitis, hypoplasia of lymph nodes. 3. Thymomegaly, hyperplasia, or hypoplasia of the thymus in children. 4. Transferring a history of infectious mononucleosis. 5. Lymphogranulomatosis (Hodgkin's disease). 6. Non-Hodgkin's lymphomas. 7. Burkitt's lymphoma. 8. Sarcoidosis. 9. Macroglobulinemia, polyclonal hypergammaglobulinemia. 10. The presence of any malignant neoplasms.
XI. Syndrome of Concomitant Chronic, Combined Diseases, and Conditions
1. Exacerbation of any chronic diseases at least 2-3 times a year. 2. Combinations of diseases of the same type (ischemic heart disease + hypertensive disease,

bronchial asthma + chronic pneumonia), or different genesis (autoimmune thyroiditis + obstructive pulmonary disease).
3. Combinations of immunopathological syndromes (infectious + allergic, immunodeficient + infectious).
4. Medicinal complications (dysbacteriosis, toxicosis, allergization, immune disorders).

b) Interpretation of the results of the analysis of the pre-laboratory examination of patients

It concerns the syndrome of susceptibility to immune disorders, displayed when there are three positive answers to any question in the questionnaire. This also includes immunodeficiency, infectious, pseudo-allergic syndromes, and a syndrome of combined and accompanying diseases, presented with a positive answer to two questions of the questionnaire. And, finally, autoimmune, lymphoproliferative, allergic, and metabolic syndromes, which are displayed with a positive answer to one question of the corresponding questionnaires.

c) Options for the conclusion based on the results of the survey

According to these results, the patient belongs to a risk group for predisposition or immunodeficiency syndromes and a high-risk group for allergic, autoimmune, lymphoproliferative, or the same, with a combination of several immunopathological syndromes.

III. Syndromic Appointment of Auxiliary Immunotherapy

Auxiliary immunotherapy involves the use of traditional medicines with an immunotropic effect in the treatment of patients.[6,7]

a) Risk group

Patients from this group, in addition to the basic treatment, receive "small" immune correctors. These include adaptogens (Manchurian aralia, Roseola Rosea, extracts from ginseng, Pantocrine, Eleutherococcus, Esberitox, tincture of Chinese magnolia vine) and metabolites, antioxidants, and vitamins (Riboxin, Potassium orotate, Hypoxenes, Reamberin, Tramelan, Pentoxyl, Methyluracil, Mildronate, Pantholex, vitamins of group B, C, A, E, Quercetin, Pangamic acid, Lipoic acid, Asparkam, brewer's yeast, Sodium nucleinate). The group of other drugs includes Piracetam, Polistim, Bendazole, Glutamic acid, Curantil, Apilac, Splenin, Leucogen, interferon, Cinnarizine, Zaditen. Finally, the eubiotics group consists of Acipol, Acylact, Bactisubtil, Bactobacterin, Bifacid, Bifibin, Bifilong, Bifidumbacterin, Bificol, Colibacterin, Biphilis, Lactobacterin, Vitanar, Linex, Narine, Sporobacterin.

b) High-risk group

Patients of this group, in addition to traditional therapy, receive a combination of two or three small immunocorrectors or broad-spectrum modulators. The latter include Sodium nucleinate, Isoprinosine, thymus drugs, Myelopid, Levamisole, Hemodez, Reamberin, Splenin, Sanaviron, Leukinferon, Polyelectrolytes, Diucifon, etc.

c) Infectious bacterial syndrome

In this syndrome, combinations of the following drugs are recommended: (1) Eleutherococcus + Interferon, (2) Vitamin B6 + Riboxin, (3) Apilak+ lipoic acid, (4) Vitamin B6 + Riboxin+ Panangin, (5) Dibazol + Eleutherococcus+ Asparkam,(6) Dibazol + Glutamic acid + Pantocrine, (7) Potassium orotate + Duovit+ Methyluracil, (8) Vitamin B15 + Quercetin, (9) Sodium nucleinate + Panangin+ Duovit, (10) Dry brewer's yeast + Kurantil+ multivitamins+ Asparkam, (11) Riboxin + Potassium orotate + Methyluracyl.

When choosing antibacterial drugs, in addition to their antibiotic sensitivity to pathognomonic microflora, it is recommended to take into account their immunosuppressive effect, for example, in Abactal, Ampicillin, Isoniazid, Kanamycin, Chloramphenicol, Monomycin, PASK, Pyrazinamide, Rifampicin, Streptomycin, Tetracycline, Furacillin, Furagin, and immunostimulating activity, as in the case of Erythromycin, Miramistin, Nizoral, Nystatin, Levin, Roxithromycin, Amphotericin, Metacyclin, Bactrim, Macropen, Isoniazid, and Clindamycin. [8,9]

d) Infectious viral syndrome

In this case, it is permissible to use a combination of two or three drugs. The list includes Dibazol, Interferon, Kurantil, Quercitin, Leukinferon, Levamisole, Myelopid, Methyluracil, Pentoxil, Prodigiosan, Remantadin, Arbidol, Vitamin A, Diucifon, Acyclovir. For persistent viral hepatitis, respectively, Katergen, Piracetam, Leukinferon, Sodium nucleinate, Lipoic acid, Acyclovir, Ribamidil, Sirepar, Cycloferon, human α-interferon, or recombinant genetically engineered human interferon Reaferon.

e) Metabolic syndrome

f) Dysnucleotidosis

In this condition, Derinat, Ridostin, Sodium nucleinate, Riboxin, Potassium orotate, Methyluracil, Pentoxil, Asparkam (Panangin), Vitamin B6, Glycerophosphate, Folic acid, Hypoxene, Cygapan, Lemont, and Tikveol are quite effective.

g) Elimination of metabolic disorders

It is carried out by energizers Riboflavin and Nicotinamide, glycolysis activators Thiamine and Riboxin, and the tricarboxylic acid cycle Biotin Lipoat.

h) Stimulates antioxidant defenses

These drugs include antioxidant defense stimulants β-carotene, Retinol, α-tocopherol, Ascorbic acid, Hypoxene, Limontar, hepatoprotectors Essentiale, Carsil, Lipostabil, Phosphoglyph, Tikveol, Bemitil, Katergen, and Flacoside, adaptogens Aralia Manchu, Roseola pink, Ginseng, Pantocrine, Eleutherococcus, Esberitox, tincture of Chinensis magnolia vine, metabolism activators Potassium orotate, Hypoxene, Tramelan, Pentoxil, Methyluracil, Mildronate, eubiotics Acipol, Acylact, Bactisubtil, Bactobacterin, Bifacid, Colibacterin, Biphilis, Lactobacterin.

i) Allergic syndrome

j) Treatment principles

They consist of (1) elimination of the allergen, (2) the use of agents that nonspecifically suppress allergic reactions, (3) nonspecific immunosuppressive therapy, (4) specific immunotherapy, (5) targeted immunomodulation, (6) non-drug immune correction. In practice, one principle of treatment is rarely used, mainly combinations of them are used. The tactics of treating patients significantly depend on the stage of the disease. So, in the period of exacerbation, therapy is aimed at eliminating acute clinical manifestations of an allergic reaction, and in the period of remission at preventing its progression.

k) Pseudoallergic syndrome

A variety of medications are used to relieve this condition.

i. *Antihistamines*

There are six groups of antihistamine compounds. These include (1) ethylenediamine, Suprastin, (2) ethanolamines, Diphenhydramine, (3) alkylamines, Dimethindene, (4) phenothiazine derivatives, Pipolfen, (5) piperazine derivatives, Cinnarizine, (6) antihistamines of various origins Tavegil, Fenkarol, Bicarfen, Peritol, Pernovin, Diazolin, Ketotyphene.

l) H1 - 2nd generation antihistamines

These include Teldan, Claritin, Gismanal, Zirtek, Semprex, Avastin, Terfenadine, Astemizole, Cimetidine, etc.

m) Hepatoprotectors

This group includes Legalon, Silibor, Katergen, Zixorin, LIF-52, and Essentiale.

n) Choleretic drugs

Which are Alcohol, Lyobil, Cholenzyme, decoctions of the sandy immortelle flower, immortelle extract, corn silk, Tanacehol, Konvaflavin, Flacumin, Oxyphenamide, and Tsikvalone.

o) Enteral sorbents

Polysorb, Polyphepan, Carboline, Enterosgel, Enterodesis are quite active.

p) Eubiotics

Various eubiotics, Acipol, Bactisubtil, Bactobacterin, Bifilong, Bifilis, Bifinormalizer, Bifidumbacterin, have also proved to be effective.

q) Autoimmune syndrome

i. *Correction principles*

They consist of (1) Elimination of "forbidden" clones of sensitized lymphocytes, (2) Removal of an immunogen or an adjuvant. (3) Plasmapheresis, (4) Immunosuppressive therapy, (5) Blockade of mediators of immune responses with antihistamines, (6) Replacement therapy for pernicious anemia with vitamin B12, for myxedema thyroxine, (7) Prescription of antiinflammatory drugs, nonsteroidal drugs and salicylates, corticosteroids, (8) Prescription of cyclosporin A, (9) Immunotherapy using causative allergens, (10) Immunocorrection of T-suppressor deficiency, (11) Use of gammaglobulins (immunoglobulins) for intravenous administration, (12) Application monoclonal antibodies against pro-inflammatory cytokines, (13) Autologous hematopoietic stem cell transplantation against the background of high-dose immunosuppression, (14) Gene therapy due to suppression of cytokine formation by genes transferred by viral vectors. It is essential to note that the effectiveness of the autoimmune syndrome correction is temporary and is expressed in remission.

r) Lymphoproliferative syndrome

i. *Correction principles*

The main types of treatment for lymphoproliferative and malignant neoplasms are surgical, radiation, and drug actions, which have a suppressive effect on the immune system, and this is the basis for the appointment of the thymus, polysaccharide, nucleic acid drugs, interferons, and interferon genes, synthetic polyoxidonium stimulants, Dapsone, Lycopid, Levamisole, vitamins, as well as blood plasma, etc.

IV. Simplified Purpose of Patients with Differentiated Immunotherapy based on the Software

a) Unified immunotherapy

This type of immunotherapy is implemented, taking into account the nature of the disease.[10,11,12] The choice of options is carried out according to the formulas of disorders of the immune system (FDIS is compiled by selecting the most significantly altered immune parameters from the normal level)[1] for specific diseases. The analysis of the immune status in patients may not be carried out because a verified clinical diagnosis of the disease, the key parameters of the previously defined typical FDIS for a specific isoform, and their coincidence with the passport targets of modulators are important (Table 2-4, 7).

Table 2: Targets of modulators grouped by immunity units

Preparations	C	H	N	Preparations	C	H	N
Adaptogens			+	Ozonized sodium chloride	+	+	+
Anabol	+			Lysozyme			+
Autohemotherapy	+	+	+	Methyluracil	+	+	+
Amixin	+			Myelopid	+	+	+
Acyclovir	+			Trace elements	+	+	+
Bronchomunal	+	+	+	Leukomax	+		
Vaccines		+		Likopid	+	+	+
Vitamin A	+		+	Sodium nucleinate	+	+	+
Vitamins B	+		+	Potassium orotate	+		+
Vitamin C			+	Polyoxidonium	+	+	+
Viusid	+		+	Synthetic polynucleotides	+	+	+
Gammaglobulin		+		Plasma	+		+
γ-interferon	+		+	Plasmapheresis	+		+
Gepon	+	+	+	Panavir	+		+
Hemodez	+	+	+	Piracetam	+		
Hypoxene	+	+	+	Plasmapheresis	+	+	+
Heparin	+	+		Polyelectrolytes	+	+	+
Glutoxim	+	+	+	Pentoxil	+	+	+
Dalargin	+	+	+	Pyrogenal	+	+	+
Derinat	+	+	+	Preventan	+	+	+
Dibazol	+	+	+	Prodigiosan	+	+	+
Diuciphon	+	+	+	Reaferon	+		
Diuciphon	+			Reopolyglyukin	+	+	+
Zixorin			+	Riboxin	+		+
Isoprenosine	+	+	+	Ridostin	+	+	+
Isoprenosine			+	Roncoleukin	+	+	+
Immunomax	+	+	+	Ruzam	+		+
Immunomax	+	+	+	Splenin	+	+	+
Indomethacin	+			Superlimph	+	+	+
Lysate of bacteria IRS-19			+	Tamerid	+	+	+
Katergen	+			Thymus preparations	+	+	+
Camedon		+		Trichopolus			
Combined immune drug	+	+	+	Body ultraviolet irradiation			+
Kipferon	+	+	+	Ultraviolet blood irradiation	+	+	
Quercetin	+	+		Phenazepam	+		+
Bloodletting	+	+	+	Cycloferon	+	+	+
Leakadin	+	+	+	Cinnarizine	+		
Levamisole	+	+	+	Cimetidine	+		+
Leukinferon	+		+	Cygapan	+	+	+
Low-intensity laser radiation	+	+	+	Erythrocytes	+	+	+

Legend: (C) cellular, T-dependent, (H) humoral, B-dependent, (N) nonspecific links of immunity, + target of positive action of the drug

Table 3: Distribution of the action of modulators on the parameters of the immune system

Preparation	CD3+	CD4+	CD8+	CD16+	CD19+	Ig	CIC	MWM	CD11в	AF	MF	Tc-Lph
Autohemotherapy	+				+	+				+		
Vitamins	+	+	+	+		+						
Viferon	+		+			+				+		+
Hemodez	+	+	+		+	+						
Hypoxene	+	+			+	+				+	+	+
Gepon	+	+	+			+	+			+	+	+
Glutoxim	+					+					+	+
Dalargin		+			+	+						+
Decaris/levamisole	+		+		+	+	+					
Derinat	+	+	+			+			+		+	+
Diuciphon		+			+	+	+			+	+	
Donor γ-globulin	+	+				+	+			+	+	
Isoprinosine	+					+		+		+	+	+
Imudon						+				+	+	+
Immunomax	+	+							+	+	+	+
Imunofan	+	+	+	+		+				+	+	+
Combined immune preparation (CIP)					+	+		+		+		+
CIPferon	+		+	+		+	+			+	+	+
Leakadin	+	+	+	+	+	+		+				
Leukinferon	+	+	+		+	+				+	+	
Likopid	+				+	+			+	+	+	
Limontar	+	+	+			+	+	+		+		
Therapeutic plasmapheresis	+	+		+		+	+	+				
Myelopid	+	+	+		+	+				+		+
Neovir	+	+			+	+						
Low-intensity laser radiation	+	+	+		+	+				+		+
Sodium nucleinate	+	+	+	+	+	+	+	+		+	+	
Ozone	+	+			+	+	+			+	+	
Polystim	+	+			+	+						
Polyoxidonium	+	+	+	+	+	+		+		+	+	
Polysaccharides	+	+	+	+	+	+				+	+	+
Ridostin		+	+		+	+	+			+	+	
Sorbents	+	+	+		+	+				+		
Splenin	+	+	+	+		+	+					+
Superlimph	+						+			+	+	+
Tamerid	+	+	+	+								+
Thymomimetic	+	+	+	+	+	+	+			+	+	+
Tikveol					+	+		+			+	
Ultraviolet blood irradiation		+		+	+					+	+	
Cygapan						+	+			+		
Esberitox	+	+	+		+	+					+	

Legend: AF - absorption function (phagocytic index and number), MF - metabolic function (NBT-test spontaneous or activated), CIC- circulatory, immune complexes, MWM - medium-weight molecules, Tc-Lph - cytotoxic T-lymphocytes, + the effect of the drug is established

Table 4: Typical immune disorders in certain diseases

Diseases	FDIS
I. Bronchopulmonary diseases	
Acute pneumonia	$CD3_2^- IgM_2^- IgA_2^-$
Chronic pneumonia in adults	$CD3_3^- IgA_2^- IgM_2^-$
Chronic pneumonia in children	$CD3_2^- CD19_2^- IgM_2^-$
The mixed form of bronchial asthma in adults	$CD3_2^- CD19_2^- IgA_2^-$
Exogenous bronchial asthma	$Lph_2^+ CD4_2^- CD3_2^-$
Endogenous bronchial asthma	$RN_2^+ CD3_2^- NBTsp_2^+$
The mixed form of bronchial asthma in children	$CD3_2^- CD4_2^- CD8_2^-$
Corticosteroid bronchial asthma in adults	$CD3_2^- CD19_2^- IgA_3^-$
The mixed form of bronchial asthma, stage of exacerbation	$L_2^+ CD4_2^- CD3_2^-$
The mixed form of bronchial asthma, stage of remission	$RN_3^+ CD19_2^- MWM_2^+$
Chronic bronchitis	$CD3_2^- CD19_2^- IgA_3^-$
Chronic obstructive pulmonary disease	$CD4_3^- CD8_3^+ CIC_3^+$
Infectious destruction of the lungs	$CD3_2^- CD19_2^- IgA_3^-$
Chronic obstructive bronchitis	$CD3_2^- CD19_2^- IgA_2^-$
II. Purulent-inflammatory diseases	
Deep pyoderma	$IL8_3^+ CIC_3^+ NBTac_3^-$
Purulent soft tissue infection	$CD8_3^+ E_3^+ CD19_2^-$
Acute salpingo-oophoritis	$L_3^+ CIC_3^+ CD4_2^-$
Exacerbation of chronic salpingo-oophoritis	$Tc_3^+ IL8_3^+ T_3^+$
Acute pyelonephritis	$IgG^+_3 MWM^+_3 L^+_2$
Exacerbation of chronic pyelonephritis	$ESR_3^+ IgG_3^+ CD8_3^+$
Exacerbation of chronic calculous pyelonephritis	$CD4_2^- CD3_2^- FI_2^-$
Exacerbation of chronic non-calculous pyelonephritis	$CD8_2^- CD19_2^- CD3_2^-$
Exacerbation of chronic salpingo-oophoritis + cervicitis	$E_3^+ CD3_2^- CD3_2^+$
Cervicitis	$HLA\text{-}DR\text{-}Lph_2^+ CD3_2^- CD19_2^- IgA_2^-$
Exacerbation of chronic cystitis	$IgG_3^+ NBTac_3^- TNF_3^+$

Legend: FDIS is a formula for disorders of the immune system, built on three key parameters that are most different from the level of the norm, with an indication of the direction of the dynamics vector (+ hyperactivation, - deficiency) and the degree of these changes (1-3, where 1- I degree of changes is transient up to 33% of the norm, 2- II degree is reliable from 34 to 66%, 3- III degree highly significant> 66%), L - leukocytes, RN - rod-nuclear neutrophils, IL - interleukins. ESR- erythrocyte sedimentation rate, NBTac- NBT-test activated, NBTsp- NBT-test spontaneous, TNF- tumor necrosis factor, Tc- T-cytotoxic lymphocytes, T- T-lymphocytes, E- eosinophil, Lph- lymphocytes, FI- phagocytic index

The algorithm for prescribing differentiated immunotherapy is that the recommended drugs are selected for patients with certain diseases based on the key parameters of FDIS by the tables given. For example, in acute pneumonia with FDIS constituting $CD3_2^- IgM_2^- IgA_2^-$ (deficiency of T-lymphocytes, IgA, and IgM of the second degree), the recommended drugs for correcting $CD3_2$ deficiency are autohemotherapy, vitamins, Viferon, etc. Regarding IgM_2^-, IgA_2^- shows the same drugs, etc.

b) Generalized immunotherapy

It is used without considering the nature of the disease.[6] It is used in the severe clinical condition of patients. It is based on a generalized definition of altered links of immunity (by the presence of indicators with second-third degrees of immunodeficiency) and the choice of modulators based on grouped passport targets of action on individual links of the immune system without taking into account the nature of the diseases (Tables 2, 5).

c) Interpretation of the results of the immune examination of patients

If one or more indicators coincide in a particular patient, grouped by immunity links with tabulated ones, a conclusion is made about the deficit of the second - third degree of the link as a whole (Table 5).

Table 5: Reference values of laboratory parameters, grouped by immunity links

Immune indicator	Second - third degree of immune deficiency	Immune indicator	Second - third degree of immune deficiency
General T-Lph(CD3+)	<0,5-1,0 • 10^9/l		<1,9-3,7 CU
T-helpers (CD4+)	<0,38-0,74 • 10^9/l	CD11b+	<0,06-0,11 • 10^9/l
T-cytotoxic Lph(CD8+)	<0,14-0,28 • 10^9/l	PhI	<24,3-48,4 % neutrophils
T-activated Lph(HLA-DR+)	<0,04-0,08 • 10^9/l	PhN	<2,4-4,7microbial bodies/neutrophil
T-regulatory Lph(CD4+CD25+)	<0,03-0,07 • 10^9/l	NBTsp	<2,9-5,7 %
Natural killer cells (CD56+)	<0,18-0,36 • 10^9/l	NBTac	<7,5-15,0 %
B-Lph (CD19+)	<0,2-0,4 • 10^9/l	IL4	<6,6-13,1 pkg/ml
IgM	<0,6-1,3 g/l	IL6	5,5-10,9 pkg/ml
IgA	<0,5-1,1g/l	IL8	4,7-9,4 pkg/ml
IgG	<10,8-14,4g/l	TNF	0,06-0,13 pkg/ml
CIC	<9,1-18,3 CU		

Legend: CU- conventional units; PhI, PN - phagocytic index and number, other designations - see above

d) Detailed immunotherapy

It is carried out without taking into account the nature of the disease.[13] Specific critically reduced laboratory parameters of the second or third degree are determined in patients according to the table's values. Based on their coincidence with the passport targets of modulators, variants of detailed immunotherapy are selected.

e) Algorithm for prescribing detailed immunotherapy

The changed indicator/indicators in a particular patient are determined if its value coincides with the tabular value of the modulator target. According to these data, specialized drugs are selected for a prescription that can act on these indicators.

f) Personalized immunotherapy

It is carried out, taking into account the nature of the disease.[14,15,16,17] The algorithm for choosing personalized immunotherapy is implemented according to certain formulas for the targets of immunoprotection (ITF, determined by the three most altered immune parameters from the initial level after performing immunocorrection)[1] in certain diseases (Table 6). The essence of the program is that based on ITF, including the second-third degree of changes in laboratory signal parameters towards a decrease or increase, the key values of diagnostically significant immune parameters are selected, summarized in the tables. By comparing the data of laboratory examination of certain patients with tabular values, marker parameters changed from the normal level are revealed according to the vector and the degree of their changes. When the selected indicators coincide with the three key components of ITF for certain diseases, the optimal options for immunotherapy are selected, which are prescribed against the background of traditional basic treatment of diseases.

Table 6: Purulent inflammation of the skin and soft tissues

Modulators	ITF	Modulators	ITF
	PIST	Deep pyoderma	
Traditional therapy	$T_3^-IgG_2^+E_2^+$	Traditional therapy	$IgM_3^-NBTac_2^+MWM_2^+$
+Derinat	$Th_2^-B_2^-IL4_2^-$	+Hypoxene	$PhN_2^-B_2^-T_3^-$
+Gammaglobulin	$PhN_3^-NBTac_3^-NK_2^+$	+Ozone	$E_2^+B_2^-CIC_2^+$
+Derinat+ Gammaglobulin	$IL8_3^+T_3^-IgM_3^+$	+Hypoxene+ Ozone	$T_3^-CIC_2^+PhI_2^-$
+Lycopid	$CD11b_2^-PhI_2^-IgG_2^-$	+Polyoxidonium	$IgG_3^-IgM_3^-B_3^-$
+Ridostin	$Lph_3^-T_3^-NBTsp_3^+$	+Polyoxidonium+ Ozone	$PhI_3^-IgA_3^+PhN_2^-$
+Lycopid+ Derinat	$Lph_3^-MWM_2^+PhI_3^-$	+Diuciphone	$Tx_3^-Lph_2^-E_3^-$
+Cygapan	$PhN_2^-IgM_2^-E_3^+$	+Dalargin	$B_3^-IgA_2^-IL4_2^-$
+Ridostin+ Gammaglobulin + Cygapan+ Polyoxidonium	$Th_2^-T_3^-IgG_2^-$	+Diuciphone+ Dalargin+ Polyoxidonium	$IL4_3^-Tx_3^-IgM_2^-$
+Sodium nucleinate + Hypoxene	$T_3^-NRr_3^-CIC_3^+$	+enterosorbents	$NBTsp_3^-PhN_2^-Tc_3^-$

+Hypoxene	$T_3^- Tch_3^- PhI_3^-$	+autohemotherapy	$NBTsp_3^- PhN_2^- T_2^-$
+Ridostin+ Gammaglobulin	$IL8_3^+ T_3^- IgM_3^+$	+thymus preparations	$T_3^- Tx_3^- NBTac_3^-$
+Limontar	$IgM_3^- TNF_3^+ ClC_3^+$	+Ridostin	$NBTac_3^- T_3^- Lph_2^-$
+Limontar+ Immunomax	$IgA_3^+ Tc_3^- PhN_3^-$	+Imunofan	$Th_2^- T_2^- IgG_2^-$
+Limontar+ Isoprinosine	$T_3^- PhN_3^- IL6_3^+$	+Staphyloanatoxin+ Gammaglobulin	$Tc_3^- NKt_3^- IL4_3^-$
+Limontar+ Immunomax+ Isoprinosine	$T_3^- ClC_3^+ IgG_3^-$	+Tamerid	$NBTac_3^- NKT_3^- Tc_3^-$

Legend: ITF - the formula for the targets of immunocorrection, see the text for an explanation, PIST - purulent infection of soft tissues, NKt - natural T-killers, B- B-lymphocytes, NKr- natural killer-regulators, for other designations see above

Table 7: Reference values of immune parameters

Immune phenotypic and functional characteristics	Immune System Disorders Formulas (FDIS)			
	2 DID(-2)	3 DID(-3)	2 DIH(+2)	3 DIH(+3)
T-Lph (CD45+CD3+), 10^9/l	0,5-1,0	<0,5	2,0-2,5	>2,5
T-helpers (CD45+CD3+CD4+), 10^9/l	0,38-0,74	<0,38	1,46-1,82	>1,82
T-cytotoxic Lph(CD45+CD3+CD8+), 10^9/l	0,14-0,28	<0,14	0,56-0,7	>0,7
T-activated Lph(CD3+HLA-DR), 10^9/l	0,04-0,08	<0,04	0,16-0,2	>0,2
T-regulatory Lph(CD3+CD4+CD25+), 10^9/l	0,03-0,07	<0,03	0,15-0,19	>0,19
NK-cytolytic(CD3-CD16+CD56+), 10^9/l	0,04-0,08	<0,04	0,16-0,2	>0,2
B-Lph (CD19+), 10^9/l	0,2-0,4	<0,2	0,4-0,6	>0,6
IgM, g/l	0,6-1,3	<0,6	3,3-4,6	>4,6
IgA, g/l	0,5-1,1	<0,5	2,1-2,6	>2,6
IgG, g/l	10,8-14,4	<10,8	14,4-18,0	>18,0
CIC, CU	9,1-18,3	<9,1	36,7-45,9	>45,9
MWM, CU	1,9-3,7	<1,9	7,3-9,1	>9,1
PhI, %	24,3-48,4	<24,3	96,6-120,7	>120,7
PhN, number of bacteria\Nph	2,4-4,7	<2,4	9,3-11,6	>11,6
NBTsp, %	2,9-5,7	<2,9	11,3-14,1	>14,1
NBTac, %	7,5-15,0	<7,5	30,0-37,5	>37,5
IL4, pkg/ml	6,6-13,1	<6,6	26,1-32,6	>32,6
IL6, pkg/ml	5,5-10,9	<5,5	21,7-27,1	>27,1
IL8, pkg/ml	4,7-9,4	<4,7	18,8-23,5	>23,5
TNF, pkg/ml	0,06-0,13	<0,06	0,26-0,32	>0,32
Lymphocytes (CD95+), 10^9/l	0,02-0,05	<0,02	0,11-0,14	>0,14
L (leucocytes), 10^9/l	1,3-2,7	<1,3	5,5-6,9	>6,9
Lph (lymphocytes), %	13,8-27,5	<13,8	54,9-68,6	>68,6
Nph (neutrophils), %	20,4-40,5	<20,4	80,7-100,8	>100,8
E (eosinophils), %	0,64-1,27	<0,64	2,53-3,2	>3,2
M (monocytes), %	4,2-8,5	<4,2	13,0-17,2	>17,2
ESR, mm/hour	4,3-8,4	<4,3	16,6-20,7	>20,7

Legend: DID, DIH- the degree of immune deficiency, the degree of immune hyperfunction, Nph - neutrophil, ESR- erythrocyte sedimentation rate, for other designations, see above.

V. Conclusion

A certain problem of the current state of clinical immunology is the insufficient introduction of innovative diagnostic and therapeutic technologies into practice, which is often accompanied by not always full use of the latest immunotherapeutic effects in the treatment of patients and, as a consequence, their often insufficient effectiveness. This also includes the lack of simple and, at the same time, informative methods of immune diagnostics.

One solution to the stated problem is the development at the first level of a simplified technology for the clinical detection of marker immunopathological

syndromes with the appointment of profile "small" immunocorrectors to patients. At the second level, based on laboratory assessment of the reactivity of patients, created laboratory support and preliminary study of the effectiveness and targets of differentiated immunotherapy of certain diseases in work, mathematically justified unified, generalized, detailed, and personalized methods for choosing options for optimal immunotherapy are presented. ... They are a good help in the daily work of a practical clinical immunologist.

References Références Referencias

1. Zemskov, A.M., Esaulenko, I.E., Chereshnev, V.A., Zemskov, V.M., Suchkov, S.V., Popov, V.I., Zemskova, V.A. Cours of lectures on clinical immunophysiology. Textbook. Voronezh, Publishing House: Ritm, 2017:1048p.
2. Zemskov, A.M., Zemskov, V.M., Zemskov, M.A., Zemskova, V.A. Electronic software doctor's assistant for the diagnosis and treatment of immunological disorders. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2016619036. Published on 11.08. 2016.
3. Kishkun, AA. Immunological studies and diagnostic methods of infectious diseases in clinical practice. Moscow, Publishing House: Medical Information Agency, 2009:711p.
4. Pokrovsky, V.I. (Ed). Manual for physicians of general clinical immunology, allergology, immunogenetics, and immunopharmacology. In 2 vols, Moscow, Publishing House: Triada-X, 2005: 517p.
5. Zemskov, A.M., Zemskov, V.M., Zemskov, M.A., Zemskova, V.A. etc. Selection of options for differentiated auxiliary immunotherapy based on the results prelaboratory examination. Certificate of state registration of software the Electronic Computing Machine, Russia, No. 2014619643. Published on 18.09.2014.
6. Zemskov, A.M., Zemskova, V.A. etc. The choice of options for differentiated immunotherapy is based on generalized laboratory diagnostics in patients with immune disorders. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2015612811. Published on 26.02.2015.
7. Zemskov, A.M., Zemskov, V.M., Zemskov, M.A., Zemskova, V.A. etc. Program choice of options for purulent-inflammatory diseases. Certificate of state registration of software for the Electronic Computing Machine, Russia, No.2014660956. Published on 20.10. 2014.
8. Zemskov, A.M., Chereshnev, V.A., Revishvili, A. Sh., Zemskov, V.M., Popov, V.I., Zemskova, V.A., Problems of clinical immunology in the 21st Century - II. Natural and drug regulation mechanisms of immunological homeostasis. Moscow, Publishing House: Scientific Book, 2018:286.
9. Zemskov, A.M., Zemskova, V.A. The choice of treatment options for infections based on the immunosuppressive or immunostimulating effect of antibiotics. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2015614569. Published on 21.04.2015.
10. Zemskov, A.M., Zemskova, V.A. etc. The choice of differentiated immunotion of software for the Electronic Computing Machine, Russia, No. 2015614977.Published 05.05.2015.
11. Zemskov, A.M., Zemskova, V.A., Berezhnova, T.A., Kulintsova, Y.A. Laboratory markers in the diagnosis of purulent-inflammatory diseases of the genitourinary organs. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2017662910. Published on 21.11. 2017.
12. Zemskov, A.M., Berezhnova, T.A., Kulintsova, Ya.V., Zemskova, V.A.An additional method for diagnosing the pathogenesis of pyo-inflammatory diseases. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2018616529. Published on 14.09. 2018.
13. Zemskov, A.M., Zemskova, V.A., Zemskov, M.A. etc. The choice of options rendered immunotherapy according to the detailed immunological analysis. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2014619846. Published 23.09.2014.
14. Zemskov, A.M., Zemskov, M.A., Popov, VI, Likhachev, A.V., Zoloedov, V.I. A method for selecting options in the treatment of nonspecific inflammatory lung diseases. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 2015619428. Published on 03.09.2015.
15. Kalinina, N.M., Ketlinsky, S.A., Okovity, S.V., Shulemin, S.N. Diseases of the immune system. Diagnostics and pharmacotherapy. Moscow, Publishing House: Eksmo, 2008: 494.
16. Pokrovsky, V.I. (Ed). The national conception of prevention of infections associated with first aid rendering and informational material based on its provisions. Nizhny Novgorod, Publishing House: Remedium Privolzhye, Russia, 2012:84.
17. Lvovich, I.Y., Zemskov, A.M., Lutskiy, M.A. etc. A program for calculating a personal formula for immune system disorders in various diseases. Certificate of state registration of software for the Electronic Computing Machine, Russia, No. 201861202. Published 09.02.2018.

This page is intentionally left blank

Global Journal of Medical Research: K
Interdisciplinary
Volume 21 Issue 1 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Opening up a New Field of Modern Medical Research 3

By Li Xiaoguang

Abstract- This paper is a continuation of "Opening up a New Field of Modern Medical Research 1" published in the preprint of osf and "Opening up a New Field of Modern Medical Research 2" published in the Journal of Alternative, Complementary & Integrative Medicine.

Modern medicine tells us that the human body is an organism composed of heart, lung, liver, kidney, spleen, stomach, brain, nerves, muscles, bones, blood vessels, blood, and so on, At the same time, Traditional Chinese Medicine believes that besides these tissues and organs, the human body still has another part of the structure, Traditional Chinese Medicine calls them Jing Luo and Shu Xue. Jing Luo means the longitudinal line of the human body and the accompanying net, translated into English Meridians and Collaterals. Shu Xue means holes distributed on Jing Luo and outside Jing Luo. Because stimulating Shu Xue's position by acupuncture, massage, and other methods can cure diseases, so Shu Xue is translated into an English acupuncture point, abbreviated as acupoint or point. Meridians and acupoints are the special knowledge of human body structure in Traditional Chinese Medicine.

Keywords: physiology, pathology, traditional chinese medicine, meridian, acupoint, massage, electricity, blood.

GJMR-K Classification: NLMC Code: W 20.5

Opening up a New Field of Modern Medical Research 3

Li Xiaoguang

Abstract- This paper is a continuation of "Opening up a New Field of Modern Medical Research 1" published in the preprint of osf and "Opening up a New Field of Modern Medical Research 2" published in the Journal of Alternative, Complementary & Integrative Medicine.

Modern medicine tells us that the human body is an organism composed of heart, lung, liver, kidney, spleen, stomach, brain, nerves, muscles, bones, blood vessels, blood, and so on, At the same time, Traditional Chinese Medicine believes that besides these tissues and organs, the human body still has another part of the structure, Traditional Chinese Medicine calls them Jing Luo and Shu Xue. Jing Luo means the longitudinal line of the human body and the accompanying net, translated into English Meridians and Collaterals. Shu Xue means holes distributed on Jing Luo and outside Jing Luo. Because stimulating Shu Xue's position by acupuncture, massage, and other methods can cure diseases, so Shu Xue is translated into an English acupuncture point, abbreviated as acupoint or point. Meridians and acupoints are the special knowledge of human body structure in Traditional Chinese Medicine. Traditional Chinese Medicine not only draws the distribution map of the meridians and acupoints in the human body, but also has been using them to treat diseases for thousands of years. There are hundreds of these acupoints, stimulating each one by acupuncture, massage, or other methods will have a special effect on the human body and can treat various diseases. But what effect does stimulating every acupoint have on the human body so that it can treat various diseases? The discussion of Traditional Chinese Medicine is vague and incomprehensible, and cannot be proved by experiments.

According to the author's research for more than 30 years, this paper makes a clear and accurate exposition of the effects on the human body and diseases that can be treated with acupoint massage. These statements can be proved by experiments, so they are believed to be reliable. It is hoped that meridians, acupoints, and massage therapy can be incorporated into modern medicine and become a part of modern medicine after being proved by others through experiments.

Massaging acupoints can not only treat many diseases that are difficult to be treated with drugs, but also have simple methods and low cost.

Keywords: physiology, pathology, traditional chinese medicine, meridian, acupoint, massage, electricity, blood.

I. Introduction

Medicine is not only a science to study the structure and laws of the human body, but also a technology to treat and prevent diseases. In ancient times, different regions used to have different medicine, they had a different understanding of the human body and adopted different treatment methods for diseases. However, in modern times, European medicine has achieved rapid development with the help of modern scientific and technological progress, and has soon been accepted by all countries in the world to become world medicine and gradually developed into modern medicine. At present, the research and understanding of the human body in modern medicine have been very thorough and meticulous, reaching the molecular level. Since modern medicine has such a thorough and detailed understanding of the human body, in theory, most diseases of the human body should be cured, but the actual situation is not the case. There are still a large number of diseases that modern medicine is powerless and difficult to cure, even a considerable number of which are seemingly uncomplicated diseases. So what is the reason? The reason is that the current modern medicine has defects and deficiencies in understanding the laws of the human body. Meridians and acupoints are very important parts. According to thousands of years' experience in Traditional Chinese Medicine and the author's research, a large number of diseases in the human body are related to meridians and acupoints, which can be treated through meridians and acupoints. Unfortunately, modern medicine knows nothing about this. It is hoped that more people can devote themselves to the research of meridians and acupoints. This will be a promising field.

II. The Meridians Involved in this Paper

Traditional Chinese Medicine tells us that the meridians system of the human body is composed of the twelve regular meridians, the eight extraordinary meridians, and so on. The following meridians are involved in this paper. The figures show only the part on the body surface, and another part enters the body and is connected with internal organs.

Corresponding Author: Traditional Chinese Medicine in Shaanxi Province, China. e-mail: lxg090@qq.com

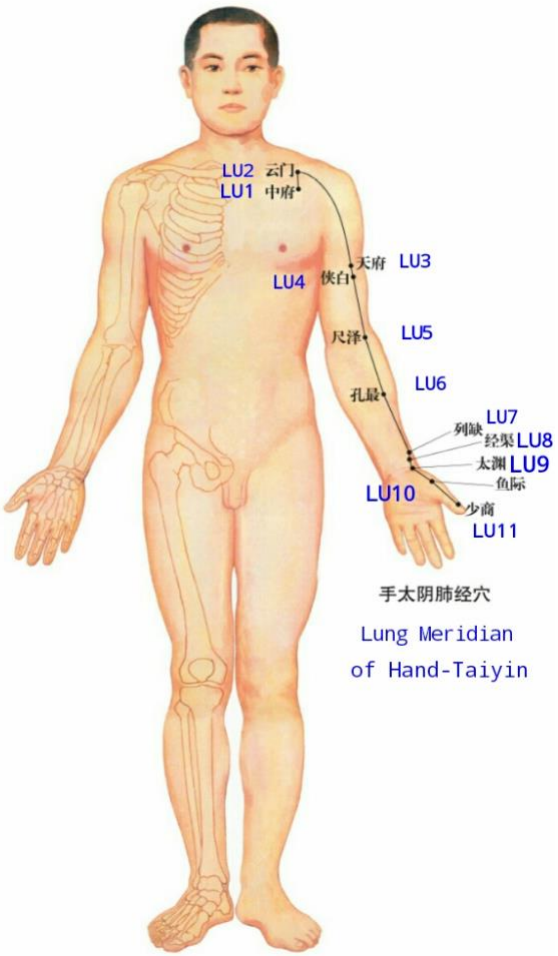

Figure 1: Lung Meridian of Hand-Taiyin (Lung Meridian for short)

Lung Meridian enters the body and connects with the lung and large intestine.

Figure 2: Large Intestine Meridian of Hand-Yangming (Large Intestine Meridian for short)

Large Intestine Meridian enters the body and connects with the large intestine and lung.

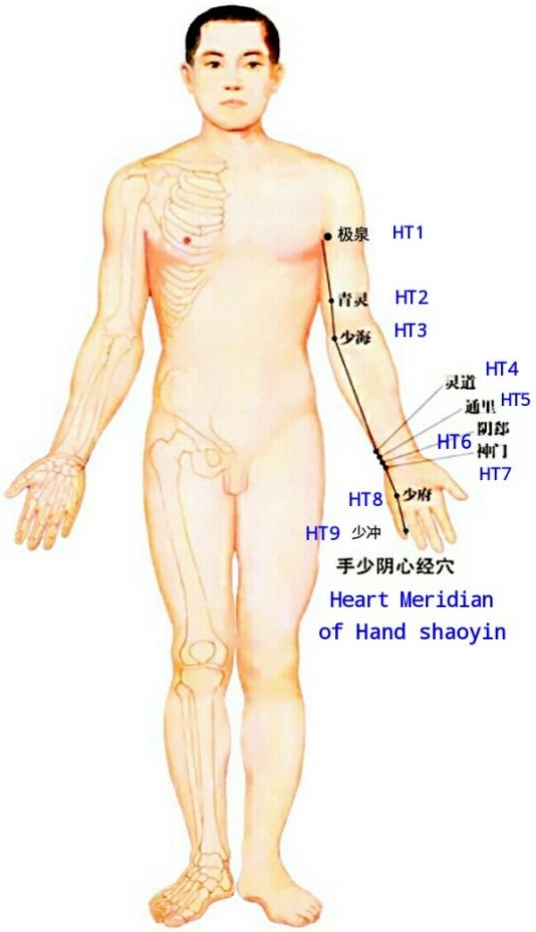

Figure 3: Heart Meridian of Hand-Shaoyin (Heart Meridian for short)

Heart meridian enters the body and connects with the heart and small intestine.

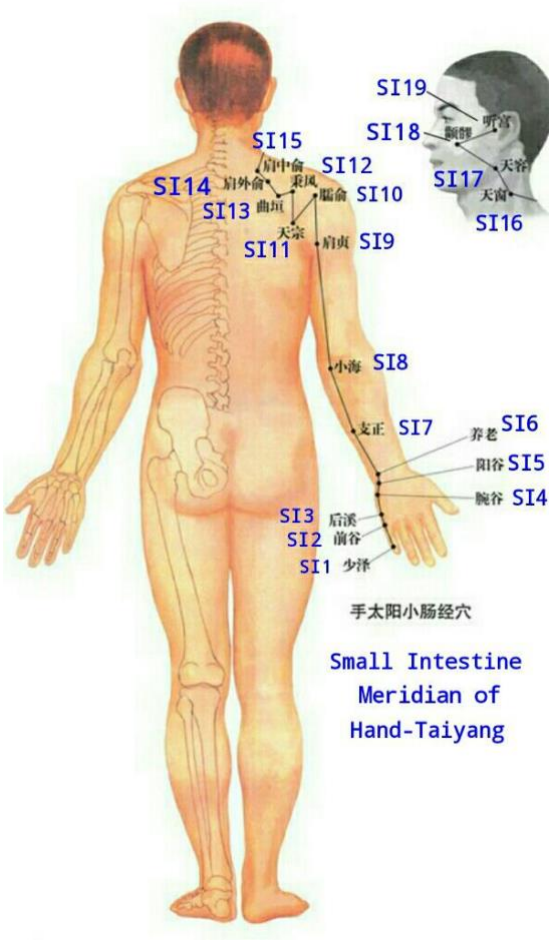

Figure 4: Small Intestine Meridian of Hand-Taiyang (Small Intestine Meridian for short)
Small Intestine Meridian enters the body and connects with the small intestine and heart.

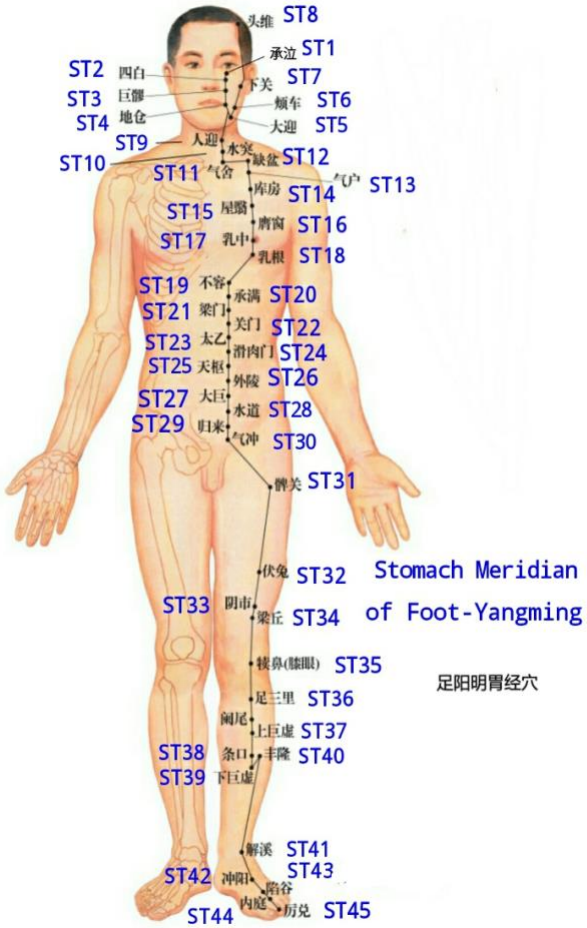

Figure 5: Stomach Meridian of Foot-Yangming (Stomach Meridian for short)

Stomach Meridian enters the body and connects with the stomach and spleen.

III. The Effect on the Human Body and Diseases that can be Treated of Massaging Some Acupoints on these Five Meridians

The following introduces the effects on human body and the diseases that can be treated by massaging some acupoints on these five meridians. The massage method can be either rubbing on acupoints with fingers or pressing on acupoints with fingers or other slender or sharp hard objects. Putting your fingers on acupoints without rubbing or pressing can also have effect. Tens of times or seconds at a time. The ones who are physically strong and have certainty about the nature of the disease and the choice of acupoints can be more, while those who are young, old, weak, or uncertain about the nature of the disease and the choice of acupoints can be less. It starts to work after the massaging, the effect will continue for 7 hours and 40 minutes, and then stop. If you fall asleep in the middle, the period of sleep will not be included in the 7 hours and 40 minutes, because the effect will stop temporarily after you fall asleep and resume after you wake up. For example, when you massage acupoints at 7 p.m. and fall asleep at 10 o'clock, the effect will stop, when you wake up at 6 a.m., the effect will resume again, and then continue until 10:40. The effect of massaging acupoints is not always manifested very well every time due to various factors. for example, for some reason, stimulating acupoints with opposite effects at the same time can offset the effect, because there are many acupoints in the human body that is stimulated to produce the opposite effects.

1. Massaging the acupoint LU10 on Lung Meridian of Hand-Taiyin (Figures 1 and 6) can simultaneously increase the blood flowing from pulmonary artery to lung and from lung to pulmonary vein, and reduce the electricity of the lung and large intestine, it can be used to treat diseases caused by insufficient blood flowing from pulmonary artery to lung and from lung to pulmonary vein and excessive electricity of the lung and large intestine, but it is inappropriate for the opposite situation and should be prohibited.

Figure 6: Acupoints on Lung Meridian of Hand-Taiyin

Electricity is called Qi in Traditional Chinese Medicine. Electricity in the lungs is called Lung Qi, electricity in the heart is called Heart Qi, etc. A healthy body not only requires that the blood flowing from the artery to the internal organs and from the internal organs to the vein be appropriate, not too much or too little, but also requires that the electricity of internal organs be appropriate, not too much or too little, too much or too little will cause abnormal functions of internal organs and make people sick. The diseases caused by too much or too little blood flowing from arteries to internal organs and from internal organs to veins have been mentioned in the previous two papers, this paper will not repeat, but only talks about the diseases caused by too much or too little electricity in internal organs. If the internal organs have too little electricity, their functions will be insufficient and weak, for example, if the electricity of the lungs is insufficient, the function of the lungs will be weak, and people will feel short of breath and breathing weakness; If the electricity of the heart is not enough, the function of the heart will be weak, and people will feel depressed, tired, weak, unresponsive, sleepy, unwilling to speak, and have a low voice. On the contrary, If the internal organs have too much electricity, their functions will be too strong, for example, if there is too much electricity in the lungs, the function of the lungs will be too strong, and people will feel wheezing, chest tightness, cough and so on; If there is too much electricity in the heart, the function of the heart will be too strong, and people will feel suffocated in the chest, excited, palpitation, easily frightened, upset and insomnia. Other organs are similar to this.

2. Massaging the acupoint LU8 on Lung Meridian of Hand-Taiyin (Figures 1 and 6) can simultaneously reduce the blood flowing from pulmonary artery to lung and from lung to pulmonary vein, and increase the electricity in the lung and large intestine. It can be used to treat diseases caused by excessive blood flowing from pulmonary artery to lung and from lung to pulmonary vein and insufficient electricity in the lung and large intestine, but it is inappropriate for the opposite situation and should be prohibited.
3. Massaging the acupoints LI3 or LI18 on the Large Intestine Meridian of Hand- Yangming (Figures 2 and 7) can simultaneously increase the blood flowing from artery to large intestine and from large intestine to vein and reduce the electricity of the lung and large intestine, it can treat diseases caused by insufficient blood flowing from artery to large intestine and from large intestine to vein and excessive electricity of the lung and large intestine. Similarly, it is inappropriate for the opposite situation and should be prohibited.

Figure 7: Acupoints on Large Intestine Meridian of Hand-Yangming

4. Massaging the acupoints LI7 or LI17 on the Large Intestine Meridian of Hand- Yangming (Figures 2 and 8) can simultaneously reduce the blood flowing from artery to large intestine and from large intestine to vein, increase the electricity of the lung and large intestine, and can treat diseases caused by excessive blood flowing from artery to large intestine and from large intestine to vein and insufficient electricity of the lung and large intestine. Similarly, it is inappropriate for the opposite situation and should be prohibited.

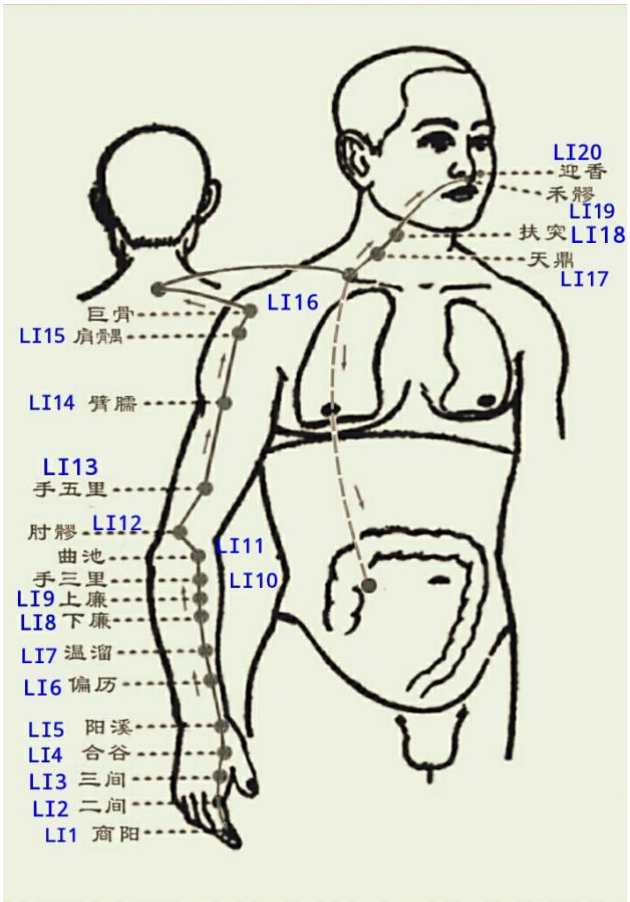

Figure 8: Acupoints on Large Intestine Meridian of Hand-Yangming

5. Massaging the acupoint HT6 on the Heart Meridian of Hand-Shaoyin (Figures 3 and 9) can simultaneously reduce the blood flowing from the coronary artery into the myocardium and from the myocardium into the vein, increase the electricity of the heart and small intestine, and can treat diseases caused by excessive blood flowing from the coronary artery into the myocardium and from the myocardium into the vein and insufficient electricity of the heart and small intestine. Similarly, it is not suitable for the opposite situation and should be prohibited.

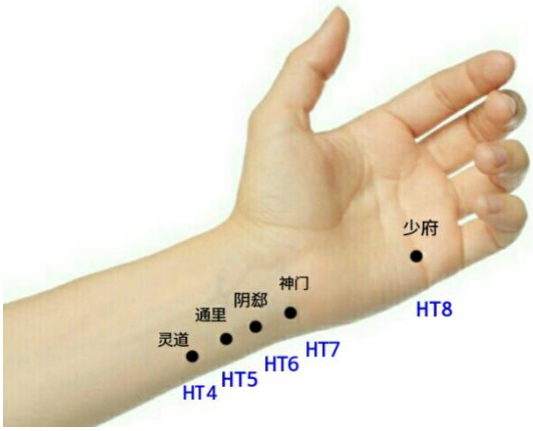

Figure 9: Acupoints on Heart Meridian of Hand-Shaoyin

6. Massaging the acupoint HT5 on the Heart Meridian of Hand-Shaoyin (Figures 3 and 9) can simultaneously increase the blood flowing from the coronary artery into the myocardium and from the myocardium into the vein and reduce the electricity of the heart and small intestine, it can treat diseases caused by insufficient blood flowing from the coronary artery into the myocardium and from the myocardium into the vein and excessive electricity of the heart and small intestine. Similarly, it is inappropriate for the opposite situation and should be prohibited.

7. Massaging the acupoint SI1 on the Small Intestine Meridian of Hand-Taiyang (Figures 4 and 10) can simultaneously increase the blood flowing from the artery into the small intestine and from the small intestine into the vein and reduce the electricity of the heart and small intestine, it can treat diseases caused by insufficient blood flowing from the artery into the small intestine and from the small intestine into the vein and excessive electricity of the heart and small intestine. Similarly, it is inappropriate for the opposite situation and should be prohibited.

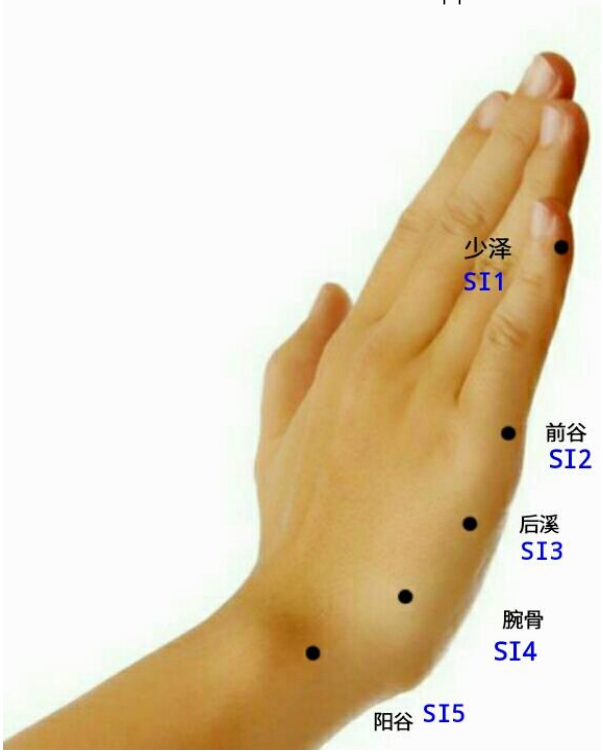

Figure 10: Acupoints on Small Intestine Meridian of Hand-Taiyang

8. Massaging the acupoint SI5 on the Small Intestine Meridian of Hand-Taiyang (Figures 4 and 10) can simultaneously reduce the blood flowing from the artery into the small intestine and from the small intestine into the vein, increase the electricity of the heart and small intestine, and can treat diseases caused by excessive blood flowing from the artery into the small intestine and from the small intestine into the vein and insufficient electricity of the heart and small intestine. Similarly, it is inappropriate for the opposite situation and should be prohibited.
9. Massaging the acupoints ST43, ST35, ST33, ST10, ST8, ST2, or ST1 on the Stomach Meridian of Foot-Yangming (Figures 5, 11, 12, 13, 14, and 15) can simultaneously increase the blood flowing from the artery into the stomach and from the stomach into the vein and reduce the electricity of the stomach, it can treat diseases caused by insufficient blood flowing from the artery into the stomach and from the stomach into the vein and excessive electricity of the stomach. Similarly, it is inappropriate for the opposite situation and should be prohibited.

Figure 11: Acupoints on Stomach Meridian of Foot-Yangming

Figure 12: Acupoints on Stomach Meridian of Foot-Yangming

Figure 13: Acupoints on Stomach Meridian of Foot-Yangming

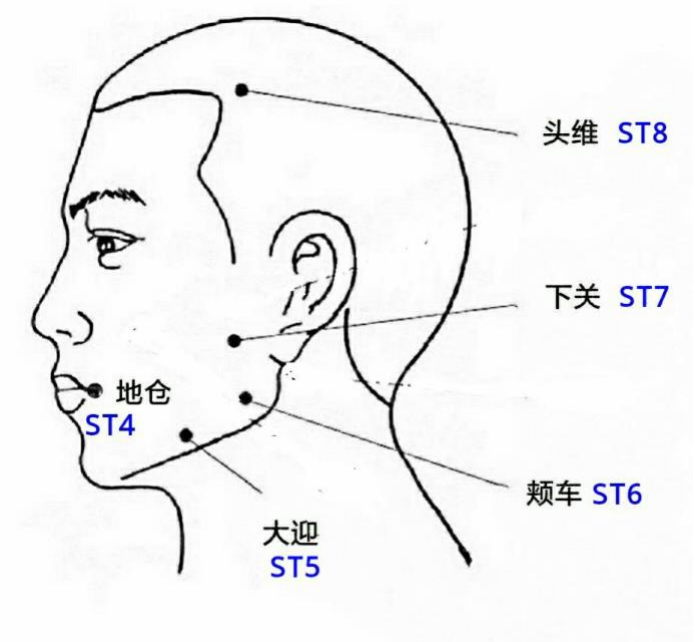

Figure 14: Acupoints on Stomach Meridian of Foot-Yangming

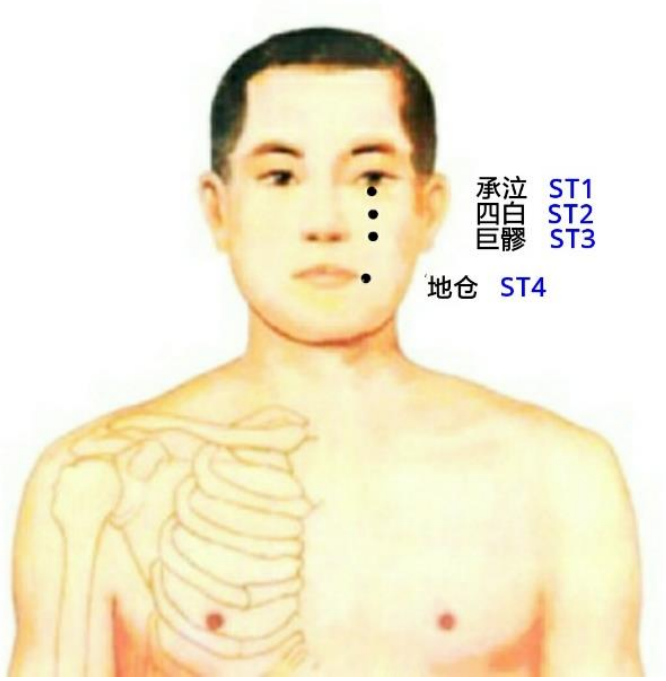

Figure 15: Acupoints on Stomach Meridian of Foot-Yangming

10. Massaging the acupoints ST39, ST34, ST32, ST11, ST5, or ST3 on the Stomach Meridian of Foot-Yangming (Figures 5, 12, 13, 14, and 15) can simultaneously reduce the blood flowing from the artery into the stomach and from the stomach into the vein, increase the electricity of the stomach, and can treat diseases caused by excessive blood flowing from the artery into the stomach and from the stomach into the vein and insufficient electricity of the stomach. Similarly, it is not suitable for the opposite situation and should be prohibited.

Literature

1. Liu Yanchi, Basic Theory of Traditional Chinese Medicine, Jiangxi Science and Technology Press, China, 1987.
2. Lun Xin, Yi Wei, The Theory of Meridians and Acupoints, Science and Technology Literature Publishing House, China, 2006.
3. Li, Xiaoguang. 2020. "Opening up a New Field of Modern Medical Research 1." OSF Preprints. September 11. doi:10.31219/osf.io/zgf28.
4. Xiaoguang L (2020) Opening up a New Field of Modern Medical Research 2. J Altern Complement Integr Med 6: 121.

Global Journal of Medical Research: K
Interdisciplinary
Volume 21 Issue 1 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Erudite Women's Outstanding Contribution to the Indian Medical Education: A Recognition on International Women's Day 2021

By Manishi Bansal and Shashi Raheja

Abstract- Women education is the first and the most important step towards attaining women empowerment. Writing and publishing textbooks for medical education is a challenging work, especially by women. This article intends to compile personal information and books published by women in different specialities so as to give recognition to such women on this International Women's Day. Forty women were shortlisted who have either written or edited textbooks, out of which gynaecology and anatomy were the dominant specialities where contribution of the women was seen maximum. Along with textbooks, these women have many publications in indexed journals and are the recipient of famous awards in their fields. Contributions of these empowered women should be documented more often in literature so that more and more younger women get to know them.

Keywords: *medical education, women empowerment, medical textbooks, international women's day.*

GJMR-K Classification: *NLMC Code: W 18*

Strictly as per the compliance and regulations of:

Erudite Women's Outstanding Contribution to the Indian Medical Education: A Recognition on International Women's Day 2021

Manishi Bansal [α] and Shashi Raheja [σ]

Abstract- Women education is the first and the most important step towards attaining women empowerment. Writing and publishing textbooks for medical education is a challenging work, especially by women. This article intends to compile personal information and books published by women in different specialities so as to give recognition to such women on this International Women's Day. Forty women were shortlisted who have either written or edited textbooks, out of which gynaecology and anatomy were the dominant specialities where contribution of the women was seen maximum. Along with textbooks, these women have many publications in indexed journals and are the recipient of famous awards in their fields. Contributions of these empowered women should be documented more often in literature so that more and more younger women get to know them.

Keywords: medical education, women empowerment, medical textbooks, international women's day.

I. Introduction

Women empowerment means the action of raising the status of women through education, literacy, and training [1]. Empowerment of women and achieving gender equality is essential for our society to ensure the sustainable development of the country and literacy is the foremost important step towards attaining it. This was aptly realised long back in early 19th century by two Indian women, Anandibai Gopalrao Joshi and Kadambini Ganguly [2]. They were the first two Indian women to study medicine during British Empire. Anandibai Gopalrao Joshi (1865-1887) graduated with a two-year degree in western medicine from Woman's Medical College of Pennsylvania, United States in 1886. At the age of fourteen, Anandibai gave birth to a boy, but the child died after ten days due to lack of medical care. This proved to be a turning point in Anandi's life and inspired her to become a physician [3]. After her medical training, she returned to India to practice medicine as she believed that midwifery was not sufficient to save lives. Unfortunately, Anandi died at an early age of 22 years due to tuberculosis. Kadambini Ganguly (1861-1923) graduated from Calcutta Medical College in 1886 despite strong criticism from the society opposing women liberation. She became the first woman physician with a western medical degree in the whole of South Asia[4]. In 1893, she also travelled to UK for higher studies. Since then, these two women have been the guiding light for many other women to study medicine.

Since 1914, International Women's Day on 8 March is a global day celebrating the economic, political, and social achievements of women in the past, present and future [5].In the last 60 years, increasing numbers of women doctors in India have contributed to the medical academics by writing textbooks for medical and para-medical students. However, not much information is available on Google about authors of textbooks who have spent quite a few years of their life writing books for academic purposes. The scenario is worse when it comes to women. Therefore, on this International Women's day, this article intends to honour Indian women authors who have contributed to medical education by publishing textbooks for the students. This is the first of its kind article published so far.

II. Methodology

The methodology used in this article is mainly based on personal communication and Google Scholar. Subject wise, we searched for medical books authored by women and contacted them telephonically and via email. We also contacted head of the departments of various institutes and asked them for information on women authors in their peer group. Then they were also contacted personally. In this way we formed a chain and asked them if they knew other women authors. Medical students were also contacted and inquired about the books they prefer to read and why. We even contacted famous publishers who have published books written by women. Simultaneously, online search was also carried out for medical textbooks available and then shortlisted for books by women. The authors were then sent a proforma by email asking for their personal details and the books published by them. The data was then compiled over a period of two months.

III. Results

A total of 40 women authors were sent the proforma. All authors who have written or edited textbooks for medical as well as para-medical students

Author α σ: e-mails: manishi1@yahoo.com, drshashiraheja@gmail.com

were included in the analysis whereas authors who have exclusively written practical books and viva books were excluded from the analysis. Subject wise, maximum contribution of women authors was seen in the field of gynaecology (13 authors), followed by anatomy (8 authors) and other clinical and non-clinical specialties [Table1]. Institute wise, maximum contribution is from alumni of Lady Hardinge Medical College (LHMC), New Delhi and All India Institute of Medical Sciences (AIIMS), New Delhi (12 authors each), and Maulana Azad Medical College, New Delhi (4 authors). Textbooks are singly authored in 22cases and more than one author contributed in18 books. Twenty-three women authors have published more than one book whereas 16 have published single book. Presently, out of 40 women, 10 have retired from their respective specialty and 30 women are still working.

IV. Pioneer Women in Various Medical Fields

Here is a subject wise abridged information of women authors who by publishing textbooks for medical education have created a dent in their respective fields.

a) Anatomy

Human body has been intriguing to mankind since ages. Andreas Vesalius (1514-1564) who is known as the "Father of anatomy", made significant anatomical discoveries with his observations and documented them in textbooks [6]. In the same way, some prominent women anatomist of India have written textbooks to simplify the subject of anatomy for the medical and paramedical students.

1. Dr. Krishna Garg

Known as a Legend of Anatomy, Dr Krishna Garg was born on 12th July 1938.She did her MBBS from Lady Hardinge Medical College (LHMC), New Delhi in 1961 followed by MS in 1968. She also completed PhD in anatomy in 1993 from the same college. She became faculty there and later retired in 1996 from LHMC as Professor and Head of the department of anatomy [7].Furthermore, she did not stop here and continued to teach in many medical, dental and physiotherapy colleges. She has been awarded with many prestigious awards like lifetime achievement award of anatomy, Nations who's who (2019) and Excellence award in anatomy in 2004 by Delhi Medical association for her selfless dedication and research excellence. Dr Krishna has published many textbooks for medical curriculum. Among them the noted ones are- *Textbook of Histology* (second to sixth edition, by CBS Publishers), *Textbook of Neuroanatomy* (first to sixth edition, by CBS Publishers), *B D Chaurasia's Handbook of General Anatomy* and many more. Besides this, she has been editing the famous textbook of anatomy by B D Chaurasia (4thto 8th edition) which is widely read by medical students all over the world.

2. Dr. Neeta V Kulkarni

Dr Neeta V Kulkarni is another iconic woman in the field of anatomy. She has graduated from Government Medical College, Nagpur, and post-graduation in anatomy from Government Medical College, Thiruvananthapuram. She has worked in various medical colleges of Kerala and has been a lifetime member of many anatomical societies of India. Her textbook, *Clinical Anatomy, A Problem Solving Approach,* was first published by Jaypee Brothers in 2006 [8]. Currently this book is in third edition. This book is designed to provide exposure on day-to-day applications of anatomy in clinical settings and analyses. Dr Kulkarni passed away at her home in Pune in 2019.

3. Dr. Rani Kumar

Dr Rani Kumar MBBS (1969), MS, FAMS is a renowned woman who has retired as Professor and Head of anatomy, and Dean of AIIMS, New Delhi. She has a total of 40 years of teaching experience in anatomy. To help the undergraduate students understand embryology, she simplified it and wrote a *Textbook on Human Embryology* [9]. Dr Rani has written another textbook by the name *Synopsis of Anatomy with MCQ and Mnemonics.* She has many awards and achievements to her name, like the lifetime achievement award from AIIMS in 2016, Distinguished Teachers' award by Delhi Medical association in 1992 and PN Dubey memorial gold medal in 1992. She was also awarded Fogarty International Fellowship at National Institute of Health, Bethesda, USA.

4. Dr. Veena Bharioke

Retired as Professor and Head of the department of anatomy from University College of Medical Sciences, New Delhi, Dr Veena is a prominent figure in her field. She is MBBS from Gandhi Medical College, Bhopal in 1971 and MS anatomy from AIIMS, New Delhi in 1974. She has published a *Textbook Of Histology With A Practical Manual And Colour Atlas, second edition in 1995* and also *Textbook on Human Histology* published in 1999.

5. Subhadra Devi Velichety

Born in 1955, Dr Subhadra did her MBBS in 1979 and MS in 1985 from Sri Venkateswara (S.V) Medical College, Tirupati. She has worked as Professor and Head, Department of anatomy at the same college. Presently, she is working as Professor of Anatomy, Apollo Institute Medical Science and Research, Chittoor, Andhra Pradesh. She has vast experience in the field of teaching anatomy, research, histology and genetics. She has edited a famous textbook of a great anatomist of India namely, *Inderbir Singh's Human Embryology*, published by Jaypee Publishers [10]. Another book is *Textbook of General Anatomy,* also published by Jaypee

Publishers in 2019. This book provides basic knowledge for the dissection of cadaver and study of various organs adopting integrated approach. Besides this she has numerous publications in indexed journals.

6. Dr. Mrudula Chandrupatla

Dr Mrudula (MBBS, MD) is Professor and Head of the department of anatomy at Apollo Institute of Medical Sciences and Research, Hyderabad. Along with publications in renowned journals, she has written many books for medical as well as physiotherapy students. Among them, the famous ones are-*Handbook of Muscles*, published by Osmania Publisher and has three editions. *Concise Anatomy* has two editions and *Anatomy for BPT* is published in 2015 [11].

7. Dr. Daksha Prashant Dixit

Having done MBBS from K.J Somaiya Medical College, Mumbai in 1998, Dr Daksha is Professor in the department of anatomy, Jawaharlal Nehru Medical College, Belagavi. She has written 2 textbooks-*Textbook of Human Embryology for undergraduate and postgraduate students*, published by CBS Publishers in 2004 [12]. Another textbook is *General anatomy for undergraduate medical and paramedical students,* published in 2001. She wrote these books to simplify embryology and anatomy for the medical and para-medical students.

8. Dr. Renu Chauhan

Dr Renu Chauhan MBBS (1990), MS is Professor and Head of the department of anatomy at University College of Medical Sciences Hospital (UCMS), New Delhi. She has published textbooks on genetics, histology and anatomy for medical students as well as nursing. The textbook *Essentials of Genetics* is published by Avichal publishing company and the first edition came in 2014 [13]. This book aims at providing the students with the basic concepts of genetics, prenatal diagnosis and important techniques in genetics. She is also the joint editor of journal of Anatomical Society of India and has many publications in her name.

b) Physiology

Physiology is the science of life. It is the branch of biology that aims to understand the mechanisms of living things, from the basis of cell function at the ionic and molecular level to the integrated behaviour of the whole body and the influence of the external environment. Two prominent women in this field are-

1. Dr. Surrinder Himmat Singh

Dr Surrinder is the oldest among all women. She was borne in 1935. She did her MBBS and MD from LHMC, New Delhi. She retired as ex-Professor and head of the Department of Physiology at LHMC. She has received various awards and recognitions. She has authored 4 textbooks for medical and paramedical students, these are- *Anatomy and Physiology for Nurses and Allied Health Sciences.* This book is also co-authored by Dr Krishna Garg. *Principles of Human Physiology for Paramedical Courses, Principles of Human Physiology courses in Nurses and Allied Health Sciences* and *Manual of Practical Physiology* [14].

2. Dr. Indu Khurana

Presently working as Dean cum Principal of World College of Medical Sciences & Research and Hospital, Jhajjar, Dr Indu is MBBS (1977) and MD Physiology (1982) from Post Graduate Institute Medical College (PGIMS), Rohtak. She has worked as Professor and Head of Department of Physiology there and also held various administrative positions. She has published 11 books in physiology for medical and para-medical out of which the *Textbook of Medical Physiology* published by Elsevier (2nd edition 2015) is famous among medical students. For her dedicated works in academics, she has received lifetime achievement award in 2018.

c) Biochemistry

Biochemistry is the branch of science that explores the chemical processes within the human body. It is a laboratory based science and is a fusion of biology and chemistry. The prominent women in this field are-

1. Dr. Sreekumari S

Dr Sreekumari was born in 1949, she did her MBBS in 1972 and MD in biochemistry in 1977 from Medical College Thiruvananthapuram, Kerala. She has held various faculty positions and later retired in 2004 as Professor and Head of the Department of biochemistry from the same college. She is the co-author of 3 books published by Jaypee Medical Publishers –*Textbook of Biochemistry for Medical Students,* first edition published in 1995 and 9th edition released in 2019 [15]. This textbook is accepted as one of the standard textbooks by The Medical Council of India (MCI) and is famous not only in India but other Asian countries also. This book has a Spanish edition also. Other textbooks are-T*extbook of Biochemistry for Dental Students,*3rd edition and *Clinical Chemistry Made Easy*.

2. Dr Veena Singh Ghalaut

Born in 1954, Dr Veena did MBBS from Raipur in 1978 and MD in biochemistry in 1982.She is presently Professor and Head of the department of biochemistry at PGIMS, Rohtak. She has more than 100 publications in national and international journals and has been the president of the Association of Medical Biochemist of India from 2009-10. She has authored 3 books in biochemistry based on MCI syllabus-*Practical book/ Manual of Biochemistry for MBBS, Practical book/ Manual of biochemistry for BDS, and Practical Skills in Biochemistry*[16].

3. Dr. Poonam Agrawal

Dr Poonam has done MBBS in 1997 and MD in biochemistry in 2007 from Madras Medical College. She is presently working as Professor and Head of the department of biochemistry at Dr Baba Saheb Ambedkar Medical College and Hospital, Delhi. She has written 4 textbooks of biochemistry– *Concepts in Biochemistry with Clinical Approach*, first edition 2020 - this book helps the medical students to understand the basis of disease at metabolic and molecular level [17]. *Textbook of Biochemistry based on CBME*- this textbook is written in more elaborative fashion for the medical undergraduates. *Review of Biochemistry for PGMEE*, first edition 2012- this book helps the post graduate aspirants for the correct and easy approach to the subject of biochemistry. This book is currently in 5th edition. *Practical Biochemistry with Clinical Approach*- this book is written to make the concept of practicals in biochemistry clear for the medical students and to understand the clinical importance of the subject.

d) Pathology

Pathology is a branch of medical science that involves the study and diagnosis of disease through the examination of surgically removed organs, tissues and body fluids. Some pioneer women in the field of pathology are -

1. Dr. Chitra Sarkar

Dr Chitra Sarkar is a prominent name in the field of pathology. She is presently Professor and Head of the department of pathology at AIIMS, New Delhi. She did her MBBS from Bangalore Medical College in 1978 and MD pathology from AIIMS, New Delhi in 1981. She has written a book on neuropathology by the name *Essentials of Diagnostic Surgical Neuropathology,* first edition came in 2017 and was published by Thieme[18]. She wrote this book because of the nonavailability of a concise surgical neuropathology book in the Indian context specially for practicing pathologist. Besides this she has more than 400 publications in her name out of which 193 are from neuro-oncology. She has also written 34 chapters in various books.

2. Dr. Sunita Sharma

Dr Sunita Sharma MBBS and MD in pathology from King George's Medical College, Lucknow. She is presently the Director, Professor and Head of the Department of pathology at LHMC, New Delhi. The name of her book is *Concise Haematology* published in 2018 [19]. This book is considered as the nutshell of haematology and transfusion medicine for undergraduate medical students.

3. Dr. Vandana Puri

Dr Vandana has done MBBS in 2006 from Coimbatore Medical College, Tamil Nadu and MD in Pathology from LHMC in 2010, New Delhi. Presently she is working as Associate Professor there. The name of her book is *Complete Review of Pathology and Haematology for NBE*. She wrote this book with the idea to simplify pathology for undergraduate students.

4. Dr. Ila Tyagi

Dr Ila has done MBBS from Bangalore Medical College in 1999. She is presently Associate Professor of pathology at North Delhi Municipal Corporation Medical College and Hindu Rao hospital, New Delhi. Her textbook is *Essentials of Gross Pathology* published by CBS publishers [20].

e) Microbiology

Microbiology is the study of microscopic organisms and includes fundamental research on them.

Dr. Seema Sood

Dr Seema Sood is Professor in the Department of Microbiology at AIIMS, New Delhi. She has written a book by the name *Microbiology for Nurses* published by Elsevier, 3rd edition [21]. The fact that nursing students needed a book that is more pertinent for their duties, inspired her to write this book. She has published extensively in international and national journals and is recipient of many scholarships and awards.

f) Pharmacology

Pharmacology is a pertinent branch of medicine and pharmaceutical sciences which is concerned with the study of drug or medication action.

Dr. Padmaja Udaykumar

Dr Padmaja is presently head of the department of pharmacology at Father Muller Medical College (FMMC), Mangalore. She did her MBBS from Government Medical College, Bellary in 1987 and MD from Kasturba Medical College, Manipal in 1991. She has many publications in her name. Besides academics, she has also held administrative positions at FMMC. She has written many books of Pharmacology, the noted ones are - *Medical Pharmacology for Medical Students* published by CBS publishers, 6th edition 2020 and *Exam Preparatory Manual for Undergraduates in Pharmacology* by Jaypee Brothers Medical Publishers, 2019 [22].

g) Obstetrics and Gynaecology

The field of obstetrics and gynaecology has been dominated by women since ages since female patients feel more comfortable being treated by their female counterparts. Fortunately, India has produced many stalwarts in obstetrics and gynaecology who have contributed hugely in their field of specialisation. Among them are-

1. Dr. VG Padubidri

Among them the first name is Dr VG Padubidri who has authored as well as edited the famous *Howkins & Bourne Shaw's textbook of Gynaecology*. Dr Padubidri completed her MBBS in 1958 from Topiwala National Medical College, Mumbai and MS in 1962. Thereafter

she worked at MAMC, New Delhi from 1974-1984 and later became Director, Professor and Head of department of obstetrics and gynaecology, LHMC, New Delhi from where she retired in 1991. Shaw's textbook of Gynaecology, authored by VG Padubidri and SN Daftary, is one of the best-selling obstetrics and gynaecology textbooks of all time [23].The main objective of this book is to meet the needs of undergraduate medical students and those preparing for postgraduate entrance examination. This book was first published in 1936 and presently 17th edition of the book came in 2018. The book is published by Reed Elsevier India Private Limited.

2. Dr. Shubha Sagar Trivedi

Dr Shubha has retired as Professor and Head, department of obstetrics and gynaecology from LHMC, New Delhi. She has more than 80 research papers in her name along with two books, namely *Management of High Risk Pregnancy, A practical approach*, second edition and *Anaemia in Pregnancy* [24]. Dr Manju Puri and Dr Swati Agarwal are two other editors of this book. This book deals with prenatal diagnosis of obstetrics and gynaecology disorders in pregnancy, complications in pregnancy and effect of various medical conditions in pregnancy like anaemia and diabetes. She wrote these books with the aim to pass on her vast knowledge of dealing with difficult and challenging cases to the students.

3. Dr. Sudha Salhan

The next prominent women in the field of obstetrics and gynaecologyis Dr Sudha Salhan, who did her MBBS from Government Medical College Srinagar and MD from Banaras Hindu University, Varanasi. She retired as Professor and Head of the department from Vardhman Mahavir Medical College (VMMC) and Safdarjang Hospital, New Delhi. She has edited three textbooks, namely *Textbook of Obstetrics* second edition in 2016*, Textbook of Obstetrics and Gynaecology* fourth edition in 2011, and *Women and HIV* second edition in 2013 for which she was awarded FOGSI prize. The book *Women and HIV* is a comprehensive book about the HIV infection in females, emphasizing about mother-to-child transmission, postexposure prophylaxis and biosafety measures.

4. Dr. Suneeta Mittal

Dr Suneeta Mittal MBBS (1972) and MD (1977) from LHMC, New Delhi, is presently Director and Head, department of obstetrics and gynaecology, Fortis Memorial Research Institute, Gurugram [25]. She has been former head of the department of obstetrics and gynaecology and Director of WHO-CCR in human reproduction at AIIMS, New Delhi. She has worked hard to uplift women's health in various ways like introduction of emergency contraception in India, introduction of medical abortion guidelines and minimum standards for mother-baby friendly health care facility. For her achievements, she has been profiled in "The Lancet" as crusader for women's health in India. She has written 15 books on topics like contraception, abortion, mother-child health along with WHO and UNICEF. Out of them her latest textbook is *Obstetrics and Gynaecology, The 5-minute consult 2020.*

5. Dr. Shakuntala Baliga

Dr Shakuntala is MBBS and MD in obstetrics and gynaecology from AIIMS, New Delhi. She is presently Professor and Chief of Colposcopy at Mazumdar Shaw Medical Center, Bengaluru. She has worked mainly on colposcopy and has authored three textbooks on colposcopy, the most famous is *Principles and Practice of Colposcop*y, second edition, published by Jaypee Publishers.

6. Dr. Neerja Goel

Dr Neerja Goel is a well-known name in the field of gynaecology. She is Professor and Unit head of the department of obstetrics and gynaecology at Sharda Hospital, Greater Noida. She has written numerous books in her field of specialization. Among them the popular textbooks are C*urrent Practice in Obstetrics and Gynaecology,* published by Young Brothers in 1999*, Advances in Obstetrics and Gynaecology,* published by Jaypee Brothers in 2006, others are a book on *Menopause, Contraception and State of Art Vaginal Surgery* [26]. She wrote all these books with the intention of imparting her knowledge to the readers.

7. Dr. Mala Arora

Dr Mala is presently consultant obstetrics and gynaecology at Fortis La Femme, New Delhi. She has done MBBS from LHMC in 1978. She is the author of 8 books, the famous ones are- *Year book in Obstetrics and Gynaecology*, 2018-2020, *First Trimester in Pregnancy* published by Jaypee Publishers in 2017 and *Recurrent Pregnancy Loss,* first to third edition. She has numerous publications in her name and has been invited to deliver more than 400 talks at national and international conferences.

8. Dr. Pratima Mittal

Dr Pratima is former Head of the department of obstetrics and gynaecology, VMMC, New Delhi. She has authored four textbooks along with her colleagues- *A practical manual of Obstetrics and Gynaecology*, published in 2001. This book is about instruments and procedures for undergraduates and postgraduate students, *Practical Approach to Critical Care Obstetrics*, published in 2017 and *FOGSI Focus: Surgical Skills in Obstetrics and Gynaecology,* published in 2018. This book also includes surgical videos, and the latest textbook is *FOGSI handbook of Antenatal Care*, published in 2020.

9. Dr. Manju Puri

Alumni of PGIMS, Rohtak, Dr Manju Puri is currently the Director, Professor and Head of the

department of obstetrics and gynaecology at LHMC, New Delhi. Her textbook, *Clinical Methods in Obstetrics and Gynaecology* is written to guide the students on systematic approach with specific presenting complaints in obstetrics and gynaecology. This book is basically a compilation of bedside teachings during clinical rounds.

10. Dr. Surveen Ghumman

Dr Surveen Ghumman is another icon in the field of obstetrics and gynaecology. She is graduate from Christian Medical College (CMC), Ludhiana in 1986 and postgraduate from Amritsar Medical College in 1991. She is presently Director and Head, department of IVF and Reproductive Medicine at Max group of Hospitals, New Delhi. Dr Surveen takes the credit of authoring 8 books, out of which 6 books are on infertility and 3 books have been published internationally. Her latest book is *Principles and Practice of Ovarian stimulation in ART,* published by Springer in 2015. Her books, *Step by Step Ovulation Induction, Tubo-uterine Factors in Infertility* and *Non- Descent Vaginal Hysterectomy* (co-authored by Dr Neerja Goel) have been published in UK as well. Her passion for the subject of infertility and translating knowledge into a logical sequence to help many others to follow and practice, was what kept her inspired. Also, she wanted to translate both evidence- based protocols and her years of experience in a manner where it could be put to practical utility.

11. Jyotsna Suri

Dr Jyotsna Suri is working in the field of obstetrics and gynaecology for the last 27 years. She is presently professor in the dept of obstetrics and gynaecology at VMMC, New Delhi. She is MBBS from LHMC in 1988 and MD Obstetrics and Gynaecology from Safdarjang Hospital in 1993. Her main area of interest is high risk pregnancy and critical care obstetrics and endocrinology. She has many awards to her name like WHO fellowship in reproductive endocrinology and APJ Abdul Kalam award for 2020 by Delhi Obstetrics and Gynaecologist Forum. She has edited and authored two books, namely *Practical Approach to Critical Care in Obstetrics* published by Jaypee Publishers in 2018 and another one is *Abnormal Placentation* published by Jaypee Publishers in 2020 [27].

12. Dr. Asmita Muthal-Rathore

Maternal foetal medicine is a challenging field in obstetrics and gynaecology. Dr Asmita who is Director, Professor and Head of obstetrics and gynaecology, MAMC, New Delhi, has worked immensely in this field. She has written 3 textbooks, namely *Hormones in Obstetrics and Gynaecology* (FOGSI), *Common Clinical Problems in Obstetrics and Gynaecology: A Practical Approach* and *Case discussions in Obstetrics and Gynaecology*. Along with textbooks, she has numerous publications in national and international journals.

13. Dr. Pikee Saxena

Dr Pikee is presently working as Professor of obstetrics and gynaecology at LHMC, New Delhi. She has been awarded with 28 gold medals for her research presentations in national and international conferences. She has authored two books- *Clinical Guide for Management of Diabetes in Pregnancy* and *Postpartum Haemorrhage* which is also co-authored by Dr Aruna Nigam.

h) Ophthalmology

Dr Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi is considered as one of the premier institute for eye diseases and has produced many prominent ophthalmologist.

1. Dr. Ramanjit Sihota and Dr Radhika Tandon

Dr Ramanjit Sihota has done MBBS from CMC, Velloreand MD Ophthalmology from AIIMS, New Delhi. She is presently Head of glaucoma research facility and services at Dr Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS. She has 197 publications in peer reviewed international journals, 3 books and 24 chapters in her name. Prof Sihota was instrumental in initiation of a National Task force for glaucoma through the Ministry of Health and Family Welfare, India, that developed a comprehensive Action Plan for treatment and prevention of blindness due to Glaucoma in India.

Dr Radhika Tandon is MBBS and MD ophthalmology from AIIMS, New Delhi. She is presently Professor of ophthalmology at Dr Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi. Dr Radhika has received various awards like President of India' s Silver medal for highest marks nationally among female medical graduates 1986, Muthusamy Gold medal Royal College of Surgeons Edinburgh for highest marks in Ophthalmology 1992. She has served the post of President of Eye Bank Association of India 2016-2018.

Dr Ramanjit and Dr Radhika have edited a famous textbook in ophthalmology by the name *Parsons Diseases of the Eye* (19th to 23rd Editions), published by Elseiver[28]. They wrote this book because of the urgent need for a book on eye diseases as seen in India, which differs greatly from the western view of the diseases.

2. Dr. Kirti Singh

Dr Kirti Singh is graduate from LHMC, New Delhi in 1986 and postgraduate from AIIMS, New Delhi in 1989. She is presently Professor in the Department of ophthalmology at MAMC, New Delhi. She has done various fellowships in glaucoma from UK and USA. She has also received Commonwealth fellowship from London in 2000 and WHO fellowship in 2009 for low vision rehabilitation. She has written two textbooks- *Contact Lenses Principles and Practice* published by

CBS publisher in 2017. She wrote this book because of lack of needed information on contact lenses. Second book is *Step by Step Glaucoma Surgery*, published by All India Ophthalmic Society. Besides writing textbooks of ophthalmology, she also writes English poems.

3. Dr. M Vanathi

Dr Vanathi is MD in ophthalmology from AIIMS, New Delhi. She is presently working as professor of ophthalmology and cornea specialist at Dr Rajendra Prasad centre, AIIMS, New Delhi. She has written 2 textbooks- *Postgraduate Ophthalmology and Undergraduate Ophthalmology* [29]. She has more than 100 publications in indexed journals and over 35 chapters in international books.

4. Dr. Zia Chaudhuri

Dr Zia Is Director Professor of ophthalmology at LHMC, New Delhi. She has written a book named *Postgraduate Ophthalmology* published by Jaypee Medical Publishers. This book has 2 editions, the first edition came in 2012 and the second one came in 2020. This book is a comprehensive and holistic textbook customised to the postgraduate curriculum in ophthalmology in India. In addition, it has a global perspective with contributions from many national and international stalwarts in ophthalmology. It is useful as a text cum reference book for ophthalmic fellows. Dr Zia has more than 250 publications, she has been editor of 5 books and written 98 chapters in various books.

i) Otorhinolaryngology

Over the last 30 years the specialty of Otorhinolaryngology has undergone dramatic development and has taken advantage of new advances in endoscopy, microsurgery, the use of lasers and flap reconstruction.

Dr. Shruti Dhingra

Dr Shruti Dhingra is alumni of MAMC, New Delhi and PGIMER, Chandigarh. She is presently working as Head of the department of otolaryngology and head and neck surgery at ESIC Medical College and Hospital, Faridabad. She went for advanced training in laryngology at Massachusetts Eye and Ear Infirmary, USA. She is the co-author of the famous textbook by the name *Diseases of Ear, Nose and Throat and Head and Neck Surgery*. This book is currently in 7th edition and published by Elsevier [30].This book was first published in 1992 and is widely considered as a standard textbook by medical students. Dr Shruti is also co-author of the *Manual of Clinical Cases in Ear, Nose and Throat* which is also published by Elsevier.

j) Dermatology

The skin is an incredible organ. It is our first line of defense against diseases. Dermatologists have the unique skills to offer the best care for the organ that cares for us.

Dr Neena Khanna

Dr Neena Khanna is MBBS (1978) and MD in dermatology from AIIMS, New Delhi in 1984. She is currently working as Professor at AIIMS, New Delhi. She has written a textbook -*Synopsis of Dermatology and Sexually Transmitted Diseases,* 6th edition [31]. She has received various awards and achievements with over 25 chapters in books and over 150 articles in journals.

k) Anaesthesia

Anaesthesia derived from the Greek word "without sensation" is a state of controlled, temporary loss of sensation or awareness that is induced for medical purposes.

Dr. Usha Kiran

Dr Usha has worked as Professor and Head of the department of cardiac anaesthesia at AIIMS, New Delhi. She has been practising cardiac anaesthesia and intensive care for more than 35 years. She is the chief editor of the *Textbook of Vascular Anaesthesia.* Besides this she has more than 280 publications in peer reviewed journals. Lifetime achievement award has been conferred to her by the President of India in 2010. She has special interest in teaching stress management to patients who are undergoing heart and vascular surgery.

V. Conclusion

This article gives a synopsis of 40 women stalwarts who have worked towards the upliftment of medical education of our country. There may be many more who have contributed their roles in their respective fields. Writing one article takes few weeks to few months, whereas writing a whole book can take months and years to complete. A reader while reading the book may not acknowledge the tremendous efforts put in by the author, therefore it was very necessary that through this article the readers get an insight of the hard work put in by the writers and especially women who plays multidimensional role in the society. A 34.3 km crater on Venus named *Joshee* in the honour of Anandibai Joshi is a proof of such recognition of women [32].Women education is the most powerful tool to bring a positive change in any society. Talented women of such calibre need no escalator or support from others, rather they stand as pathfinders and role models for many futuristic generations to come. Contributions of these empowered women should be documented and recognised more often in literature so that more and more younger women get to know them.

Acknowledgement: None

Conflict of Interest: None

References Références Referencias

1. Bayeh, Endalcachew. "The role of empowering women and achieving gender equality to the sustainable development of Ethiopia". Pacific

Science Review B: Humanities and Social Sciences 2016; 2 (1): 38. doi:10.1016/j.psrb.2016.09.013
2. "First lady doctor of India". The Telegraph. Retrieved 1 May 2016.
3. "Who is Anandi Gopal Joshi?". The Indian Express. 31 March 2018.
4. Karlekar, Malavika. "Anatomy of a Change: Early Women Doctors". India International Centre Quarterly 2012; 39 (3/4): 95–106. JSTOR 24394278.
5. "International Women's Day, 8 March". *www.un.org*. Retrieved March 7, 2020.
6. Jindal A and Bansal M. Bhagwan Din Chaurasia (1937-1985): The unsung hero of Indian anatomy. Journal of Medical Biography 2020. Doi: 10.1177/ 0967772020961011
7. https://asiindia.in/files/Krishnagarg.pdf (accessed 4 December 2020) Google Scholar.
8. Clinical Anatomy. A problem solving approach by Neeta V Kulkarni, third edition, Jaypee Publishers, 2016.
9. Textbook of Human Embryology by Rani Kumar, First edition, I K International Publishing House Pvt. Ltd, 2008.
10. Inderbir Singh's Human Embryology As Per The Competency Based Medical Education Curriculum (MCI) by V Subhadra Devi, 11th edition, Jaypee Brothers Medical Publishers, 2017.
11. Concise Anatomy by Mrudula Chandrupatla, 2nd Edition, Osmania Medical Publisher, 2013.
12. Textbook of Human Embryology for undergraduate and postgraduate students by Daksha Dixit, 1st edition, CBS Publishers, 2004.
13. Essentials of Genetics by Renu Chauhan, Second edition, Avichal publishing company, 2014.
14. Principles of human Physiology courses in Nurses and Allied Health Sciences by Surrinder H Singh, 1st edition, CBS Publishers, 2020.
15. Textbook of Biochemistry for medical students by Sreekumari S, 9th edition, Jaypee Brothers Medical Publishers, 2019.
16. Manual of Biochemistry for MBBS by Veena Singh Ghalaut, 3rd edition, Arya Publishing Company, 2018.
17. Concepts in Biochemistry with Clinical Approach for Undergraduate Medical Students by Poonam Agrawal, 1st edition, CBS Publishers, 2020.
18. Essentials of Diagnostic Surgical Neuropathology by Chitra Sarkar, 1st edition, Thieme Publishers, 2017.
19. Concise Haematology by Sunita Sharma, 1st edition, CBS Publishers, 2018.
20. Essentials of Gross Pathology by Ila Tyagi, 1st edition, CBS Publishers, 2017.
21. Microbiology for Nurses by Seema Sood, 3rd edition, Elsevier, 2013.
22. Medical Pharmacology for Medical Students by Padmaja Uday Kumar, 6th edition, CBS Publishers, 2020.
23. Howkins & Bourne Shaw's Textbook of Gynaecology by VG Padubidri and SN Daftary, 17thedition, Reed Elsevier India Pvt Ltd, 2018.
24. Management of High Risk Pregnancy, A Practical Approach by SS Trivedi, 2nd edition, Jaypee Brothers Medical Publishers, 2016.
25. https://www.fortishealthcare.com/doctor/dr-suneeta-mittal-1978 (last accessed on 11/12/2020)
26. Step by Step Non-Descent Vaginal Hysterectomyby Neerja Goel, 3rd edition,Jaypee Brothers Medical Publishers, 2018.
27. FOGSI Focus Abnormal Placentation by Jyotsna Suri, 1st edition, Jaypee Brothers Medical Publishers, 2020.
28. Parson's Diseases of Eye by Ramanjit Sihota and Radhika Tandon, 22nd edition, Elsevier, 2014.
29. Postgraduate Ophthalmology by M Vanathi and Zia Chaudhuri, 2nd edition, Jaypee Brothers Medical Publishers, 2020.
30. Diseases of Ear, Nose and Throat and Head and Neck Surgery by PL Dhingra, Shruti Dhingra and Deeksha Dhingra, 7th edition, Elsevier, 2019.
31. Synopsis of Dermatology and Sexually Transmitted Diseases by Neena Khanna, 6th edition, Elsevier, 2019.
32. https://en.wikipedia.org/wiki/Anandi_Gopal_Joshi (Last accessed on 11/12/2020

Table 1: List of women authors with popular textbooks

Subject	Women Authors	Popular Books
Anatomy	Dr. Krishna Garg	Textbook of Histology
	Dr.Neeta Kulkarni	Clinical Anatomy: A Problem Solving Approach
	Dr. Rani Kumar	Textbook of Human Embryology
	Dr. Veena Bharioke	Textbook of Human Histology
	Dr. Subhadra Devi Velichety	Inderbir Singh's Human Embryology
	Dr. Mrudula Chandrupatla	Concise Anatomy
	Dr. Daksha Prashant Dixit	Textbook of Human Embryology for Undergraduate and Postgraduate Students
	Dr. Renu Chauhan	Essentials of Genetics
Physiology	Dr. Surrinder Himmat Singh	Principles of Human Physiology Courses in Nurses and Allied Health Sciences
	D. Indu Khurana	Textbook of Medical Physiology
Biochemistry	Dr. Sreekumari S	Textbook of Biochemistry for Medical Students
	Dr. Veena Singh Ghalaut	Manual of Biochemistry for MBBS
	Dr. Poonam Agrawal	Concepts in Biochemistry with Clinical Approach for Undergraduate Medical Students
Pathology	Dr. Chitra Sarkar	Essentials of Diagnostic Surgical Neuropathology
	Dr. Sunita Sharma	Concise Haematology
	Dr. Vandana Puri	Complete review of Pathology and Haematology for NBE
	Dr. Ila Tyagi	Essentials of Gross Pathology
Microbiology	Dr. Seema Sood	Microbiology for Nurses
Pharmacology	Dr. Padmaja Udaykumar	Medical Pharmacology for Medical Students
Obstetrics and Gynaecology	Dr. VG Padubidri	Shaw's Textbook of Obstetrics and Gynaecology
	Dr. SS Trivedi	Management of High Risk Pregnancy, A Practical Approach
	Dr. Sudha Salhan	Textbook of Obstetrics and Gynaecology
	Dr. Suneeta Mittal	Obstetrics and Gynaecology, The 5 Minute Consult 2020
	Dr. Shakuntala Baliga	Textbook of Colposcopy
	Dr. Neerja Goel	Step-by-step Non Descent Vaginal Hysterectomy
	Dr. Mala Arora	First Trimester in Pregnancy
	Dr. Pratima Mittal	Practical Approach to Critical Care Obstetrics
	Dr. Manju Puri	Clinical Methods in Obstetrics and Gynaecology
	Dr. Surveen Ghumman	Step-by-Step Ovulation Induction
	Dr. Jyotsna Suri	FOGSI Focus: Abnormal Placentation
	Dr. Asmita Rathore	Hormones in Obstetrics and Gynaecology (FOGSI)
	Dr. Pikee Saxena	Clinical Guide for Management of Diabetes in Pregnancy and Postpartum Haemorrhage

Ophthalmology	Dr. Ramanjit Sihota and Dr. Radhika Tandon	Parson's Diseases of the Eye
	Dr. Kirti Singh	Contact Lenses: Principle and Practice
	Dr. M Vanathi	Undergraduate Ophthalmology
	Dr. Zia Chaudhuri	Postgraduate Ophthalmology
Ear, Nose & Throat	Dr. Shruti Dhingra	Diseases of Ear, Nose and Throat & Head and Neck Surgery
Dermatology	Dr. Neena Khanna	Synopsis of Dermatology and Sexually Transmitted Diseases
Anaesthesia	Dr. Usha Kiran	Textbook of Vascular Anaesthesia

Global Journal of Medical Research: K
Interdisciplinary
Volume 21 Issue 1 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Awareness and Willingness to Participate in Community Health Insurance Scheme among Household Heads in Rivers State Nigeria

By Benjamin O Osaro, Ishmael D Jaja & Tondor C Uzosike

Rivers State University

Abstract- *Background:* Community-Based Health Insurance scheme (CBHI) can guarantee access to quality healthcare services and increase universal health coverage. Enrolments for this scheme in Nigeria is however low. This study sought to assess the awareness and willingness of households in Rivers State to participate in CBHI.

Methodology: This is a cross-sectional descriptive study done in Rivers State, Nigeria. A total of 332 heads of households recruited through multistage sampling and gave written informed consent were interviewed using a pretested interviewer-administered questionnaire. Participants gave information on their socio-demography, awareness and willingness to participate in CBHI and reasons for unwilling to participate. Data were analyzed using IBM SPSS Statistics 22 and results were presented in frequency tables. Chi-square test was done at $P < 0.05$.

Keywords: *awareness, willingness to participate, community-based health insurance scheme, rivers state.*

GJMR-K Classification: *NLMC Code: W 160*

Strictly as per the compliance and regulations of:

Awareness and Willingness to Participate in Community Health Insurance Scheme among Household Heads in Rivers State Nigeria

Benjamin O Osaro [α], Ishmael D Jaja [σ] & Tondor C Uzosike [ρ]

Abstract- Background: Community-Based Health Insurance scheme (CBHI) can guarantee access to quality healthcare services and increase universal health coverage. Enrolments for this scheme in Nigeria is however low. This study sought to assess the awareness and willingness of households in Rivers State to participate in CBHI.

Methodology: This is a cross-sectional descriptive study done in Rivers State, Nigeria. A total of 332 heads of households recruited through multistage sampling and gave written informed consent were interviewed using a pretested interviewer-administered questionnaire. Participants gave information on their socio-demography, awareness and willingness to participate in CBHI and reasons for unwilling to participate. Data were analyzed using IBM SPSS Statistics 22 and results were presented in frequency tables. Chi-square test was done at $P< 0.05$.

Results: Only 126 (38.0%) participants had the awareness of CBHI. Those willing to participate or enroll other family members were 272 (82.5%) and 174 (63.5%) respectively with 157 (57.3%) willing to pay a premium of ₦2, 000.00 or less either once or twice a year or monthly. Associated with the willingness to participate in CBHI were awareness ($P = 0.037$), the number of living children ($P = 0.025$), partner's level of education ($P = 0.041$) and experience of catastrophic health expenditure ($P< 00001$). Financial constraints and lack of trust were the most common reasons for unwillingness to participate in CBHI.

Conclusion: The awareness of CBHI in Rivers State is low but the willingness to participate is high. Community engagement to increase awareness of CBHI should be strengthened.

Keywords: awareness, willingness to participate, community-based health insurance scheme, rivers state.

I. Introduction

Although life expectancy at birth has improved globally, disparity still exists between the high-income countries on one side and the low- and medium-income countries (LMIC) on the other side. These improvements in life expectancy at birth has been attributed inter alia to improvements in standard of living, health care services delivery and its access.[1] In sub-Saharan Africa, life expectancy at birth is currently at 59.5years.[1] This however, is below that in parts of the developed and high-income countries of the world where life expectancy is over 70.5years.[1] Recent discourse to improve inequalities in health among nations and within countries has centered on increasing universal health coverage in order to improve access to and utilization of high quality and efficacious healthcare services.[2,3] Health care cost for majority of people in developing countries like Nigeria has relied on out-of-pocket (OOP) expenditures.[4] This is occasionally catastrophic and accounts for over 70% of the total family's income, an expenditure far above the recommended 30%.[5 – 7] Most countries of the world have introduced social health insurance programs aimed at ensuring access to healthcare when needed without unduly exposing individuals and families to financial hardship or impoverishment. These forms of insurance hinge on the pooling of funds and resources from enrollees and sharing of financial risk in the event of illnesses especially of catastrophic nature.[8 - 10]In Nigeria the National Social Health Insurance scheme was implemented in 2005 six years after the enactment of its enabling law (NHIS Act 35 of 1999).[11 – 13] This scheme made provision for the enrolment of the different subpopulations in the country through organized formal sector insurance schemes like the Public Sector and Organized Private Sector Employees and Tertiary Institutions Health Insurance Scheme (TSHIP) as well as the informal sector health insurance schemes like the Urban Self-Employed Individuals and Rural Community dwellers insurance schemes amongst others.

In Nigeria and other countries in Africa, the informal sector constitutes the majority population. [14] These reside in rural settings where healthcare service is of low quality and access also poor with attendant adverse consequences on their health, dignity and ability to earn income.[6,15] Health insurance systems that provides financial protection from catastrophic healthcare needs of this sector is community-based health insurance: a system of pooling of funds from individuals and families in the community on the based on solidarity to provides healthcare services to members of the community.[8,16] Enrolment in Community Health Insurance is voluntary however, to prevent adverse selection and decapitation of the insurance scheme, enrolment is in groups of at least 500 persons who are residents in the community and who may/or not share a

Corresponding Author α: Department of Community Medicine, Rivers State University, Port Harcourt, Nigeria.
e-mails: benjamin.osaro@ust.edu.ng, boosaro@hotmail.com
Author σ ρ: Department of Community Medicine, Rivers State University, Port Harcourt, Nigeria.

similar occupation. Premium is usually a flat sum, not risk-related and payment is also flexible on a monthly or seasonal basis to encourage en masse enrolment.[7,13] Payment of premium guarantees enrollees and/or their dependents access to a minimum benefit package which covers their basic health needs for treatment of malaria, typhoid fever, tuberculosis, diarrhea, etc.[10,17]

Although the formal sector insurance scheme has made significant improvement in its enrolment since inception, the informal sector rural community health insurance scheme targeting individuals and families in rural settings, trails far behind with an enrolment rate of 2% as of 2014.[3] Studies have reported an abysmally low level of awareness of CBHIS of 3.9% and enrolment of 2.9% among artisans in Abakiliki Nigeriadespite their effectiveness in ensuring financial risk protection from catastrophic health expenditures to individuals and families in rural communities.[11-18] Furthermore, the willingness to participate in CBHIS ranged from 69.3% - 97.0% among different populations in Nigeria[6,8,9,11,19] while the willingness to a pay premium of between ₦400 – ₦5000 per annum per person for any form of voluntary health insurance also varies among communities, ranging from 28% in Kwara State to 82.0% in Kaduna State, Nigeria.[2,5-7,9,11,17] Participation is largely determined by such factors like age and sex of household head, size of household, previous experience of borrowing to fund healthcare, level of education and income.[5,8,9,] Very few CBHI schemes are in operation in Nigeria despite the legal framework provided by the NHIS Act 99.[17] The willingness to participate in CBHI schemes in communities in Rivers State Nigeria is yet to be assessed therefore this study seeks to determine knowledge, willingness and barriers to participation in community health insurance schemes by individuals and families in communities in Rivers State.

II. Methods

a) Study setting

This study was carried out in Rivers State, Nigeria located in the Niger Delta region of Nigeria. Rivers State is comprised of 23 Local Government Areas (LGAs) grouped into three Senatorial Districts. Each of the LGA is delineated into ten or more political wards. Twenty of them are rural. Healthcare services in each LGA are provided at the various Health posts, Chemist/Patent Medicine Vendors, Primary Healthcare Centres, privately owned health clinics and a General Hospital which doubles as a referral centre. There are two tertiary level healthcare centres in Rivers State which receive referrals from the peripheral hospitals.

b) Study design and sampling

This study was a cross sectional descriptive study using head of households aged 18 years and above, and resident in Rivers State, Nigeria. The minimum sample size was determined as 327 using the Leslie Fischer's formula[11] $n = Z^2pq/d^2$; where n = minimum sample size; Z = Level of statistical significance = 95% (1.96); P = the estimated proportion of those willing to participate in CBHIS = 69.3%[9] = 0.693; $q = 1-p = 0.307$; d = Precision/error tolerated (5%) = 0.05. However, this was increased to 360 to accommodate for non-response of 10%.

A multistage sampling method was adopted in recruiting participants for this study. One LGA was selected in each of the three Senatorial Districts in the State. In each selected LGA, ten political wards were selected and finally 12 heads of households who are 18 years and above from each political ward.

c) Data collection

Data were collected from participants who gave consent using a pretested interviewer-administer questionnaire. Participants provided information on socio-demography, family's illness experiences and health expenditure, awareness and knowledge on CBHIS, willingness to participate in CBHIS, the amount they are willing to pay as premium and reasons for unwillingness to participate in CBHIS.

d) Data analysis

The collected data was analyzed using IBM SPSS Statistics 22 and results presented in frequency tables. The primary outcome variable: Willingness to participate in CBHIS, was assessed as the proportion of participants who were willing to enroll for CBHIS. However how much participants were willing to pay as premium was determined using the contingency valuation method where the amount was bided from the highest amount of ₦5,000.00 to the lowest amount respondent is willing to pay.[5] Secondary outcome variable: awareness of CBHIS' was determined as the proportion of respondents who have heard about CBHIS, knowledge of CBHIS, was determined with a 10-point knowledge score. The knowledge of CBHIS by participants was categorized as poor (score 1 – 4), good (score 5 – 6) or very good (score 7 – 10). The financial burden of respondents was assessed as catastrophic if a household expenditure on health involves spending all their monthly income, savings, donations, borrowings and/or sales of assets.[20]

Chi-square (X^2) test was done to determine the association of willingness to participate in CBHIS on one hand and socioeconomic variables and knowledge of CBHIS on the other hand. The level of statistical significance was set at $P < 0.05$.

III. Ethical Approval

The Rivers State Health Research Ethics Committee approved this study. Participants were fully informed of the objectives of the study, assured of the confidentiality of their responses and that participation is voluntary. Written informed consent were obtained from participants before data collection.

IV. Result

A total of 332 head of households participated in this study out of 360 selected. Majority of the participants were 35 – 44 years of age (n = 112; 33.7%) and employed by Government (n = 79; 23.8%). Nearly three-quarter of them are married (n = 242; 72.9%) with more than half attaining tertiary education (n = 171; 51.5%) Table 1.

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (n = 332)	Percent
Age (years)		
<25	19	5.7
25 – 34	76	22.9
35 – 44	112	33.7
45 – 54	66	19.9
55 – 64	26	7.9
>64	33	9.9
Mean (SD)	40.45 (11.08)	
Sex		
Male	178	53.6
Female	154	46.4
Marital status		
Married	242	72.9
Separated/divorced	9	2.7
Widow	11	3.3
Single	70	21.1
Level of education		
Primary	23	6.9
Secondary	132	39.8
Tertiary	171	51.5
None	6	1.8
*Partner's level of education**		
Primary	29	11.2
Secondary	108	41.7
Tertiary	115	44.4
None	7	2.7
Occupation		
Farming	30	9.0
Fishing	22	6.6
Trading	67	20.2
Government employee	79	23.8
Private sector employee	70	21.1
Unemployed	64	19.3
Partner's occupation		
Farming	40	12.0
Fishing	10	3.0
Trading	68	20.5
Government employee	47	14.2
Private sector employee	53	16.0
Unemployed	114	34.3

**missing values (n = 259)*

Nearly two-thirds of the participants earn less than the minimum wage of ₦30,000 monthly (n = 199; 59.9%) with 128 of them (38.6%) having 3 – 4 children. (Table 2)

Table 2: Income and family size distribution of respondents

Variables	Frequency (n = 332)	Percent
*Average monthly Income (₦)**		
<30,000	199	59.9
30,000 – 50,000	60	18.2
50,001 – 70,000	19	5.7
70,001 – 90,000	18	5.4
90,001 – 110,000	13	3.9
110,001 – 130,000	11	3.3
130,001 – 150,000	6	1.8
>150,000	6	1.8
No of living children		
0	2	0.6
1-2	93	28.0
3-4	128	38.6
≥5	109	32.8
Mean (SD)	3.14 (1.53)	
No of male children		
0	25	7.5
1-2	209	63.0
3-4	35	10.5
≥5	63	19.0
Mean (SD)	1.57 (0.93)	
No of female children		
0	40	12.0
1-2	182	54.8
3-4	42	12.7
≥5	68	20.5
Mean (SD)	1.59 (1.158)	

**skewed data (modal income = N20,000)*

Two hundred (60.2%) of the participants had 1 – 2 members of the family experiencing illness episodes within the last 12 months. Among these, majority (n = 121; 42.0%) attend Government hospitals/dispensaries for treatment. Only 32 (9.6%) participants are enrolled on any health insurance scheme. (Table 3)

Table 3: Family illness experience and enrolment on Insurance schemes

Variables	Frequency (n = 332)	Percent
Family members sick in the last 12 months		
0	44	13.3
1-2	200	60.2
3-4	67	20.2
≥5	21	6.3
Mean (SD)	2.09 (1.44)	
*Where do you go for Rx when someone is sick (n = 288) **		
Prayer house	5	1.8
Chemist	118	41.0
Home remedies	7	2.4
Private clinics	30	10.4
Government hospitals/Dispensaries	121	42.0
Others	7	2.4
Enrolment in Insurance schemes		
Yes	32	9.6
No	300	90.4
*Type of Insurance schemes enrolled on (n = 32) ***		
Public sector and organized private sector employee Social insurance scheme	11	34.3

Tertiary Institutions Social Health Insurance Scheme	2	6.3
Voluntary contribution Social Insurance Scheme	1	3.1
Rural Community Social Health Insurance Scheme	14	43.8
Children Under-five Social Health Insurance Scheme	4	12.5

** Participants who had illness experience ** Participants enrolled on an Insurance scheme*

Most (n = 164; 56.9%) of the participants spent up to ₦10,000 on the treatment of illnesses in the family. In 16 participants (5.6%), payment for treatment was defrayed by insurance scheme whereas in 178(61.8%), it was done with some of the family savings. Less than 20% had catastrophic expenditures (Table 4).

Table 4: Health expenditure and source of funding among participants who had illness experience

Variables	Frequency (n = 288)	Percent
Amount spent in last 12 months (₦)		
1 – 10,000	164	56.9
10,001 – 20,000	46	16.0
20,001 – 30,000	20	6.9
30,001 – 40,000	9	3.1
40,001 - 50,000	15	5.2
50,001 - 100,000	18	6.3
>100,000	16	5.6
*Mode of payment for treatment**		
paid for Rx with my Insurance Scheme	17	5.9
Paid for Rx with some of the family's savings	181	62.8
Paid with all the family savings**	24	8.3
Borrowed money to pay for treatment**	49	17.0
Sold family's property to pay for treatment**	53	18.4
Paid from donations from friends and other family support**	27	9.4

*Modal expenditure = ₦10,000.00; * multiple options; ** Catastrophic expenditure*

Only 126 (38.0%) of the respondents had the awareness of CBHI. Among these about half (n = 68; 54.0%) had very good knowledge of CBHIS and 38 (30.2%) had good knowledge. The commonest source of information on CBHIS were churches (n = 31; 24.6%) Table 5.

Table 5: Awareness and sources of information on CBHIS

Variables	Frequency (n = 332)	Percent
Awareness of CBHI		
Yes	126	38.0
No	206	62.0
*Knowledge of CBHIS**		
Very good	68	54.0
Good	38	30.2
Poor	20	15.8
*Sources of information on CBHI***		
Church	31	24.6
Friends	23	18.3
Hospitals/Clinics	19	15.1
Community leaders	17	13.5
Radio/TV	10	7.9
Club meetings	4	3.2
NGOs	2	1.6

** Participants who have awareness of CBHI ** multiple options*

Participants who were willing to enroll for CBHIS were 274 (82.5%). Among these 174 (63.5%) participants were willing to enroll other members of the family. Treatment of mild medical illnesses that do not require hospital admission was the most common service desired (n = 198; 72.3%). A total of 157 (57.3%) participants were willing to pay a premium of ₦2000 or less while 87(31.8%) participants were willing to pay premium once a year (Table 6).

Table 6: Willingness of participants to enroll for CBHI schemes

Variables	Frequency (n = 332)	Percent
Willingness to enroll in a CBHI		
Yes	274	82.5
No	58	17.5
*Willingness to enroll every member of the family**		
Yes	174	63.5
No	100	36.5
Desired services when enrolled$*		
Treatment of mild medical illnesses that do not require hospital admission	198	72.3
Treatment of serious medical conditions that require hospital admission	184	67.2
Surgeries	130	47.4
Delivery services	101	36.9
Immunization	106	38.7
Family planning	99	36.1
Antenatal care	97	35.4
*Amount participants are willing to pay (₦)**		
≤ 1000	78	28.5
1001 – 2000	79	28.8
2001 – 3000	49	17.9
3001 – 4000	30	10.9
4001 – 5000	35	12.8
>5000	3	1.1
Range	₦ 100 – ₦ 20,000	
Mode**	₦ 2000	
*Preferred method of payment**		
Weekly	8	2.9
Monthly	62	22.6
Quarterly	38	13.9
Twice a year	63	23.0
Once a year	87	31.8
Missing	16	5.8

** Participants willing to enroll for CBHIS; **Skewed data; $ multiple options*

Table 7 shows that there is a statistically significant association between willingness to enroll for CBHI scheme and awareness of CBHI ($P = 0.037$), the number of living children ($P = 0.025$), partner's level of education ($P = 0.04$), as well as the experience of catastrophic expenditures ($P < 0.0001$) but not with average monthly income ($P = 0.375$).

Table 7: Test of Association between willingness to enroll for CBHI scheme and outcome variables

Variables	Willingness to enroll for CBHI scheme		X^2 (*P*-value)
	Yes	No	
Awareness of CBHI			
Yes	111	15	4.349 (0.037)*
No	163	43	
Knowledge of CBHI			
Very good	62	6	1.922
Good	33	5	(0.382)
Poor	16	4	
No of living children			
0	2	0	
1 - 2	80	13	
3 - 4	112	16	9.712

≥5	80	29	(0.025)*
Average monthly income (₦)			
<30000	162	37	
30000 - 50000	48	12	
50001 - 70000	16	3	
70001 - 90000	13	5	
90001 - 110000	12	1	7.535
110001 - 130000	11	0	(0.375)
130001 - 150000	6	0	
>150000	6	0	
Level of education			
Primary	19	4	
Secondary	110	22	
Tertiary	141	30	1.107
None	4	2	(0.695)
Partner's level of education			
Primary	25	4	
Secondary	90	18	
Tertiary	105	10	8.362
None	4	3	(0.041)*
Occupation			
Farming	24	6	
Fishing	19	3	
Trading	59	8	5.291
Government employee	62	17	(0.381)
Private sector employee	61	9	
Unemployed	49	15	
Occupation of partner			
Farming	30	10	
Fishing	8	2	
Trading	59	9	
Government employee	39	8	
Private sector employee	49	4	7.662
Unemployed	89	25	(0.176)
Age (years)			
<25	16	3	
25 – 34	64	12	4.639
35 – 44	93	19	(0.461)
45 – 54	49	17	
55 – 64	23	3	
>64	29	4	
Experience of catastrophic expenditure			
Paid with all the family savings	19	5	74.971
Borrowed money to pay for Rx	43	6	(< 0.00001)*
Sold family's property to pay for Rx	7	46	
Paid from donations from friends and other family support	23	4	

**P < 0.05 (statistically significant)*

The commoner reasons participants were not willing to participate in a CBHI scheme were 'lack of regular income to pay or renew premium' (n =17; 29.3%) and 'I don't believe that I will be treated when I am sick without payment' (n = 16; 27.6%). 'Hospital is far away' was the least common reason for not willing to participate CBHI scheme (n = 1; 1.7%) Table 8.

Table 8: Reason for not willing to participate in CBHI scheme

Reason for not willing to participate in CBHI scheme	Frequency (n = 58)	Percent
Lack of regular income to pay or renew premium	17	29.3
I don't believe that I will be treated when I am sick without payment	16	27.6
Not interested in Insurance	9	15.5

I may not meet up the requirements for enrolment like enrolling everybody in my family.	6	10.3
Services rendered are of poor quality	5	8.6
I will lose my premium if I don't fall sick	5	8.6
No support from wealthy people in the community	5	8.6
Timing of payment of premium may not be conducive	4	6.9
My family is too large to pay a premium for everybody	3	5.2
Not aware of the scheme	3	5.2
My culture forbids saving money for illness	1	1.7
Hospital is far away	1	1.7

V. Discussion

One mechanism for financing of healthcare services in low- and medium-income countries of the world, where funding of healthcare services is poor, is Community-based health insurance. In Nigeria this model has been integrated into the National Social Health Insurance Schemes in order to improve access to healthcare services for the informal sector and the poor.[6,15] This study is aimed at determining awareness of CBHI and the willingness of head of households in Rivers State Nigeria to participate in it. The awareness of CBHI is low in Rivers State Nigeria. In this study about one-third (38%) of respondents have heard about CBHI. Studies previously conducted in some parts of Nigeria also show that awareness of CBHI is still low. For instance, among artisans in Abakiliki, Nigeria only 3.9% of them are aware of CBHI.[11] Residents in a capital city of Nigerian who have the awareness of CBHI were only 13% [6,]while in a suburb in Lagos, 19.8% of residents were aware of CBHI.[21] Furthermore, a similar finding was reported in a health District in Douala Cameroun, where 25.6% of informal workers were aware of the existence of CBHI schemes.[22] The level of awareness of CBHI scheme has also being reportedly high in other populations. For instance 52.2% and 91% of participants, in studies done in North-western Nigeria and in Tanzania respectively, have the awareness of CBHI.[9, 18] Awareness of CBHI in most developing countries is low probably because of poor mass media and community sensitization campaigns promoting health insurance schemes particularly in rural areas.[21,22] The commonest sources of information on health insurance in this study were churches (24.6%) and friends (18.3%). Other studies reported common sources of information on CBHI as radio, friends, community leaders and television among household heads in FCT Nigeria, [6,18]whereas among residents in a Lagos suburb it was community sensitization and community members.[21] This study found that among respondents who have awareness of CBHI, more than four-fifth (84.2%) have at least a fair knowledge of CBHI. Good knowledge of CBHI was similarly high (71%) among respondents in the North Central Zone of Nigeria but low (37%) among residents in a suburb of Lagos.[21,23] Enrolment for CBHI is low among households in Nigeria and elsewhere. Only 9.6% of households in this study were currently enrolled in a health insurance program. The majority of them (43.0%) enrolled in rural CBHI schemes like the Obio Cottage health insurance in Port Harcourt and Community Health Insurance Scheme in Bonny. Other studies reported lower enrolment into CBHI schemes. For instance, CBHI enrollees were 6.7% in FCT Nigeria, 4.5% in a suburb in Lagos Nigeria, 2.9% among artisans in Abakiliki and 1.2% among informal sector workers in Douala, Cameroun.[6,11,21,22]

Although enrolment for CBHI scheme is low in this study, over four-fifths (82.5%) of household heads have the willingness to enroll themselves in CBHI scheme while approximately two-thirds (63.5%) were willing to enroll members of their households. Related studies have similarly reported a very high willingness of household heads to enroll in a CBHI scheme. In these studies more than three - quarters of the respondents were willing to enroll for CBHI schemes in Nigeria [6,23]and elsewhere [2,8,22] whereas in others, approximately two-thirds of heads of households were willing to enroll in CBHI schemes.[7,21] When out of pocket expenditure on health is catastrophic, individuals and families become impoverished. This further increases the risk of poor health as well as denial of access to quality healthcare services.[5] Income and educational level of enrollees have been reported to influence their willingness to enroll for an insurance scheme.[2,9]The poor who have experienced catastrophic health expenditure because of their low ability to pay for health services at points of care, better appreciate the benefits of a community health insurance scheme and are more willing to enroll in CBHI schemes.[8] This study found no statistically significant association between willingness to participate in CBHIS and income levels of respondents ($P = 0.375$) or the level of education of respondents ($P = 0.7$) as reported in another study.[9] However the association between respondents' willingness to participate in CBHI and having a catastrophic health expenditure ($P< 0.00001$), number of living children ($P = 0.025$),

awareness of CBHI by respondents (P = 0.037) and level of education of their partners (P = 0.041) were statistically significant. Kibret et al similarly reported that households who borrowed to pay for healthcare services were 2-7 times more willing to enroll for CBHI.[8] Sixty percent of heads of households in this study earn less than ₦30, 000.00 monthly, the minimum wage in Nigeria; more than half (57.0%) had spent on the average ₦10,000.00 on healthcare expenses in the last 12 months and only 6.0% paid for healthcare services through an insurance scheme. Furthermore, the knowledge of the benefits of health insurance programs by individuals in the community is key to their decisions to enroll in CBHI schemes. Approximately half (52.0%) of the respondents and 44.0% of their partners have tertiary level education. Individuals who have had catastrophic health expenditure as well as those with more education can appraise the risk-benefit packages of a health insurance scheme better than the less educated and thus more willing to participate.[5,11]Such catastrophic experiences coupled with the high level awareness of CBHI of respondents and of education of their partners who possibly play roles in decisions on enrolment may likely account for the high level of willingness to enroll for CBHI schemes by respondents in this study irrespective of their incomes.[2]

Most of the respondents were willing to pay a premium of ₦2, 000.00 per head per annum (range ₦ 100 - ₦20,000.00) for treatment of mild medical conditions on an outpatient basis as well as serious conditions requiring hospitalization. This finding is comparable to the annual premium reported in other studies as prepayment for healthcare services which may or not include surgery and other treatments requiring hospitalization.[4,11,17] In terms of flexibility of payment of premium, majority of the respondents in this study preferred once a year payment followed by twice a year or monthly. In another study however, the monthly payment pattern was the most preferred method among informal sector workers.[22] Although this study did not assess the factors that determine how much enrollees are willing to pay, other studies found age and level of education of household head, monthly income, farm size or wealth status of the family, household size as determinants of amount enrollees were willing to pay. These factors may be due to the awareness of and actual experience of catastrophic expenditures following illness events within the family.[2,17,23]

Among the reasons respondents in this study gave for their unwillingness to enroll for CBHI, financial constraints (lack of regular income to pay and renew premium) and distrust for the insurance scheme (I don't believe that I will be treated when I am sick without payment) were the commonest. In similar studies, lack of awareness, trust, interest, altruism (an attitude of viewing premium as a contribution to the success of CBHI) and the solidarity principle (an attitude of 'somebody else will use up my premium if I don't use it'), etc have also been reported as 'demand side' barriers to enrolment for insurance schemes. [6,11,21]

VI. Conclusion

Although the awareness of Community-Based Health Insurance is low in Rivers State, knowledge of CBHI is high among those with awareness. Enrolment is also low however, majority of the people have the willingness to enroll themselves and members of their family.

A statistically significant association was found between willingness to enroll for CBHIS and awareness of CBHIS, number of living children, level of education of partner and the experience of catastrophic health expenditure. Community engagement programs to increase the awareness of CBHIS should be implemented to increase enrolment and improve access to high-quality healthcare services.

VII. Limitation of the Study

Information analyzed were obtained from the responses of participants. These responses are dependent on their memory recall which may introduce information bias.

Conflict of Interest

Nil

Financial support

This research was funded entirely by the researchers.

References Références Referencias

1. United Nations, Department of Economic and Social Affairs, Population Division (2017). World Mortality Report 2015 – Highlights (ST/ESA/SER.A/382).
2. Minyihun A, Gebregziabher MG and Gelaw YA. Willingness to pay for community-based health insurance and associated factors among rural households of Bugna District, Northeast Ethiopia. BMC Res Notes. 2019; 12:55
3. Christian Aid 2015. A Review of Community-Based Health Insurance Schemes: Lessons from Nigeria and Ghana. Abuja, Nigeria: Christian Aid.
4. Onwujekwe et al.: Investigating determinants of out of-pocket spending and strategies for coping with payments for healthcare in southeast Nigeria. BMC Health Services Research 2010; 10:67.
5. Ogundeji YK, Akomolafe B, Ohiri K, Butawa NN Factors influencing willingness and ability to pay for social health insurance in Nigeria. PLoS ONE. 2019; 14(8): e0220558. https://doi.org/10.1371/journal.pone.0220558
6. Adedeji AS, Doyin A, Kayode OG, and Ayodele AA. Knowledge, Practice, and Willingness to Participate in Community Health Insurance Scheme among

Households in Nigerian Capital City. Willingness to Participate in Community Health Insurance Scheme among Households in Nigerian Capital City," Sudan Journal of Medical Sciences. 2017; 12 (1): 9–18. DOI 10.18502/sjms.v12i1.854.
7. Shafie AA, Hassali MA. Willingness to pay for voluntary community-based health insurance: Findings from an exploratory study in the state of Penang, Malaysia. Social Science & Medicine. 2013; 96: 272-276.
8. Kibret GD, Leshargie CT, Wagnew F and Alebel A. Willingness to join community based health insurance and its determinants in East Gojjam zone, Northwest Ethiopia. BMC Res Notes. 2019; 12:31.
9. Abdulganiyu G, Muhammad K, Ibrahim U, Suleiman HH, Lawal BK. Awareness and Willingness to Pay for Community Based Health Insurance Scheme in North-Western Nigeria. Journal of Pharmaceutical and Health Sciences. 2018;6(2): 139-147.
10. Doetinchem O, Carrin G, Evans D. Thinking of introducing social health insurance? Ten questions. World Health Report (2010) Background Paper, No 26.
11. Azuogu BN, Eze NC. Awareness and Willingness to Participate in Community Based Health Insurance among Artisans in Abakaliki, Southeast Nigeria. Asian Journal of Research in Medical and Pharmaceutical Sciences. 2018; 4(3): 1-8. Article no.AJRIMPS.42839
12. Odeyemi IAO. Community-based health insurance programmes and the national health insurance scheme of Nigeria: challenges to uptake and integration. International Journal for Equity in Health 2014 13:20.
13. Obiajulu Nnamuchi. The Nigerian Social Health Insurance System and the challenges of access to health care: an antidote or a white elephant? Electronic copy available at: http://ssrn.com/abstract=1138276
14. Wiesmann D, Jütting J. The Emerging Movement of Community Based Health Insurance in Sub-Saharan Africa: Experiences and Lessons Learned. afrika spectrum. 2000; 35:2.
15. Johannes Jütting. Health Insurance for the poor? Determinants of participation in Community-based Health Insurance Schemes in Rural Senegal. OECD Development Centre Working Paper No. 204. 2003; 2.
16. Mukangendo M, Nzayirambaho M, Hitimana R, and Yamuragiye A. Factors Contributing to Low Adherence to Community-Based Health Insurance in Rural Nyanza District, Southern Rwanda. Journal of Environmental and Public Health. 2018.Article ID 2624591: 1- 9.
17. Babatunde RO, Oyedeji OA, Omoniwa AE, Adenuga AH. Willingness-To-Pay For Community Based Health Insurance By Farming Households: A Case Study of Hygeia Community Health Plan In Kwara State, Nigeria. Trakia Journal of Sciences. 2016; 3: 281-286.
18. Kapologwe NA, Kagaruki GB, Kalolo A, Ally M, Shao A, Meshack M, Stoermer M, Briet A, Wiedenmayer K, Hoffman A. Barriers and facilitators to enrollment and re-enrollment into the community health funds/Tiba Kwa Kadi (CHF/TIKA) in Tanzania: a cross-sectional inquiry on the effects of socio-demographic factors and social marketing strategies. BMC Health Services Research. 2017; 17:308.
19. Azuogu BN, Madubueze UC, Alo C, Ogbonnaya LU, Ajayi NA. Level of awareness, and factors associated with willingness to participate in the National Health Insurance Scheme among traders in Abakaliki main market, Ebonyi State, Nigeria. Afr J Med Health Sci 2016; 15:18-23.
20. Hajizadeh M and Nghiem HS Out-of-pocket expenditures for hospital care in Iran: who is at risk of incurring catastrophic payments? Int J Health Care Finance Econ. 2011. 11; (4):267–285.
21. Yusuf HO, Kanma-Okafor OJ, Ladi-Akinyemi TW, Eze UT, Egwuonwu CC, Osibogun AO. Health Insurance Knowledge, Attitude and the Uptake of Community Based Health Insurance Scheme among Residents of a Suburb in Lagos, Nigeria. The West African Journal of Medicine. 2019; 36(2):103-111.
22. Noubiap JJN, Joko WYA, Obama JMN, Bigna JJR. Community-based health insurance knowledge, concern, preferences, and financial planning for health care among informal sector workers in a health district of Douala, Cameroon. Pan African Medical Journal. 2013; 16:17. doi:10.11604/pamj.2013.16.17.2279.
23. Banwat ME, Agbo HA, Hassan Z, Osagie IA, Ozoilo JU, Ogbonna C. Community Based Health Insurance knowledge and willingness to pay: a survey of a rural community in North Central zone of Nigeria. Jos Journal of Medicine. 2012; 6(1): 54-59.

Global Journal of Medical Research: K
Interdisciplinary
Volume 21 Issue 1 Version 1.0 Year 2021
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Radioactivity Properties of Natural Salts Proving a Strong Prophylaxis in Covid-19 Pandemic

By Dr. Alok Thakur

Abstract- Global data on Covid-19 pandemic morbidity/mortality from most of the rich and poor countries has baffled public healthcare professionals. Pathogenic mechanism of SARS-CoV-2 virus is still not clear even after about a year of pandemic sweeping the whole globe and killing more than 1.9 million deaths till writing of paper (08 January 2021). Socioeconomic status of populations seems to have played a vital role for the huge differences in mortality among various countries. It is strange that despite extremely unhygienic local environments, disadvantaged population fared much better in the Covid-19 pandemic in poor countries compared to the populations in developed countries having great healthcare infrastructure with the only exception being Japan. All circumstantial evidence points towards the difference in salts (natural or processed) consumed. Natural salts have many trace elements including radioactive elements. Radioactive radiations are known to inactivate pathogens.

Keywords: *prophylaxis; viral infection; natural salts; trace minerals; radioactive elements.*

GJMR-K Classification: *NLMC Code: WN 420*

Radioactivity Properties of Natural Salts Proving a Strong Prophylaxis in Covid-19 Pandemic

Dr. Alok Thakur

Abstract- Global data on Covid-19 pandemic morbidity/mortality from most of the rich and poor countries has baffled public healthcare professionals. Pathogenic mechanism of SARS-CoV-2 virus is still not clear even after about a year of pandemic sweeping the whole globe and killing more than 1.9 million deaths till writing of paper (08 January 2021). Socioeconomic status of populations seems to have played a vital role for the huge differences in mortality among various countries. It is strange that despite extremely unhygienic local environments, disadvantaged population fared much better in the Covid-19 pandemic in poor countries compared to the populations in developed countries having great healthcare infrastructure with the only exception being Japan. All circumstantial evidence points towards the difference in salts (natural or processed) consumed. Natural salts have many trace elements including radioactive elements. Radioactive radiations are known to inactivate pathogens.

It is hypothesized that Covid-19 mortality is inversely proportional to consumption of natural salts. This hypothesis successfully explains the huge differences in the mortality rates between the rich and the poor countries. Till date, no other hypothesis or scientific explanation has been put forward to explain huge mortality differences. The radioactivity properties make the natural salts an appealing prophylaxis against virus attacks.

Keywords: prophylaxis; viral infection; natural salts; trace minerals; radioactive elements.

I. Background

The whole world continued to face worst public health and economic catastrophe from the onslaught of Covid-19 pandemic over more than a year with no solution in sight so far. SARS-CoV-2 virus is one of the most virulent strains of coronavirus that has inflicted colossal hardships on the global population primarily in terms of untimely deaths of loved ones and huge financial losses. Economy of the whole world is jeopardised. Perpetual fear of death forced the human race to adopt new living normal on a global scale. There are several health disorders manifestations that resulted from the infected and uninfected populations and created additional healthcare burdens on an unprecedented scale. Frequent usage of sanitizers, and prolonged wearing of face masks caused many skin and health disorders especially mental disorders.

Author: Ph.D., Centre for Holistic Health, Cross 10, 8-Tapovan Enclave, Dehradun 248008, India. e-mail: aksthakur@gmail.com

Global data over a year on Covid-19 morbidity and mortality among most of the rich and poor countries baffled public healthcare professionals and doctors all over the world. The USA and the EU nations like the UK, France, Italy, and Spain reported morbidity/mortality per million several hundred times more than the poor or underdeveloped countries like India, Myanmar, Laos, Cambodia, Vietnam, Nepal and Afghanistan where morbidity/mortality is zero or significantly low. No explanation has come up till date for this huge difference in morbidity/mortality between the rich and poor countries.

According to the Johns Hopkins Coronavirus Resource Center data, the pandemic caused more than 88.5 million cases and 1.9 million deaths globally;[1] India reportedly had more than 10.4 million cases with death toll of 150,606 at the time of writing on by 08th January, 2021 and numbers are galloping with every passing day. Despite the vast global pool of healthcare knowledge no ideal treatment has been evolved so far. The virus has been found to affect almost all organs including the brain. Cases of blood clots and existence of virus in seminal fluid have also been increasingly reported thus affecting sustainability of the human race. Near absence or short life of antibodies in symptomatic subjects is a major cause of concern leading to frequent relapses and dimming the hope of any effective long term vaccine.

Stretched isolation and lockdowns resulted in separation from elderly parents and children and vice versa have caused elevated anxiety levels that led to onset of many non-communicable health disorders including suicides.[2] Reported spikes in suicides by individual and families for want of money and uncertain future including the suicide by 54 year old Thomas Schäfer, German finance minister, are causes of serious concern. Spurt in clinical manifestation of several non-communicable health disorders of unknown origin like mild to severe abdominal pain, hypo- and hypertension, disturbed sleep, myalgia, convulsions, mental disorders like compulsive obsessive disorder (COD), prolonged constipation, gastrointestinal (GI) disorders, skin disorders like stress rashes, warts and allergy, and many more are being reported from all over the world. Aggravation of pre-existed health disorders is also being reported.

a) *World Health Organization (WHO):*Several long lockdowns, face masks and social distancing as per the WHO guidelines could not impede increasing morbidity/mortality rates in developed countries despite robust healthcare infrastructure. Global healthcare experts and WHO have expressed draconian opinion that the virus is going to stay and all have to learn live with it. Thus, unlike earlier epidemics, Covid-19 pandemic is likely to make a paradigm shift in living protocol for next several years in absence of any inexpensive treatment or prophylaxis. On 13 July 2020, Director General of WHO warned "If basics are not followed, the only way this pandemic is going to go - it is going to get worse and worse and worse."[3] Now most of the healthcare experts talk about second wave of destruction.

b) The big question arises: Do we all have to live with face masks, social distancing, personal protective equipment (PPE) kits, compulsive use of sanitizers, lockdowns, work-from-home, on-line schools, no beach strolls, no enjoyment tours, no nightlife, no morning walk, no family celebrations, no religious gatherings and no friends gathering. These guidelines have already started showing dreaded picture of coming times. Nobody can predict the health outcome of such measures in the case of infants and toddlers. Already handful of deaths have been reported across the world on account of face masks and PPE kits.[4-6] Distress calls to specialists like psychiatrists, ophthalmologists, dermatologists, and cardiologists have increased 3-4 times. How long these precautions need to be taken? It should not have happened that in the process of defeating the virus global population fall victim to other long term morbidities and forget pre-pandemic life.

II. Materials & Methods

a) *Natural Salts:* Natural salts are basis for the study. Ancient system of Indian medicine *(Ayurveda)* associates many clinical and nutritional values to natural salts especially the pink Himalayan rock salt. These salts contains more than 85 micro-macro-minerals and trace elements (MMTE); some of these elements are radioactive capable of emitting α, β, and γ radiations.[7] Spectral analysis shows that Himalayan rock salt contains 86 elements including 12 radioactive elements besides sodium and chlorine (Table-1).

Table-1: Spectral analysis of Himalayan Rock Salt

S. No.	Element	Atomic Number	Concentration	S. No.	Element	Atomic Number	Concentration
1	Hydrogen	1	0.3 g/kg	45	Indium	49	<0.001 ppm
2	Lithium	3	0.4 g/kg	46	Tin	50	<0.01 ppm
3	Beryllium	4	<0.01 ppm	47	Antimony	51	<0.01 ppm
4	Boron	5	<0.001 ppm	48	Tellurium	52	<0.001 ppm
5	Carbon	6	<0.001 ppm	49	Iodine	53	0.01 g/kg
6	Nitrogen	7	<0.024 ppm	50	Cesium	55	<0.001 ppm
7	Oxygen	8	1.2 g/kg	51	Barium	56	1.96 ppm
8	Fluoride	9	<0.1 g/kg	52	Lanthanum	57	<0.001 ppm
9	Sodium	11	382.61 g/kg	53	Cerium	58	<0.001 ppm
10	Magnesium	12	0.16 g/kg	54	Praseodymium	59	<0.001 ppm
11	Aluminium	13	0.661 ppm	55	Neodymium	60	<0.001 ppm
12	Silicon	14	<0.1 g/kg	56	Promethium*	61	Unstable
13	Phosphorus	15	<0.1 ppm	57	Samarium	62	<0.001 ppm
14	Sulphur	16	1.24 g/kg	58	Europium	63	<3.0 ppm
15	Chloride	17	590.93 g/kg	59	Gadolinium	64	<0.001 ppm
16	Potassium	19	3.5 g/kg	60	Terbium	65	<0.001 ppm
17	Calcium	20	4.05 g/kg	61	Dysprosium	66	<0.4 ppm
18	Scandium	21	<0.0001 ppm	62	Holmium	67	<0.001 ppm
19	Titanium	22	<0.001 ppm	63	Erbium	68	<0.001 ppm
20	Vanadium	23	0.06 ppm	64	Thulium	69	<0.001 ppm
21	Chromium	24	0.05 ppm	65	Ytterbium	70	<0.001 ppm
22	Manganese	25	0.27 ppm	66	Lutetium	71	<0.001 ppm
23	Iron	26	38.9 ppm	67	Hafnium	72	<0.001 ppm
24	Cobalt	27	0,6 ppm	68	Tantalum	73	1.1 ppm
25	Nickel	28	0.13 ppm	69	Wolfram	74	<0.001 ppm
26	Copper	29	0.56 ppm	70	Rhenium	75	<2.5 ppm
27	Zinc	30	2.38 ppm	71	Osmium	76	<0.001 ppm
28	Gallium	31	<0.001 ppm	72	Iridium	77	<2.0 ppm
29	Germanium	32	<0.001 ppm	73	Platinum	78	0.47 ppm

30	Arsenic	33	<0.01 ppm	74	Gold	79	<1.0 ppm
31	Selenium	34	0.05 ppm	75	Mercury	80	<0.03 ppm
32	Bromine	35	2.1 ppm	76	Thallium	81	0.06 ppm
33	Rubidium	37	0.04 ppm	77	Lead	82	0.01 ppm
34	Strontium	38	0.014 g/kg	78	Bismuth	83	<0.01 ppm
35	Yttrium	39	<0.001 ppm	79	Polonium*	84	<0.001 ppm
36	Zirconium	40	<0.001 ppm	80	Astatine*	85	<0.001 ppm
37	Niobium	41	<0.001 ppm	81	Francium*	87	<1.0 ppm
38	Molybdenum	42	0.01 ppm	82	Radium*	88	<0.001 ppm
39	Technetium*	43	Unstable	83	Actinium*	89	<0.001 ppm
40	Ruthenium	44	<0.001 ppm	84	Thorium*	90	<0.001 ppm
41	Rhodium	45	<0.001 ppm	85	Protactinium*	91	<0.001 ppm
42	Palladium	46	<0.001 ppm	86	Uranium*	92	<0.001 ppm
43	Silver	47	0.031 ppm	87	Neptunium*	93	<0.001 ppm
44	Cadmium	48	<0.01 ppm	88	Plutonium*	94	<0.001 ppm

** Radioactive elements*

b) Data on morbidity/mortality has been taken from opensource centre of Johns Hopkins University[1] for the study. It has been further supplemented with the other reliable sources in digital and print media. Table-2 depicts mortality per million among the randomly picked 18 rich and the poor countries as on 8th January 2021; People's Republic of China was not considered due to quality of reported data:

Table-2: Mortality per million data for about a year up to 8th January 2021

Developed Countries	Mortalities	Under Developed Countries	Mortalities
The USA	1,127	Laos	0
The UK	1,153	Cambodia	0
France	1,023	Vietnam	0.35
Spain	1,105	Nepal	65
Belgium	1,716	Myanmar	51
Italy	1,279	Sri Lanka	10
Canada	437	Afghanistan	57
Russia	414	Pakistan	47
Japan	30	India	109

Note: China is not considered because of suspicious data.

c) Socioeconomic Status (SES) and dietary habits of natives in rich and poor countries were also studied to see if there is any bearing on pandemic strike and survival.

d) A passing reference to ethnicity has also been considered. An important input stems from the mortality of two affluent practicing Indian-American doctors in New Jersey, USA, in the first week of May 2020. For the purpose of study, a preliminary comparison was made with extreme poverty stricken subjects in India, Table-3:

Table-3: Comparisons between rich Indian-Americans and deprived class of native Indians

Parameters	New Jersey (USA) Doctors (n=2)	Extreme Rural Poor in India
Socioeconomic Status	High	Lowest
Hygiene	High	Lowest
Nutrition/food	Rich and balanced	Difficult two square meals
Health	Excellent	Undernourished
Healthcare	Access to state-of-art	Almost nil
Vulnerability	Low	High
SARS-CoV-2 Impact	Infected and succumbed	No case of infection reported so far
Salt type	Ultra refined table salt	Cheapest raw sea salt

e) *Earlier Study*[8]*:* The present study is supplemented by an earlier study made in 2015 on prevalence of non-communicable diseases (NCD) involving 314 subjects from 78 families comprising children and elderly population of both genders across India that indicated significant role of ultra refined table salt for the onset of NCD. The study was initiated during treatment of chronic diseases and subjects were

advised to switchover to natural salts. The group (n=314, median age = 53 years), except one family, voluntarily switched from ultra refined table salt (Sodium Chloride) to pink Himalayan rock salt and remaining one family of four (two adults and two children) switched to sea salt (being cheaper) due to financial constraints. Since outbreak of pandemic this study group has been expanded to 6713 subjects including infants and elderly over 90 years.

f) *Religious Practices:* Traditionally most of the Hindu population, during observation of fasts on religious events, consumes Himalayan rock salt in place of natural sea salts or ultra refined iodised table salt. On an average, a sizable majority of this adult population observes at least 5-6 fasts in a year and consume rock salt even if they are totally dependent on the pure sodium salt; its importance will be discussed later.

III. Hypothesis

Based on the clinical experience for almost a decade on root cause of increasing incidence and prevalence of non-communicable diseases and simultaneous observations on influenza like illness (ILI) and vector born morbidities, it is hypothesized that *SARS-CoV-2 morbidity/mortality is inversely proportional to consumption of natural salts or directly proportional to the pure sodium chloride table salt:*

SARS-CoV-2 Morbidity/Mortality α (Natural salts usage)$^{-1}$

or

SARS-CoV-2 Morbidity/Mortality α (Sodium Chloride usage)

The hypothesis is aimed to find an answer for the huge difference of morbidity/mortality in economically rich and poor countries, with special reference to Japan that has lowest morbidity/mortality among rich countries with the similar healthcare infrastructure.

IV. Discussions

a) Totality of observational evidence suggests that populations largely dependent on natural salts in poor countries fared significantly better in the Covid-19 pandemic than the populations dependent on highly processed refined pure sodium table salt in the rich countries. It is worth mentioning that most of the Japanese prefer natural salt known as 'SHIO' and has shown low morbidity/mortality compared to the EU nations and the USA despite similar healthcare infrastructures (Table-2).

b) *Disruption of Binding Mechanism:* A logical explanation for extremely low mortality/morbidity in the poor countries appears to have stemmed from the consumption of natural salts that provides better immunity against pathogen assault seen in the earlier study on account of presence of MMTE including radioactive elements.[7] Incidentally in the last 4-5 years, this study group has not experienced any morbidity like ILI or other vector-borne diseases like malaria, dengue, and Japanese Encephalitis. Since there is no Covid-19 mortality/morbidity case surfaced over a year in the study group spread over 27 hot spots across India, it can be safely concluded that the binding mechanism between the virus and ACE2 protein is not taking place. Though in infinitesimal quantities, α, β, and γ radiations from radioactive elements with large half-life cycles 10^3 to 10^7 years might had played a vital role in inactivating SARS-CoV-2 virus and resulted in the failure of binding of the SARS-CoV-2 virus RNA with receptor ACE2 cells. There could be three possible mechanisms at the cellular level:

a. Since γ rays are very powerful which can only be stopped by one meter thick concrete block, the aura of γ radiations generated from radioactive elements present in natural salt inactivates the virus outside the human body, or,
b. Presence of trace radioactive elements inactivates the virus through modifications in the virus envelope or RNA inside the body, and/or
c. Impact of MMTE on binding mechanism.

Inactivating effects of radioactive radiations on viruses were studied in the past.[9,10]It seems that even occasional intake of natural rock salt provided enough radioactive radiations to inactivate attacking viruses and thus enable the body to fight onslaught of pathogens successfully. No other explanation supports such a low morbidity/mortality in India where 65.97% of 1.35 billion disadvantaged population lives in villages and is deprived of adequate nourishment with little or no modern healthcare system.

c) *Radioactivity processes in human body:* Host of radioactive elements found in human body play very critical role in many metabolic functions e.g. iodine for thyroid. These radioactive elements ^{238}U, ^{234}U, ^{232}Th, ^{210}Po, ^{210}Pb, ^{40}K, ^{226}Ra, ^{228}Ra, ^{14}C, ^{7}Be, ^{22}Na, ^{137}Cs and ^{90}Sr enters the body mostly though dietary route and many others listed exclusively in Table-1. The concentration of the gamma emitting radionuclides, except for ^{40}K, in human is so small that their detection is difficult.[11,12] On natural decay radioactive elements emit α, β, and γ radiations and get transformed into secondary radionuclides or daughter nuclides and granddaughter nuclides and so on emitting radiations till radioactive

nuclide attains stability. Most of the parent and daughter nuclide have long half life (Table-4) and so keep on radiating radioactive emissions throughout the human life.

Table-4: Radioactive elements in Himalayan Salt with Half Life Period

S. No.	Element	Concentration	Half-life Period
1.	Protactinium	<0.001 ppm	1.17 minutes
2.	Francium	< 1.0 ppm	22 minutes
3.	Astatine	<0.001 ppm	8.7 hours
4.	Promethium	Unstable	17.7 years
5.	Actinium	< 0.001 ppm	21.77 years
6.	Polonium	< 0.001 ppm	102 years
7.	Radium	< 0.001 ppm	1600 years
8.	Thorium	< 0.001 ppm	$7.54x10^4$ years
9.	Neptunium	< 0.001 ppm	$2.14x10^6$ years
10.	Uranium	< 0.001 ppm	$2.34x10^7$ years
11.	Plutonium	< 0.001 ppm	$8.0x010^7$ years
12.	Technetium	Unstable	$4.21x10^6$ years

d) *SES Linkage with Mortality:* Incidentally health professionals have not looked into the impact of nutrition factor on the pandemic victims. Food prices are sole driving force among lower SES and so is true in India and neighbouring countries where average daily earnings are mere US$5-6 for survival of a family of 4-8. This meagre earning compel poor to go for cheapest staple food including raw crystal sea salt rather than the ultra refined table salt which is 6-8 times more expensive.Table-2 and Table-3 show the death toll by Covid-19. Lower SES populations were suspected to be more vulnerable to Covid-19 pandemic for reasons of:

a. Weak health infrastructure,
b. High rate of poverty,
c. Malnutrition, and
d. Poor living conditions like an unsanitary/unhygienic environment.

However, one year data from India on morbidity/mortality projected a different picture showing that high SES population from affluent urban areas were found to be affected more; these people consume ultra refined iodised table salt.

e) *Processing of salt:* Ultra refining of natural salts salt removes MMTE that contribute about 14% by weight. The US Food and Drug Administration (USFDA) have identified 60 elements of the natural salt as essential nutrients.[13] In June 2016, the US National Research Council labelled 29 of these 60 micro- and trace-elements as "possibly" or "probably" essential and beneficial to human health; these elements include bromine, boron, chromium, calcium, copper, fluoride, iodine, iron, manganese, magnesium, molybdenum, potassium, phosphorus, selenium, silver, sulphur, and zinc. 14% fraction of natural salt comprising of MMTE that contains these 29 identified essential elements is large enough to ignore and neglect.[14-17]

f) *Suspected linkage to UN's Salt Iodization Programmes:* Global salt iodization programmes initiated by WHO and UNICEF in early 1960s with an aim to eliminate iodine deficiency disorders (IDD) mainly goitre. For example in India, the last 50 years of state sponsored programme on forced consumption of iodized salt through ban on natural sea salt could not eliminate sporadic prevalence of thyroid disorders and rather it has attained epidemic status along with other NCDs. Today, it is hard to find a family where thyroid disorder patients are not available. In India, every third Indian suffers from a thyroid disorder.[18] Hypothyroidism has graduated from endemic to silent pandemic on a global scale in the last 50-55 years. In 2016, Levothyroxine (synthetic thyroxine) was prescribed to more than 114 million hypothyroidism patients in the USA alone and retained number one position in top 300 drugs sold even in 2019.[19] These global observations speak loud on the failure of the fit-for-all iodization programmes. Increasing rates of incidence of NCD clearly found to follow the salt iodization growth trajectory in every country. Iodization was thought to be magic wand for IDD and every government world over were convinced for its implementation irrespective of iodine deficiency perhaps under commercial compulsions from salt industry.

It is important to discuss Covid-19 mortality in Afghanistan and India where extensive salt iodization programmes were implemented in last 50 years. Afghanistan accomplished almost 100 percent salt iodization programmes with 11 salt processing plants under UNICEF funding. Afghanistan achieved 66.2% adequate iodized salt consumption and 33.8% inadequate iodized salt way back in 2013.[20] On the other hand healthcare infrastructure is dismal in Afghanistan and thus reported a greater number of casualties per million compared to other countries like Myanmar, Sri Lanka and Pakistan. Among underdeveloped or poor

countries India has robust healthcare infrastructure and comparatively has higher mortality rate of 103 per million (compared to 57 per million in Afghanistan) perhaps because of dependence of larger population on pure sodium salt that is overall adequacy of 76.3% iodine in 2018-19 with only 12.7% users of the crystal salt.[21,22] Most of the poor population in villages of India still uses natural crystal salt due to financial constraints and hence didn't fall prey to Covid-19 at the same level as the USA or the EU. No other explanation supports such a low mortality in India where 65.97% of 1.35 billion population live in villages and deprived of adequate nourishment and no modern healthcare system; another 65 million live in extreme poverty in 33,510 unsanitary slums in metropolitan cities characterized by over-crowding and unhealthy living conditions without adequate healthcare system. Surprisingly, there are no media reports of beggars, rag pickers or sanitary worker dying of Covid-19 in India.

Even the Asia's largest Indian slum in Mumbai – DHARAVI – spread over 2.1 sq kms with a population of 0.7 million where implementation WHO guidelines of social distancing, face mask, and sanitizers was a daunting task reported only 86 deaths by 1st July 2020.[23] It was thought to be the most challenging task to contain the virus in the community where hundreds of people use the same toilet. Underlying cause for extremely low mortality appeared to be the consumption of crystal sea salt by the majority of the 0.7 million deprived class.

This hypothesis fits well to explain zero or low mortality among other poor countries like Myanmar as well distant Southeast Asian countries like Cambodia and Laos that are largely depended on natural salts. The hypothesis also explained low mortality among supposedly high risk group of elderly (>70 years) who have more exposure to natural salts during their early life span compared to youths who are wary of observing fast. The American and European populations are almost totally dependent upon highly processed pure sodium table salt deprived of trace elements compared to populations of Asia and Africa and this trend is amply demonstrated in recent mayhem caused by Covid-19 pandemic proving prophylaxis properties of the natural salts.

V. Conclusions

Sooner or later some therapeutics or vaccine for SARS-CoV-2 virus may see the light of the day but by then another epidemic or pandemic may be knocking at the door. Already another wave of infection in Wuhan, the UK, Germany and Sweden showed significant variation in the SARS-CoV-2 virus characteristics. Outbreaks of several epidemics like HIN1, H1N7, EBOLA, ZIKA and MERS occurred one after another in the past and now SARS-CoV-2 has spread across the world. It is an unbreakable chain with a huge burden on a country's healthcare system and economy. Moreover, it is impossible to exercise WHO guidelines of social distancing etc. for long time. It has also been experienced that a host of vaccines and therapeutics developed earlier are little effective for SARS-CoV-2 infection resulting in over 1.9 million deaths till date and the situation is not likely to improve during the outbreak of another epidemic/pandemic. Hence a better and simple solution is required which is inexpensive, regular, and faster to implement. Based on radioactive properties, it is strongly experienced that regular consumption of natural salts offers the best prophylaxis solution against viral pandemic and would be helpful in improving global health. Moreover, natural salt doesn't have any harmful side effects as it was consumed and tested till a 6-7 decades ago by everyone world over for ages.

Acknowledgements: Author is grateful to all participants.

Conflict of Interests: None

Funding: None

References Références Referencias

1. Johns Hopkins Coronavirus Resource Center. https://www.worldometers.info/coronavirus/ (Accessed: 8th January 2021)
2. Armitage R and Nellums LB. COVID-19 and consequences of isolating the elderly, The Lancet Public Health, 19 Mar 2020. DOI:10.1016/S2468-2667(20)30061-X
3. Coronavirus crisis may get worse, worse and worse, WHO warns. Reuters, Geneva, 14 Jul 2020. https://in.reuters.com/article/us-health-coronavirus-who/who-warns-that-coronavirus-crisis-may-get-worse-and-worse-and-worse-idINKCN24E1ZK
4. Two 'suffocate to death' in PPE. The Telegraph, India 20 Jun 2020. https://www.telegraphindia.com/india/coronavirus-outbreak-two-suffocate-to-death-in-ppe/cid/1782285
5. Best not to wear mask during PE. The Star, Malaysia 11 May 2020. https://www.thestar.com.my/opinion/columnists/colours-of-china/2020/05/11/best-not-to-wear-mask-during-pe
6. Student deaths stir controversy over face mask rule in PE classes. Global Times, China 5 May 2020. https://www.globaltimes.cn/content/1187434.shtml
7. Minerals in Himalayan Pink Salt: Spectral Analysis. https://themeadow.com/pages/minerals-in-himalayan-pink-salt-spectral-analysis. (Accessed: 03 May 2020)
8. Thakur AK. Decoding increasing prevalence of non-communicable diseases. Int J Non-Commun Dis 2018; 3: 139-144, DOI:10.4103/jncd.jncd_46_18
9. Reid BR. The Sterways Process: a new approach to inactivating viruses using gamma radiation,

Biologicals 1998; 26: 125-130. https://doi.org/10.1006/biol.1998.0132
10. Powell WF and Pollard EC. The effect of ionising radiation on the interfering property of influenza virus. Virology 1956; 2: 321-336. https:// doi.org/10.1016/0042-6822(56)90027-7
11. UNSCEAR 1982 REPORT. IONIZING RADIATION: SOURCES AND BIOLOGICAL EFFECTS http://www.unscear.org/unscear/publications/1982.html
12. Rao DD. Radioactivity in human body and its detection. Radiation Protection and Environment 2012; 35: 57-58. DOI:10.4103/0972-0464.112337
13. US FDA Guidance for Industry, A food Labeling Guide 14. Appendix F. https://www.fda.gov/food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm064928.htm
14. Trace Elements - Recommended Dietary Allowances – NCBI. https://www.ncbi.nlm.nih.gov/books/NBK234931/
15. Diet and Health: Implications for Reducing Chronic Disease Risk. https://www.ncbi.nlm.nih.gov/books/NBK218751/
16. JD Bogden (2000) The Essential Trace Elements and Minerals. In: Bogden J.D., Klevay L.M. (eds) Clinical Nutrition of the Essential Trace Elements and Minerals. Nutrition and Health. Humana Press, Totowa, NJ. https://doi.org/10.1007/978-1-59259-040-7_1
17. FH Nielsen (2000) Possibly Essential Trace Elements. In: Bogden J.D., Klevay L.M. (eds) Clinical Nutrition of the Essential Trace Elements and Minerals. Nutrition and Health. Humana Press, Totowa, NJ. https://doi.org/10.1007/978-1-59259-040-7_2
18. Alarming! Nearly every third Indian suffers from a thyroid disorder. https://economictimes.indiatimes.com/magazines/panache/over-30-indians-suffering-from-thyroid-disorder-survey/articleshow/58840602.cms
19. The Top 300 of 2019. https://clincalc.com/DrugStats/Top300Drugs.aspx
20. Shinwari I, Hamid BA, Aminee AW. Across Afghanistan children are now iodine sufficient. https://www.ign.org/newsletter/idd_nov14_afghanistan.pdf
21. Nutrition International and partners disseminate results of India Iodine Survey 2018-19. https://www.nutritionintl.org/2019/09/nutrition-international-and-partners-disseminate-results-of-india-iodine-survey-2018-19/
22. Chandrakant S. Pandav, Kapil Yadav, Rahul Srivastava, Rijuta Pandav, and M.G. Karmarkar. Iodine deficiency disorders (IDD) control in India. Indian J Med Res. 2013; 138(3): 418–433
23. Chasing the virus: How India's largest slum overcame a pandemic https://www.aljazeera.com/news/2020/07/virus-india-largest-slum-overcame-pandemic-200701070816284.html

Global Journals Guidelines Handbook 2021

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.

Benefit

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

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

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.

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.

Benefit

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

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.

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

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

Authorship Policies

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

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

Changes in Authorship

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

Copyright

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

Appealing Decisions

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

Acknowledgments

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

Declaration of funding sources

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

Preparing your Manuscript

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

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

Manuscript Style Instruction (Optional)

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

Structure and Format of Manuscript

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

A research paper must include:

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

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

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

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

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

Format Structure

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

All manuscripts submitted to Global Journals should include:

Title

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

Author details

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

Abstract

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

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

Keywords

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

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

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

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

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

Numerical Methods

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

Abbreviations

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

Formulas and equations

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

Tables, Figures, and Figure Legends

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

Figures

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

Preparation of Eletronic Figures for Publication

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

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

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

Tips for writing a good quality Medical Research Paper

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

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

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

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

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

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.

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.

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

save our planet

Global Journal of Medical Research

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

ISSN 9755896