SOCIETY FOR ETHNOPHARMACOLOGY, INDIA
(SFE - INDIA)
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Contents

Yearend Edition, 2021

Editorial board

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Editorial

We are at the end of 2021 and going to start 2022. Looking back to the past two years we can recall a world suffered from Covid-19 pandemic which still is not over and new variants of corona virus is emerging and presently the “omicron” variant is a matter of concern. We have lost our nearer and dearer during the last two years and still afraid of the devastating effect of Covid pandemic.

In spite of that devastating situation the Society for Ethnopharmacology continued its work. During last one year our society maintained its activities by holding yearly congress and yearly convention in hybrid mode (both onsite & online mode). 8th International Congress of Society for Ethnopharmacology was organized at the campus of Bharati Vidyapeeth deemed to be University-Poona College of Pharmacy, Maharashtra, India during 27-29th August 2021 in which over 600 delegates and scientists from over 22 countries joined in the congress. The 8th Convention of Society for Ethnopharmacology (SFE) and National Seminar on “Ethnopharmacology for wellness: Tradition to Translation” was organized jointly by Society for Ethnopharmacology and CSIR- Indian Institute of Chemical Biology (CSIR-IICB) at CSIR-IICB, Salt Lake Campus, Kolkata 700091 on 10th December 2021. This convention was supported by -Institute of Bioresources and Sustainable Development (IBSD), Imphal, Manipur, Institute of Life Sciences (ILS), Bhubaneswar, Odisha, National Institute of Pharmaceutical Education and Research Guwahati (NIPER-G), Kamrup, Assam, Institute of Advanced Study in Science and Technology (IASST), Guwahati, Assam.

Our society also started a new programme“Capacity building” under which two training programme was organized, which are- One day Training on High Performance Thin Layer Chromatography for Quality Evaluation and Validation of Natural Products, and One day training on GC-MS based analysis for Quality Evaluation and Validation of Natural Products.

SFE also organized webinar under heading “Reimaging Ethnopharmacology” on every alternate Saturday jointly with IBSD and ISE.

This News Letter is being published regularly having all regular sections and projecting the activities as much as possible. This issued contains reports of Annual International Congress, Annual Convention and abstracts of last webinars.

We need your support to enrich this newsletter and to publish it regularly, as our goal is to convert it into a complete journal.

Dr. Santanu Bhadra, PhD

Associate Editor

From SFE Office

Dear Friends,

Greetings!!

I hope the yearend edition of SFE-India-newsletter will speed up your planned activities.

We have come to the end of another eventful year. Another successful year for the SFE, India. Together we have achieved many milestones this yea. I must say, it was not easy due to the waves of Covid-19 and emergence of new diseases. But we have shown persistence, resilience and unbeatable commitment towards the society.

I personally thank the members of the executive and editorial board of the newsletter, coordinators for the local chapters and all SFE-India members for their contributions to the society and its activities.

Many congratulations to the editorial team for their contributions to release this newsletter regularly even during this tough time. On behalf of the newsletter team, I appreciate the efforts of article contributors, without whom our newsletter would not be possible.

Our newsletter is a group effort and relies on contributions from all SFE-members for the content. So, let’s contribute to our own newsletter. We want to know what projects you’re working on. What’s new with you and your organization. Let’s make it a successful mode of exchanging scientific knowledge in the field of ethnopharmacology.

Wish you a happy festive season. Hope to meet and seeing you all face to face again in 2022.

Dr. Subhash C. Mandal, Ph.D.

Executive Secretary, SFE

Conference reports

Report of the 8th Convention of Society for Ethnopharmacology and National Seminar on Ethnopharmacology for wellness: Tradition to Translation"

8th Convention of Society for Ethnopharmacology (SFE) and National Seminar on "Ethnopharmacology for wellness: Tradition to Translation" was organized jointly by Society for Ethnopharmacology and CSIR- Indian Institute of Chemical Biology (CSIR-IICB) at CSIR-IICB, Salt Lake Campus, CN-06, Sector V, Bidhannagar, Kolkata 700091 on 10th December 2021. This convention was supported by -Institute of Bioresources and Sustainable Development IBSD), Imphal, Manipur, Institute of Life Sciences (ILS), Bhubaneswar, Odisha, National Institute of Pharmaceutical Education and Research Guwahati (NIPER-G), Kamrup, Assam, Institute of Advanced Study in Science and Technology (IASST), Guwahati, Assam.



The inaugural programme was started with an address by Shri Shekhar Dutt, Guest of Honour & Former Governor, State of Chhattisgarh & Advisor, Society for Ethnopharmacology, India after a short welcome address by Dr. Arun Bandyopadhyay, Chairman of the organizing Committee & Director CSIR-IICB. In his speech Mr. Dutt has discussed about the immense scope of Ethnopharmacology for improving health. He also expressed his satisfaction about the activities of SFE and the height achieved by SFE within a short span. Dr. Ajay Parida, Director, Institute of Life Sciences, Bhubaneswar, India spoke in this occasion and wishes success of the programme.

Dr. C K Katiyar, Vice President, Society for Ethnopharmacology, India, Kolkata & CEO (Technical), Emami Ltd, Kolkata spoke in this occasion. Prof. Chiranjib Bhattacharjee, Guest of Honour & Pro-Vice-Chancellor, Jadavpur University, Kolkata, India delivered his speech. He elaborately described the scope of natural products research for holistic health care. He also expressed his long association with SFE. Shri Birendra Kumar Sarkar, Patron, 8th Convention: SFE-India & President, Society for Ethnopharmacology, India spoke on the scope of natural products in health care system. He also said that how SFE is promoting natural products among all stake holders. Dr.Debprasad Chattopadhyay, Organizing Secretary, 8th Convention, SFE-India and former Director, ICMR-NITM provided some tips to the presenters of this programme and introduced newly formed Local chapter- Mangalore Local Chapter and upcoming Local Chapter –Jorhat Local Chapter.

Prof. Pulok Kumar Mukherjee, Secretary, Society for Ethnopharmacology, India, Kolkata, elaborately described the activities of the Society and then delivered lecture on the theme Ethnopharmacology for

wellness: Tradition to Translation" with special reference to Andrographis paniculata.Mr. Indraneel Das, Co-chairman, 8th Convention: SFE-India & Vice President, Society for Ethnopharmacology and Dr. Subhash C Mandal, Coordinator, 8th Convention: SFE-India & Executive Secretary, Society for Ethnopharmacology, India nicely moderated the inaugural session.

In the 1st scientific session Dr.Ashis Kumar Mukherjee, Director, Institute of Advanced Study in Science and Technology, India spoke on the topic -Traditional medicinal plants used for the treatment of snakebite in India: Prospects and challenges.Dr.GarikapatiNarahari Sastry, Director, CSIR-North East Institute of Science and Technology, Jorhat, Assam spoke on the topic -Artificial Intelligence in Ethnopharmacology.Dr. V. Ravichandiran, Director, National Institute of Pharmaceutical Education and Research (NIPER-Kolkata), Kolkata, India on the topic-Protein complement of the genome – Application of Proteomics in Drug Development.Dr.Viswajanani J. Sattigeri, Head, CSIR-Traditional Knowledge Digital Library (CSIR-TKDL), New Delhi on the topic- Importance of documenting and protecting traditional knowledge: Efforts from India.

Dr. Sayeed Ahmad, Coordinator, SFE Delhi local chapter, Professor, School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi spoke on the topic-Metabolomics in quality control of AYUSH drugs and traditional medicine.Dr. K. Mruthunjaya, Coordinator, SFE Mysuru local chapter & Organizing Secretary, SFEC 2022 & Head, Dept. of Pharmacognosy, JSS College of Pharmacy, Mysuru spoke on the topic -Redefining Ethnopharmacology for Global health and wellbeing.Dr. Arun Bandyopadhyay, Chairman, 8th Convention: SFE-India & Director, CSIR-IICB, Kolkata, India and Dr. Subhash C Mandal, Coordinator, 8th Convention: SFE-India & Executive Secretary, Society for Ethnopharmacology, India Chaired this session.

In the Second scientific session named "Ethnopharmacology Conclave: Traditional Healers Meet" Prof. Pulok K. Mukherjee, Secretary, Society for Ethnopharmacology, Kolkata, India & Director, Institute of Bioresources and Sustainable Development, Imphal, India spoke on how the society is trying to support the traditional healers by projecting traditional knowledge and validating the healthcare there are providing. He also discussed about commercialization it with profit sharing basis. There after Dr. Prakash R. Itankar, Professor, R. T. M. Nagpur University, Nagpur, India and Dr. Pramod HJ, Professor, KLE Deemed to be University, Belagavi, Karnataka, India spoke on traditional healers role in healthcare. Healers from all over the country joined and spoke in this programme. Dr.Tapan K. Mukherjee, Member, SFE-India & Former Scientist, CSIR-NISCAIR, New Delhi and

Dr.Nanaocha Sharma, Scientist, Institute of Bioresources and Sustainable Development, Imphal, India moderated the session.

In the third scientific session Dr.Sathiyanarayanan L,Coordinator, SFE Pune local chapter &Professor, Pune College of Pharmacy, Bharati Vidyapeeth, Pune, India spoke on the topic - Herb-Drug interactions -Studies on Andrographis paniculata.Mr. AkshayCharegaonkar, Director, Anchrom Enterprises Pvt. Ltd., Mumbai, India spoke on the topic - HPTLC in pharmaceutical and herbal analysis. Dr. K.N. Ganesh,National Manager (Application), DSS Image Ready Pvt. Ltd., India spoke on the topic --Recent advances in live cell super Resolution and 3-dimensional microscopy imaging in Biology.Mr. Dileep Chandra Sreerama,Product Application specialist, Buchi India Private Limited, Mumbai, India spoke on the topic - Importance Bioactivity-guided isolation and identification constituents from Natural Plant extracts.Dr.Naibedya Chattopadhyay, Principal Scientist, CSIR-Central Drug Research Institute, Lucknow, India and Dr.DebprasadChottopadhyay, Organizing Secretary, 8th Convention: SFE-India- 2021 & former Director, ICMR-NITM Chaired this session.

There was an interesting session entitled “Young Ethnopharmacologist Competition” where selected 12 young scientists presented their research outcome and three of them was selected as best presenter.There was poster presentations session in which 24 researchers presented physically and 58 presenters presented electronically.The programme ended with a brief valedictory session in which the following distinguished personel spoke-Dr. P.V.V. Prasad,Director, Central Ayurveda Research Institute, Kolkata, India, Dr.Subhajit Biswas, Joint Organizing Secretary, 8th Convention, SFE-India & Principal Scientist, CSIR-IICB, Kolkata, India, Dr. Deepak Kumar, Joint Organizing Secretary, 8th Convention, SFE-India & Scientist, CSIR-IICB, Kolkata, India. Winners of Young Ethnopharmacologists and poster presentations were awarded in this session.

Society for Ethnopharmacology (SFE) observed its yearly convention giving importance on a specific medicinal plant since last few years. Andrographis paniculata (Kalmegh) was the focus plant of the 8th convention of Society for Ethnopharmacology (SFE). Dr.Pulok K Mukherjee, Director, Institute of Bioresources and Sustainable Development, Imphal made a presentation on “Polypharmacological potential of Ayurvedic herb Kalmegh Andrographis paniculata” on the basis of research conducted by his team during last few decades. He has elaborately discussed about potential pharmacological effects, Quality control & marker profiling, Metabolomics and combination synergy approach of Kalmegh. SFE is planning for publication of a special issue on Kalmegh in a reputed journal like earlier occasions.


SOCIETY FOR ETHNOPHARMACOLOGY
SFE
INDIA
BHARATI VIDYAPEETH
DEEMED UNIVERSITY
PUNE
ISE
8th International Congress of
Society for Ethnopharmacology, India
(SFEC 2021)
www.ethnopharmacology.in
Pune, MH, India
February 05-07, 2021
Ethnopharmacology and Medicinal Plants -
Approach towards product development
Organized by
SFE-India Pune Chapter
&
Bharati Vidyapeeth (Deemed to be University)
Poona College of Pharmacy
Pune, MH, India
www.pcp.bharatividyapeeth.edu
In association with
Society for Ethnopharmacology, India
Saktigarh, Jadavpur, Kolkata, India
www.ethnopharmacology.in

8thInternational Congress of Society for Ethnopharmacology India (Globalising local knowledge and localizing global technology)"Ethnopharmacology and Medicinal Plants – Approach towards product development", (27-29th August 2021).

The 8th SFEC 2021 was organized at the campus of Bharati Vidyapeeth Deemed to be University-Poona College, Maharashtra, India. Due to Covid-19, the congress was planned by hybrid mode which allowed delegates and speakers to participate either by online or on-site mode. A day before the congress, a Pre-conference workshop was conducted through online mode on the topic of 'Techniques for effective scientific communication'.An Ethnopharmacology Conclave was organized on "Learning and sharing TraditionalHealth wisdom during Covid and Beyond". This exclusive session was attended by more than 80 traditional healers and shared many important information about traditional medicinal practices.

The congress was inaugurated by the Chief Guest Dr. R.A. Mashelkar, Hon.Chancellor, Institute of Chemical Technology, Mumbai, Maharashtra. Other guests of inaugural session were the Guest of Honour Dr. Bhushan Patwardhan, National research professor, Ministry of Ayush, Dr.Shivajrao kadam, and Dr.Vishwajeet kadam, Minister of State, Govt of Maharashtra. Dr.Pulok K Muhkherjee, Director, Institute of Bioresources and Sustainable Development (IBSD), Imphal, Manipal, Govt. of India, and Dr. L. Sathiyanarayanan, Poona College of Pharmacy, Bharati Vidyapeeth Deemed to be university, and other dignitaries. Prof. Priya Abraham, Director, National Institute of Virology was the Chief Guest in the valedictory program.

In the three days event, 20 scientific sessions were arranged in which 77 scientific plenary talks were delivered by 55 national speakers and 22 international speakers. Over 600 delegates and scientists from over 22 countries joined in the congress.In the congress, 63 oral presentations, 307 online poster presentations and 31 onsite poster presentations were presented. 15 presentations were shortlisted for PK Debnath memorial Young Ethnopharmacologist Award, out of which 3 best were awarded. Similarly best poster and best oral presentations were also awarded.

The congress hosted following key international and national speakers including Prof. Michael Heinrich, Dr. Roy Upton, Prof. A R Paradkar, Prof. SiteshBachar, Dr. Yuan Shiun Chang, Dr. Md. Shah Amran, Dr.Dilip Ghosh, Dr.Mohd Shahid, Prof. Dr. Irena Choma, Prof. Jayantha Wijayabandara, Dr. Shah Alam Khan, Dr. Choo Chee Yan, Prof. Dr. Mohammad Mehedi Masud, Dr. M Tanwir Athar, Dr.RawiwanCharoensup, Prof.Namrita Lal, Dr. Marco Leonti, Dr. Krystyna Skalicka-Woźniak , Dr DiamantoLazari, Prof. Dr. Gertrud Morlock, Dr. Gudrun Ulrich-Merzenich, Dr. Pradeep Visen, Dr. Manoj Bhat, Dr.Sathiyanarayanan L, Dr.RamdosKute, Dr. Girish Soman, Dr. Pawan Singh, Mr.AkshayCharegaonkar, Dr. Arun Gupta, Dr. Narendra Bhat, Dr Digambar Mokat, Dr.Y.K.Gupta, Dr. Asim Ali Khan, Prof. R K Goyal,Dr.Debaprasad Chattopadhyay, Shri Shekhar Dutta, Dr. Subhash C Mandal, Dr.Prasoon Kumar Gupta, Dr.Badmanaban, Dr.Arulmozhi, Dr. Prakash Itankar, Dr.Saleemula Khan, Dr. Sayeed Ahamed, Dr.C.K.Katiyar, Dr.Chamundeeswari, Dr. Santanu Bhadra and many more.

Followingawards were conferred on various categories for the contributions towards ethnopharmacology.

- SFE - Lifetime Achievement Award - *"BisheswarSaha Memorial Award"* - 2021
    - *Awardee: Prof. Shivajirao Kadam, Chancellor, Bharati Vidyapeeth, Pune, MH, India*

- SFE - Outstanding International Ethnopharmacologist Award - *"Pranab Banerji Memorial Award"* - 2021
    - *Awardee: Prof. Thomas Efferth, Director, Institute of Pharmaceutical and Biomedical Sciences, Johannes Gutenberg University, Germany*

- SFE - Outstanding National Ethnopharmacologist Award - *"Harihar Mukherjee Memorial Award"* - 2021
    - *Awardee: Dr. Vipin Kumar Director, National Innovation Foundation, An autonomous body of DST, Govt. of India, Amrapur, Gandhinagar, Gujarat*

- SFE - ZANDU Award for "Best Research on Plant Drugs" – supported by Emami Ltd., Kolkata - 2021
    - *Awardee: Prof. USN Murthy, Director, National Institute of Pharmaceutical Education and Research* (NIPER), *Guwahati, India*

- SFE - Outstanding Service Award – "Pratim Banerji Memorial Award" – supported by Parkar Robinson Pvt. Ltd., Kolkata - 2021
    - *Awardee: Dr.ZaveiHiese, Director, Nagaland Institute of Science & Technology, Kohima, Nagaland*

- SFE- Dr.Tuhinadri Sen Oration Award - 2021
    - *Awardee: Dr.Mukhlesur Rahman, Associate Professor, East London University, London, UK*

- SFE - Herbal Industry Leader Award - 2021
    - *Awardee: BVG Life Sciences Limited, Pune, MH, India*

- SFE – Special Recognition Awards - 2021
    - *Awardees:*
    - *Prof. K R Mahadik, Principal, Poona College of Pharmacy, Pune, MH, India*
    - *Dr.Sathiyanarayanan L., Organizing Secretary, SFEC 2021 & Coordinator, Pune Local Chapter, SFE-India*

- SFE – Outstanding Local Chapter Award - 2021
    - Mysuru Local Chapter, SFE-India

More information on the activities, awards and membership of the society is available on www.ethnopharmacology.in. For further information you may please contact Prof. Pulok K. Mukherjee, Secretary, SFE-India & Director, School of Natural Product Studies, Jadavpur University, Kolkata 700032, India.

Webinar extracts

Unique properties of DNA replication and cell division in human pathogenic bacteria Helicobacter pylori

Dr.Suman Kumar Dhar
Special Centre for Molecular Medicine,
Jawaharlal Nehru University,
New Delhi,
India

Helicobacter pylori causes gastric ulcer and gastric adenocarcinoma in humans. This pathogen is immensely important for human health but its biology is poorly understood. Disease control is further hampered due to drug resistance and lack of vaccine. One of the major objectives of our laboratory is to study the mechanism of DNA replication and cell cycle control of H. pylori. The main objective is to find key regulators in DNA replication/cell division processes that could be potential targets for therapy.

Some of the unique properties of Helicobacter pylori DNA replication and cell division include the absence of a helicase loader DnaC, polar replisome formation and assembly of cell division proteins at the pole unlike E. coli where both the processes take place in the middle of the cell. These findings may reflect the extraordinary niche and the unique biology of the bacterium that may help its survival. Here we propose a model for the assembly and dynamics of the Hp-replication machinery in duplicating the Helicobacter pylori chromosome. Further the potential for intervening processes central to these unique pathways will be discussed.

Accreditation of Medical Laboratories

Dr. Th. Dhabali Singh MD
Chief Consultant Pathologist & Managing Director,
BABINA Diagnostics,
Imphal

Medical laboratories are an important component of healthcare system. The diagnosis and treatment of a patient depends on the test results, and an incorrect test result can have serious consequences by way of wrong diagnosis. Needless to say, accuracy of test results is important, each time and every time, the tests are conducted. Laboratory medicine is the backbone in medical treatment, diagnosis and prevention. Laboratory diagnostics influence 70 – 80% of hospital health care decisions. The exact number of pathology and diagnostic labs are not known but it is estimated that

there about 1,00,000 of them in India. Out of these, 80% are supposedly small, 18% are medium and only 2% of them are large sized. Even though we have been seeing the emergence of big corporate labs in the past few years, these constitute only a small percentage and a vast majority of the labs are in unorganised sector. Accreditation of clinical laboratories is not mandatory in India. In fact, there are no guidelines or laws governing diagnostic laboratories. There is no standard practice for conducting diagnostic tests or storage facilities. In the absence of a benchmark, even the rates of tests vary from one laboratory to another. Accreditation is a way to demonstrate the competence of medical laboratories and ensure the delivery of timely, accurate and reliable results. Medical laboratory services encompass arrangements for test requisitions, patient preparation, patient identification, collection of samples, transportation, storage, processing and examination of clinical samples, together with subsequent result validation, interpretation, reporting and advice. The services should meet the needs of all patients, physicians and clinical personnel responsible for patient care and any other interested parties. Laboratory accreditation provides formal recognition of competent laboratories. Accreditation offers incentives of increased customer confidence, better control of laboratory operations, and greater access for their services.

The National Accreditation Board for Testing and Calibration Laboratories (NABL) is an autonomous body under the Department of Science and Technology, Government of India and is the sole government-authorised accreditation body for laboratories. NABL offers accreditation to testing, calibration and clinical laboratories and its activities include surveillance and re-assessment visits, proficiency testing programmes and the withdrawal, suspension or reduction in scope of accreditation. NABL has adopted the International Criteria for laboratory accreditation set by the International Organization of Standardization (ISO). It has also entered into a mutual recognition arrangement with Asia Pacific Laboratory Accreditation Cooperation (APLAC) and is a signatory to the International Laboratory Accreditation Cooperation (ILAC) arrangement.The absence of strict regulatory environment has led to the mushrooming of large number of small laboratories with limited facilities. However, the diagnostics landscape is expected to change in the coming years with registration and quality compliance mandatory for laboratories and diagnostic centres under the National Clinical Establishment Act, 2010. However, looking at the small percentage of accredited labs in the entire country, we still have miles to go.

Integrated Insect Pest management

Dr.R. Varatharajan

Centre of Advanced Study in Life Sciences,

Manipur University, India

Email: rvrajanramya@gmail.com

Insects are the most abundant organisms in the World. The faunistic record indicates the occurrence of nearly 9.9 lakhs species of insects in the world, of which less than 0.5% (<5000 species) appear to

be the major pests, directly or indirectly competing with the human being for food and disseminates diseases to man and other animals. Although the pest problem existed even during the early period of civilization, the farmers managed to keep the pest incidence within the threshold level by adopting cultural control, manual removal, physical control and other simple agronomic practices. Till the discovery of DDT in 1939, the pest control was achieved through the application of inorganic pesticides. Thereafter, a number of products were discovered, screened, field tested and eventually recommended for field use. The continuous use of many chemicals over the period of time, has led to many undesirable effect to animals and ecosystem. Now there exists a dependency towards chemicals to protect the crop and therefore, pesticides are used indiscriminately in certain areas/crops/ecosystems. We know that pesticides are double edged weapon and hence we should use it cautiously. The book entitled “Silent Spring” by Rachel Carson became an eye opener to understand about the pesticide pollution in 1960s.

Realizing the importance, the FAO formulated a new action plan in which the concept of Integrated Pest Management (IPM) was introduced during 1970s. This programme advocated the use of all the possible methods of pest control in an eco-friendly manner with the least preference to chemical control. During the cropping period, a combination of methods will be adopted so as to deprive and drive away the pest. This includes cultural control, physical control, biological control, pheromone and hormonal control and organic farming etc. Microbial control also became more popular with the utility of myco-insecticides, viral pesticides, bacterial formulations and insect killing nematodes. Transgenic technology along with incorporating Bt genes gave a phase lift for the emergence of genetically modified crops. Cultivation of GM crops in a few thousand hectare area reached a phenomenal growth leading to a substantial level of few million hectare. Adopting all these methods in diverse crop growing sectors has led to enhanced food production. As far as India is concerned, the pesticide consumption was greatly reduced from two lakh metric ton in 2017 to one lak metric ton in the recent years along with reduction of crop loss from 23.5% to 15%. These steps indeed, show encouraging results. Therefore, sharing these ideas and popularising the lab outcome would go a long way towards the benefit of farmers especially in the context of integrated pest management.

Two New Local Chapters This Year

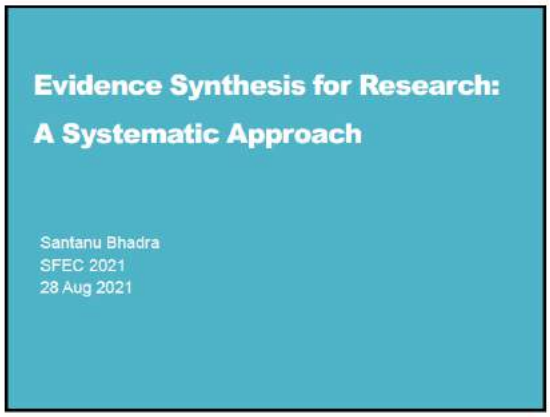
- Eastern Himalaya Local Chapter (Imphal)
- Mangalore Local Chapter (Mangalore)

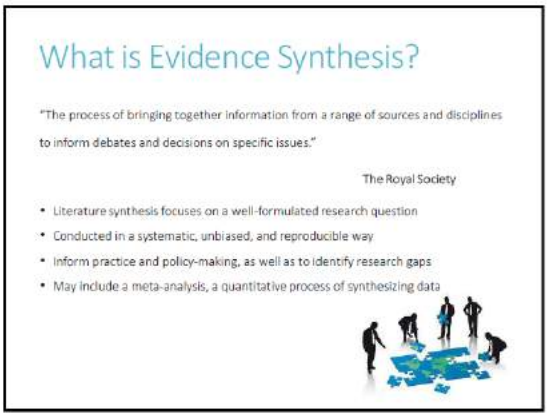
Career Section

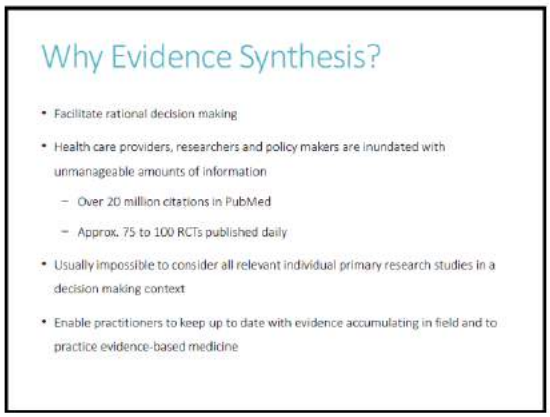
Evidence Synthesis for Research

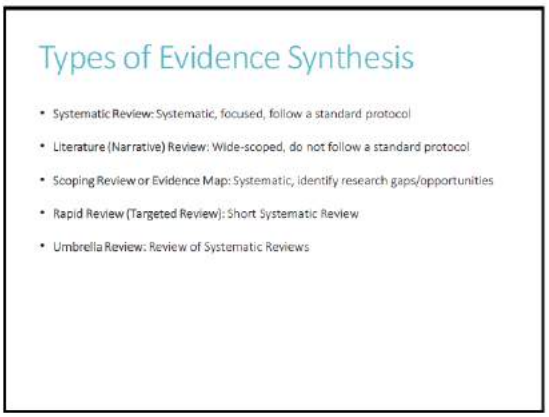
Dr. Shantanu Bhadra, PhD

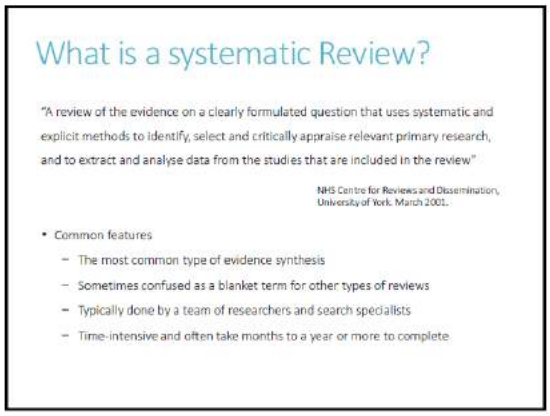
sanbhadra@gmail.com***Click on the tag to download the full presentation***

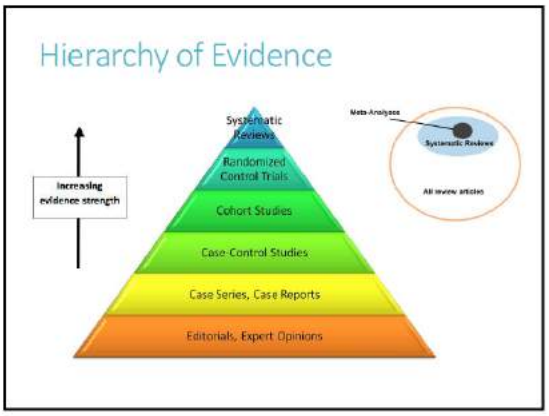












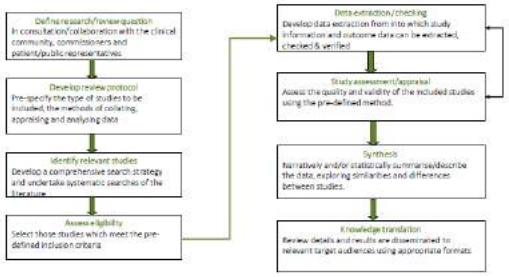
Why Systematic Reviews?

- Minimize the impact of bias/errors
- Can help to end confusion
- Highlight where there is not sufficient evidence
- Combining findings from different studies can highlight new findings
- Can mitigate the need for further trials
- Transparent or reproducible

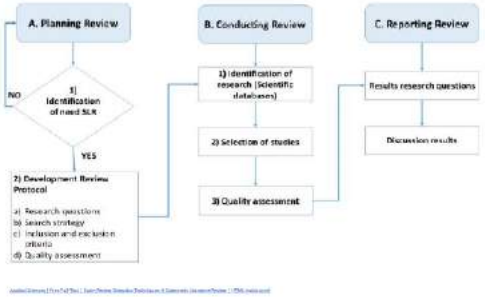
Why Not Traditional Reviews?

- Unscientific, rarely pre-specify or make methods explicit
- Rarely transparent or reproducible
- Usually qualitative, subjective, opinions of individual
- Often incomplete, filing cabinet or MEDLINE review
- Difficult to make sense across groups of studies, especially when conflicting based on qualitative reading alone

Stages of Systematic Review



Methodology



Why Need A Protocol?

- A unique feature of systematic review – differentiate it from narrative review
- A protocol is essential to keep you on track – a guiding document
- Helps to ensure careful *a priori* planning – prespecified criteria
  - Consistency, Transparency and Integrity
- An integral part of Health Technology Assessment Bodies and publication processes
- Protocol contains prespecified criteria for studies
  - Inclusion, Exclusion, Methods, Outcomes, Analysis plan

PROSPERO – CRD Initiative

- Search for existing current reviews
- Register planned review online
- Publish protocol online
- Update record on PROSPERO website as the review progresses
- Avoids duplication of reviews

Formulation of Question

- Systematic review questions are practical, measurable, specific, and answerable
  - It is likely the review question(s) will be divided into several sub-questions
  - Often question generation can be challenging
  - Ask an expert outside the review team to ensure that the resulting definitions are likely to be robust and meaningful
  - 40 different frameworks are available to generate question
  - Most used framework is PICOS

A Focused Question Look Like

- Does stress lead to overeating, and what support systems mitigate this?
- Further narrow down!
  - Short-term or chronic stress?
  - Eating disorders, or changes in eating behaviour?
  - Adults, children, adolescents?
  - Kinds of support- family, community, professional?

Pros & Cons of Research Questions

- Very broad question:
  - Pros: Comprehensive summary of the evidence, Generalizability of findings
  - Cons: mixing apples and pears – ambiguity, no clear conclusion
- Focused question:
  - Pros: clarity of objectives and ease of reading
  - Cons: Sparse evidence may limit findings/usefulness, chances of missing out

PICOS - Framework

P	Patient, Population or Problem	Describe the group of patients or problem
I	Intervention (or E for Exposure)	What are you considering doing/using
C	Comparison	What is the alternative?
O	Outcome	What do you hope to achieve? How will it be measured?
S	Study type	What would be the best kind of study to find this?

- If the question is to understand rather than treat, some of the elements of PICOS are less relevant.
- Then use SPIDER: S – Sample; P&I – Phenomenon of Interest; D – Design; E – Evaluation; R – Research type

Literature Search Toolkit

- Create search string: Based on keywords from research questions disease conditions, interventions, study design, etc. (Emtree/MeSH terms, keywords)
- Select feasible and relevant electronic databases: Medline, Embase, The Cochrane Library, EconLit, PsycINFO etc.
- Consider Gray literature: Conference abstracts, guidelines, unpublished thesis, research reports, policy documents, company reports, Google's advanced search features etc.

Tips:

- Don't cherry pick
- Keep revising your search
- Get it right before moving onto the next source

Piloting

- Developing a search is an iterative process –terms used are modified and added to based on what has been retrieved
- Have some articles already! (A "test set")
- Refer to related literature search methodologies
- Two reasons this is helpful:
  - they will help you focus your search- you can look through them for keywords and subject headings
  - they will help you check if your search is working- does your search find your test articles? If not, how can you change your search?

Tools for Database Searching

- Subject headings: MeSH or Medical Subject Headings
- Boolean operators: AND-OR-NOT
- Phrase and adjacency searches: Generic* adj4 prescri* - it will find prescribing generics, prescribe a generic, prescriptions for lower cost generics, generic versions of commonly prescribed drugs... etc.
- Truncation: Behav* will pick up behaviour, behaviours, behaving, behaved etc.
- Field codes: TI = title, ab= abstract etc.

Boolean operators: most commonly used

Operator	Symbol	Example search	The search will find...	Venn diagram - may/may not be the classic ones
AND	*	drug AND cats	Items containing both drugs and cats	
OR	/	drug OR cats	Items containing either drugs or cats or both	
NOT		drug NOT cats	Items containing drugs but not cats – useful to refine to exclude irrelevant items	

Citation Management

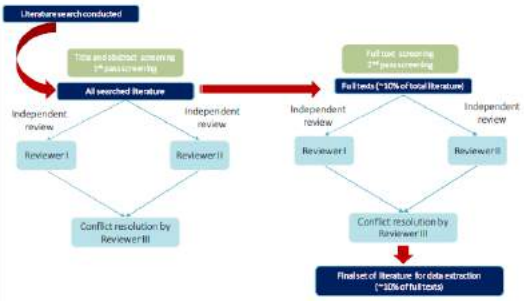
- A citation management program will save you a lot of time and make your life easy!
- Endnote, Zotero or Mendeley will
  - Store and organize the citations collected during your screening
  - De-duplicate the results
  - Automatically format in-text citations and bibliographies in your manuscript

Zotero

MENDELEY

EndNote

Literature Screening Process

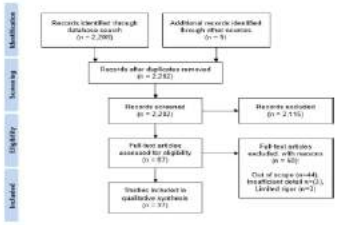


Study Selection (Screening)

- Selected studies using pre-defined inclusion/exclusion criteria in the protocol
- Common inclusion and exclusion criteria:

PRISMA Flow Diagram

- An integral part of Health Technology Assessment Bodies and publication processes
- A typical PRISMA (Preferred reporting items for systematic reviews and meta-analyses) flow diagram

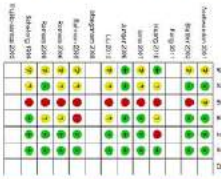


Data Extraction

- A list of all data variables of interest and their associated summary measures
- Create a data extraction template (in excel) based on the outcomes of interest
  - Independent piloting of data extraction forms
- Data are extracted by independent reviewers
  - Regular discussion of progress/ disagreements – don't wait till the end
- It is very tempting to collect irrelevant data
- REMEMBER YOUR PROTOCOL – IT IS YOUR ROADMAP, FOLLOW IT!

Risk of Bias Assessment

- Poorly designed and executed studies can increase risk of bias in their results
- Results from studies with high risks of bias must be interpreted with caution
- Scoping reviews don't typically include a risk of bias assessment
- Example of a typical risk bias assessment checklist



Critical Appraisal

- Not all published and unpublished literature is rigorous!
  - being in a journal doesn't mean it is good

- Quantitative studies
  - Internal validity
  - Bias: selection; performance; detection; attrition; reporting
  - External validity
- Domain based assessment
  - Cochrane Risk of Bias - RCTs
  - QUADAS 2 – diagnostic accuracy
  - ROBIS for systematic reviews

- Qualitative studies
- Three broad categories
  - Rigour: has a thorough and appropriate approach been applied to key research methods in the study?
  - Credibility: are the findings well presented and meaningful?
  - Relevance: how useful are the findings to you and your organisation?

CASP Appraisal Checklist

- Clear aims of research (goals, why it is important, relevance)
- Appropriate methodology
- Sampling strategy
- Data collection
- Relationship between researcher and participants
- Ethical issues
- Data analysis
- Findings
- Value of research (context dependent)

CASP: Critical Appraisal Skills Program

Analyzing Data

- Quantitative analysis:
  - More homogenous studies: a meta-analysis can be considered
  - More heterogenous studies: indirect comparison methods can be considered
- Qualitative analysis:
  - Data visualization using narrative outcomes of main, and subgroup analyses
- A rationale should be given for the type of analysis considered

"While all meta-analyses are based on systematic review of literature, not all systematic reviews necessarily include meta-analysis." (Margaliot et al. 2007)

Reporting Systematic Review

- Background
- Research question (Objectives)
- Methodology
  - Eligibility criteria – Inclusion and Exclusion criteria
  - Systematic literature search – PICOS/SPIDER framework
  - Search strategy and terms
  - Study selection – PRISMA flow diagram
  - Study quality assessment
  - Data extraction
- Results
- Discussion and conclusion

Thank you

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