

2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development **ICRILSH 2026**

26th & 27th February 2026
Kuala Lumpur, Malaysia



Organized by



IFERP Life Sciences—Formerly BioLeagues

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Academic Partner



Department of MCA, Francis Xavier
Engineering College, India



2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026), Kuala Lumpur, Malaysia

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Innovative Approaches for Sustainable Global Development.

” **Conference
Theme**

Preface

We are delighted to extend a warm welcome to all participants attending 2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026), taking place in Kuala Lumpur, Malaysia on 26th & 27th February, 2026. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Recent Innovation in Life Sciences, Healthcare for Sustainable Development . It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICRILSH-2026 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Engineering, Technology and Management. All submitted papers were subject to rigorous peer-reviewing by 2-4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Life Sciences, Healthcare but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICRILSH-2026.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality

About 2nd ICRILSH-2026

The 2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026) is a premier global forum that brings together scientists, healthcare professionals, researchers, educators, policymakers and industry leaders to explore transformative innovations in biosciences and healthcare. Building on the success of its inaugural edition, ICRILSH-2026 emphasizes cutting-edge research, sustainable practices and interdisciplinary approaches that address global health challenges and contribute to the UN Sustainable Development Goals (SDGs).

With the theme “Transformative Research and Practices in Healthcare and Biosciences”, the conference highlights the integration of scientific discovery, healthcare delivery and sustainability frameworks to create impactful solutions for the future of global health.

Vision & Purpose

Vision:

To establish ICRILSH-2026 as a leading platform for innovative, sustainable and interdisciplinary research in life sciences and healthcare.

Purpose:

- To showcase transformative research that bridges laboratory discoveries with real-world healthcare applications.
- To promote sustainable healthcare practices aligned with global priorities.
- To foster collaboration among academia, industry and policymakers for impactful outcomes.
- To empower young researchers to contribute to healthcare innovation and sustainability.

About IFERP Life Sciences

IFERP Life Science is a globally recognized professional association meant for research, innovation and development in the field of life sciences and medical sciences . It serves to propel and fuel all innovative works of research with immense potential in the fields of Healthcare, Life Sciences, Pharmaceutical Sciences, Medical Sciences, Food & Nutrition, Environmental Science, Oncology, Cardiology, Nursing, Microbiology, Physiotherapy, Dentistry and many more. IFERP Life Science has been directly responsible for a significant amount of the revolutionary developments that have taken place in these fields over the past few decades.

IFERP Life Science is a specialized platform that supports life science and medical professionals in advancing their careers and research impact. Our tailored solutions include international conferences, Faculty Development Programs, Webinars, author services, membership and scientific communications, designed to foster collaboration and knowledge-sharing within the global medical community

Our Mission

- Promote global research, innovation and development in life science, medical science, environmental science, pharmaceutical science and health care, to attain sustainable development goals (SDG's) for universal benefit.
- Advance Life Science & Medical Science for societal service.
- To facilitate knowledge exchange and growth through our professional activities and scientific conferences.

Our Vision

- An inclusive global scientific community promotes excellence in life science and medical events, author services, membership, informed decisions, and actions worldwide.

From Managing Director, IFERP



Mr. A. Siddth Kumar Chhajer

MD & Founder,
IFERP, Technoarete Groups

On behalf of Institute For Educational Research and Publications (IFERP) & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers.

The goal of the 2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of Recent Innovation in Life Sciences, Healthcare for Sustainable Development.

This conference creates solutions in different ways and to share innovative ideas in the field of Recent Innovation in Life Sciences, Healthcare for Sustainable Development. ICRILSH-2026 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026) will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in Science and Engineering from all over the world. ICRILSH-2026 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of Recent Innovation in Life Sciences, Healthcare for Sustainable Development.

From Chief Executive, IFERP



Mr. Rudra Bhanu Satpathy

CEO & Founder,
IFERP, Technoarete Groups

IFERP is hosting the 2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026) this year in month of 26th & 27th February 2026, Kuala Lumpur, Malaysia. The main objective of ICRILSH-2026 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts.

Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

About Welcome Messages



Dr. V. Velmurugan, B.E., M.Tech., Ph.D.,
Principal, Francis Xavier Engineering College,
Anna University, Tamil Nadu, India

It gives me immense pleasure to extend my warm greetings to all the participants, speakers, researchers, and distinguished delegates of the 2nd International Conference on Recent Innovation in Life Sciences, Healthcare for Sustainable Development (ICRILSH-2026), to be held on 26th – 27th February 2026 at Kuala Lumpur, Malaysia.

This prestigious conference, organized by IFERP Life Sciences in association with the Department of MCA, Francis Xavier Engineering College, reflects a shared commitment to fostering global collaboration in life sciences, healthcare innovation, and sustainable development. The theme, “*Innovative Approaches for Sustainable Global Development*,” is both timely and significant, as the global community seeks transformative solutions to address emerging health, environmental, and technological challenges.

Francis Xavier Engineering College has consistently upheld its mission of delivering quality technical education, promoting research excellence, and nurturing socially responsible professionals. With a strong focus on innovation, interdisciplinary learning, and industry–institute collaboration, our institution strives to create an academic environment that empowers students and faculty to contribute meaningfully to society. The Department of MCA actively engages in research, skill development initiatives, and global partnerships, preparing students to meet evolving technological and societal demands. In an era where artificial intelligence, biomedical sciences, data analytics, and sustainable technologies intersect, platforms like ICRILSH-2026 play a crucial role in encouraging knowledge exchange and collaborative research. The conference aligns with the vision of the United Nations Sustainable Development Goals (SDGs), promoting inclusive healthcare systems, environmental sustainability, and long-term global well-being.

I am confident that ICRILSH-2026 will inspire meaningful dialogue, innovative thinking, and impactful collaborations among academicians, researchers, industry experts, and policymakers from across the world. The insights and research outcomes shared during this conference will undoubtedly contribute to advancing science, healthcare systems, and sustainable development initiatives globally. I congratulate the organizing committee for their dedication and meticulous planning in organizing this international event. I wish the conference great success and hope that all participants find this academic engagement enriching, inspiring, and professionally rewarding.

About Invited Keynote Speaker



Mrs. D. Angeline Ranjithamani

HOD, MCA Department, Francis Xavier
Engineering College, India

Mrs. D. Angeline Ranjithamani is an accomplished academician and researcher with over 17 years of experience in higher education. She currently serves as Assistant Professor and Head of the Department of Computer Applications at Francis Xavier Engineering College, Tirunelveli.

She holds B.Sc., MCA, M.Phil., and M.E. (Computer Science and Engineering) degrees and has strong expertise in Wireless Sensor Networks, Machine Learning, Cloud Computing, Blockchain Technologies, Internet of Things, and Emerging Computing Systems. She has published more than 40 research papers, including 28 papers from national conferences, 4 from international conferences, 8 journal articles, and several Scopus-indexed publications. Her research contributions focus on energy-efficient networks, intelligent systems, cloud-based applications, and technology-enabled learning. She is also the recipient of three patents in the areas of artificial intelligence and smart automation systems. Mrs. Angeline has earned professional certifications from Wipro (Mission10X), EMC Academic Alliance, NPTEL, and ACME Infotek and has completed several AICTE- and NIT- sponsored Faculty Development Programs.

As an academic leader, she has organized five international conferences, more than ten Faculty Development Programs, and over 100 academic events. She actively promotes industry- institution collaboration and student skill development through internships, industrial visits, and professional training initiatives.

She has served in various academic and administrative roles, including Department Research Coordinator, Anna University Examination Coordinator, and Faculty Advisor. She is also a recognized External and Theory Examiner for Anna University and has held key responsibilities in national-level examinations. With a strong commitment to excellence in teaching, research, and academic leadership, Mrs. D. Angeline Ranjithamani continues to inspire students and contribute significantly to technical education and innovation.

About Keynote Speaker



Dr. Indra Wibowo

Dean, Associate Professor at School of Life Sciences and Technology, Institut Teknologi Bandung, Indonesia

Dr. Indra Wibowo is the Dean of the School of Life Sciences and Technology, Institut Teknologi Bandung (SITH ITB), Indonesia. He is an Associate Professor specializing in developmental biology, regenerative biology, stem cell research, and zebrafish models for disease and tissue regeneration. His research bridges fundamental biology with translational applications, particularly in biomaterials, probiotics, and metabolic health, contributing to sustainable healthcare innovations. Dr. Wibowo has published extensively, supervised numerous graduate and doctoral students, and actively fosters international collaborations with universities and industries across Asia and beyond. Under his leadership, SITH ITB will continue to strengthen its role in advancing life sciences for bioindustry and sustainable development.

About Keynote Speaker



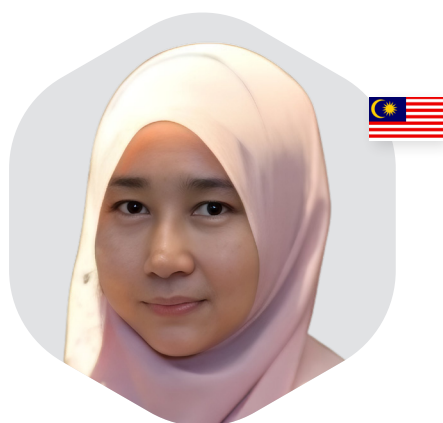
Dr. Abdullahi Rabiu Abubakar

Bayero University, Nigeria

Dr. Abdullahi Rabiu Abubakar is a Senior Research Fellow in the Department of Pharmacology and Therapeutics, Faculty of Pharmaceutical Sciences, Bayero University, Kano, Nigeria. He specializes in drug development for neurodegenerative disorders, endocrine disorders, and malaria infection. His research interests also include cell culture, molecular biology, and bioinformatics.

Dr. Abdullahi has published more than 70 peer-reviewed articles, including several in high-impact Q1 journals. He has mentored several PhD and MSc candidates in the field of neuropharmacology. In addition, he maintains several international collaborations with universities and industries worldwide. His primary goal is to increase access to medicine for mental health across the globe and to advance research and innovations in the field of neuropharmacology.

About Keynote Speaker



Ts. Dr. Norli Ismail

Professor, Universiti Sains Malaysia,
Malaysia

Prof. Norli binti Ismail is a distinguished environmental technologist and senior academic at the School of Industrial Technology, Universiti Sains Malaysia (USM), where she serves as Professor in Environmental Technology and Chemical Process. With over two decades of academic and research experience, she is recognized for her pioneering contributions to solid waste management, wastewater treatment, renewable energy, waste valorisation, and biogas purification technologies.

She began her career as a Research Officer at Pembinaan Jayabumi Sarawak Sdn. Bhd. (1995–1996) before joining USM in 2003. Rising through the academic ranks, she has played a central role in curriculum development, postgraduate supervision, and departmental leadership. She holds a B.Sc. in Environmental Science (1995), an M.Sc. in Chemical Process Technology (1999), and a Ph.D. in Environmental Technology (2003) from USM.

Prof. Norli has authored over 100 publications, achieving a Scopus h-index of 36 with more than 3,600 citations. Her research spans membrane separation, sludge treatment, microplastics analysis, and biochar applications, with publications in leading journals such as Journal of Hazardous Materials.

Her achievements have earned her international fellowships in Japan and Germany, visiting professorships in Asia and Europe, and recognition for advancing sustainable environmental solutions aligned with ESG and SDGs.

About Keynote Speaker



Dr. Kalirajan Arunachalam
Mulungushi University, Zambia

Dr. Kalirajan Arunachalam is a Senior Lecturer in Biological Sciences and Biotechnology at Mulungushi University, Zambia, with over a decade of academic and research experience. He earned his Ph.D. in Biotechnology-Zoology from Manonmaniam Sundaranar University, India, and has since built a career spanning teaching, research, and scientific leadership across India, Zambia, and the UK.

His research expertise lies in marine natural products, microbial biotechnology, nanotechnology, and sustainable agriculture. He has published over 45 research papers, authored three books, and contributed five book chapters. His work has been recognized with several fellowships and awards, including the UICC Fellowship (Switzerland), JRS Biodiversity Foundation Fellowship (Zambia), and the Global Outreach Award (India). He also holds a patent for a microbial pigment-based nucleic acid staining agent.

Dr. Arunachalam actively contributes to international scientific communities as a Fellow of the Zambia Academy of Sciences, Life Member of UICC (Switzerland), Member of the Microbiology Society (UK), and Scientist Ambassador of the Smithsonian Science Education Centre, USA. He has supervised numerous undergraduate and postgraduate projects, developed academic curricula, and led community training initiatives, including mushroom cultivation workshops for women's groups. His work reflects a strong commitment to research, education, and sustainable development.

About Keynote Speaker



Dr. Md Jasim Uddin
Universiti Malaya, Malaysia

Dr. Md Jasim Uddin is a Senior Lecturer at Universiti Malaya, Malaysia, and a leading researcher in advanced drug delivery systems, particularly 3D/4D-printed microneedle technologies. He earned his Ph.D. from the University of Greenwich, UK, and holds a Higher Education Teaching Certificate from Harvard University. With experience spanning academia and industry, including Pfizer Ltd. UK—Dr. Uddin has contributed extensively to pharmaceutical innovation and global health. He serves as a Scientific Advisor to the DDRx Group and holds affiliations with INTI International University (Malaysia) and the University of Turin (Italy). Dr. Uddin actively leads multidisciplinary research in oncology-focused drug delivery and regulatory science.

About Keynote Speaker



Dr. Rohini Karunakaran

Senior, Associate Professor, AIMST
University, Malaysia

Senior Associate Professor Dr Rohini Karunakaran is the Deputy Dean - Postgraduate, Research & Administration and Head of Biochemistry Unit in the Faculty of Medicine, AIMST University, Malaysia. Dr Rohini is the Medical Educationist (MEU Coordinator) and Internal Auditor at AIMST University, with administrative responsibilities besides teaching. Dr Rohini Karunakaran is an accomplished academic leader with extensive expertise in teaching, research, academic governance, and faculty administration. Dr Rohini demonstrates deep subject matter expertise in medical education and research, with a strong record of high-impact publications and postgraduate supervision; Skilled in curriculum development, pedagogical innovation, and integrating digital transformation into education through AI and emerging technologies. Dr. Rohini has demonstrated leadership in strategic academic planning, quality assurance, accreditation processes, and policy development, aligning with institutional goals and national standards.

About Keynote Speaker



Dr. Chua Kek Heng

Professor, Department of Biomedical
Science, University of Malaya, Malaysia

Professor Dr. Chua Kek Heng is a Senior Professor of Biomedical Science at the Faculty of Medicine, Universiti Malaya, Malaysia. His extensive research expertise spans disease polymorphism, mutation analysis, bacterial virulence factor characterization, and the development of diagnostic kits. Professor Chua has made outstanding contributions to science and technology, having authored more than 200 original research publications. His work has driven significant scientific innovations and advanced our understanding of human diseases, particularly their associations with genetic factors and pathogenic microorganisms.

His pioneering research in disease genotyping has enabled the identification and mapping of critical disease-predisposing markers for conditions such as systemic lupus erythematosus, Crohn's disease, and retinopathy within the Malaysian population. These discoveries have played a vital role in improving disease prediction and supporting early preventive interventions.

Professor Chua's achievements have received widespread national and international recognition. He holds over 20 patents registered in multiple countries and has been the recipient of more than 100 prestigious awards in recognition of his scientific excellence and impact.

About Keynote Speaker



Dr. Nani Draman

Associate Professor, Universiti Sains
Malaysia, Malaysia

AP Dr. Nani Draman is a distinguished Family Medicine Specialist at the Department of Family Medicine, School of Medical Sciences (PPSP), Universiti Sains Malaysia (USM), Kubang Kerian, Kelantan. With over 15 years of clinical experience, she is widely recognized for her expertise in comprehensive primary care, particularly in the management of diabetes and chronic diseases. Dr. Nani is a Fellow in Point-of-Care Ultrasound (POCUS) and has been actively integrating POCUS into primary care practice for the past four years to enhance diagnostic accuracy and clinical decision-making.

She currently serves as the Head of Unit for ICSC, MPG, and BPSP at PPSP, USM, where she oversees clinical operations, quality improvement initiatives, and staff development. Dr. Nani holds a Medical Degree and a Master's in Family Medicine, along with fellowship training in Critical Care and POCUS Ultrasound. In addition to patient care, she is deeply involved in research, mentoring, and administrative leadership, demonstrating a strong commitment to advancing excellence in primary care practice and teaching.

About Keynote Speaker



Mr. Praveen Kumar Yellarthi

Professor, VSPM's College of
Physiotherapy, India

Prof Y Praveen Kumar is Physiotherapy educator based at VSPM's College of Physiotherapy in Nagpur, Maharashtra, India.

Professional Roles: He serves as Professor and HOD in Cardiovascular and Respiratory Physiotherapy, Ph.D. Guide, Dean Faculty of Allied Health Sciences, Senate Member, and Academic Council Member at Maharashtra University of Health Sciences (MUHS) Nashik.

He also acts as NAAC Coordinator at his college.

Academic Qualifications: His post-graduation (MPT) is in Cardiovascular and Respiratory Physiotherapy from Tamil Nadu Dr. MGR Medical University, Chennai.

He holds a post graduate diploma in medicolegal system, Diploma in Nutrition and a Certificate in Yoga Therapy.

Achievements and Contributions: Dr. Kumar received numerous awards which includes fellow of Indian association of physiotherapy, the Best Professor of the Year award for 2023–24.

He has 23 publications, guided 32 postgraduates, and has 7 Ph.D. scholars registered under him.

His areas of interest include cardiac, pulmonary and vascular rehabilitation; and physiotherapy education and research. He is a resource person for teaching technology, research methodology, and was instrumental in rolling out new competency-based physiotherapy curriculum along with blueprinting for Maharashtra university of health science.

About Keynote Speaker



Mrs. Pallavi Yellarthi

Professor, VSPM's College of
Physiotherapy, India

Prof. Pallavi Yellarthi is a senior academician and clinician in the field of Physiotherapy with over 20 years of teaching and professional experience. She is currently associated with VSPM's College of Physiotherapy, Nagpur, and has made significant contributions to physiotherapy education, research, and community health.

She completed her Master's degree in Physiotherapy from The Tamil Nadu Dr. M.G.R. Medical University, Chennai, and also holds a Diploma in Nutrition, reflecting her multidisciplinary approach to rehabilitation and patient care.

Prof. Yellarthi is a recipient of a Research Award from the Indian Institute of Science (IISc), Bangalore, recognizing her contributions to academic research. She serves as a Board of Studies (BoS) Member and Faculty at the Maharashtra University of Health Sciences (MUHS), Nashik, actively participating in curriculum development and academic governance.

She is a recognized resource person for Research Methodology and Educational Technology workshops, and has been instrumental in capacity building for faculty and postgraduate students. Her community engagement includes organizing and contributing to geriatric rehabilitation camps, emphasizing functional independence and healthy aging.

Academically, she has guided 30 postgraduate physiotherapy students, mentoring them in clinical practice and research. Her career reflects a strong commitment to education, research excellence, and community-oriented physiotherapy services.

About Session Speaker



Dr. Devi N. Choesin

Professor, Institut Teknologi
Bandung, Indonesia

Prof. Dr. Devi N. Choesin is professor and member of the Ecology expertise group in the School of Life Sciences and Technology, Institut Teknologi Bandung (SITH ITB), Indonesia. She actively conducts research and supervises students in topics related to ecology and the environment. Her main research interests are in the ecology and management of wetland ecosystems, including the role of natural wetlands in the mitigation of climate change, and the use of constructed wetlands for wastewater treatment. Through collaborations, she aims to contribute scientific findings to facilitate science-policy dialogues for the sustainable management of wetland ecosystems.

About Session Speaker



Dr. Shahin Salarvand

Associate Professor, Lorestan
University of Medical Sciences, Iran

Dr. Shahin Salarvand is an academic member (Associate professor) and researcher. She studied Nursing at the Isfahan University of Medical Sciences, Iran. She received her Ph.D. degree in 2018 at the same university. She has published many research articles in various academic/scholarly journals. At present, she works as a faculty member and associate professor at Lorestan University of Medical Sciences, Iran. She is interested in cooperating with international researchers as a team.

About Session Chairs



Dr. Arunachalam Kalirajan

Senior Lecturer, Department of Biotechnology,
St. Eugene University, Zambia

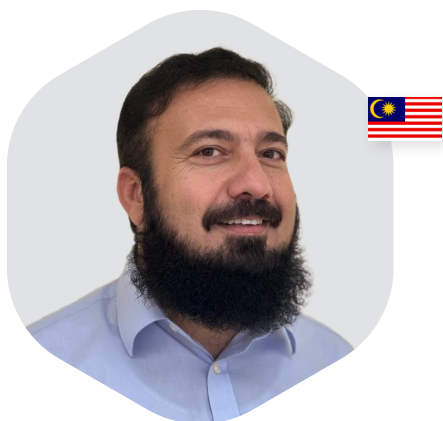
Dr. Fahad Saleem

Associate Professor, Faculty of Pharmacy,
Malaysia



Dr. Asif Nawaz

Senior Lecturer, Faculty of Pharmacy, Universiti
Malaya, Malaysia



About Professional Ambassador



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Researcher and Lecturer, International Affairs Advisor,
Research Center for Medical Ethics and Law, Shahid
Beheshti University of Medical Sciences, Tehran, Iran

About Moderator

Mr. Mohammed Saeed

Master's Student, Pharmaceutical Chemistry,
UCSI University, Malaysia



Mrs. Fithriyah Athifah

Student of Health Polytechnic of Jambi,
Ministry of Health of the Republic of Indonesia

About Conference Convenor



Dr. G.P.Ramesh

Professor, Conference Convenor
India

Dr. G.P.Ramesh is a distinguished academician, visionary technologist and ambitious researcher with over 26 years of multifaceted experience spanning higher education, advanced research and industry leadership. His career reflects a seamless integration of academic excellence and technological innovation, positioning him as a transformative force in engineering education and applied research. A dynamic leader and passionate educator, Dr. G.P.Ramesh has served as Professor and Head of Electronics and Communication Engineering at prestigious institutions across India and abroad. He has mentored undergraduate, postgraduate and doctoral scholars, successfully guiding Twenty-Two Ph.D. candidates and nurturing a culture of inquiry and excellence. His academic expertise encompasses artificial intelligence, machine learning, embedded systems, VLSI design and antenna technologies. With more than 125 publications in Scopus-indexed journals, his scholarly influence is evidenced by an H-index of 32 and an i10-index of 70, marking him as a prominent contributor to global research discourse. He has also organized Twelve International and Six National conferences, publishing proceedings with Springer and ensuring global visibility through Scopus and Web of Science. A pioneer in Outcome-Based Education and a strategic advisor for NAAC, NBA and Autonomous frameworks, Dr. G.P.Ramesh continues to shape future-ready engineers and scalable, tech-driven solutions for India and beyond.

About Organizing Committee Members

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Senior Lecturer, Biological Sciences and Biotechnology, Mulungushi University Kabwe, Zambia

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Psychometric Evaluation of Bull's Mental Skills Questionnaire among Gifted and Talented Population in Malaysia

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ccc:

Mental skills play an important role in supporting the psychological well-being and performance of gifted and talented students in educational and co-curricular settings. Although Bull's Mental Skills Questionnaire (BMSQ) has been widely used in sport psychology research, empirical evidence on its validity and reliability among gifted and talented students in Malaysia remains limited. Therefore, evaluating the psychometric properties of this instrument is essential to ensure its suitability within the local educational context. This study evaluated the psychometric properties of BMSQ among gifted and talented students in Malaysia. A total of 214 students which is 54.2% male, 45.8% female aged 12 to 17 years participated in this study. Descriptive analysis indicated moderate to high levels across seven mental skill domains, with mental readiness and imagery ability recording the highest mean scores. The data met normality assumptions, with skewness and kurtosis values within ± 1 . The Kaiser-Meyer-Olkin (KMO) measure of 0.840 and Bartlett's Test of Sphericity ($\chi^2 = 2775.911$, $p < .001$) confirmed sampling adequacy and factorability. Exploratory Factor Analysis (EFA) using Principal Component Analysis with Varimax rotation extracted seven components explaining 65.82% of the total variance, consistent with the original theoretical model proposed by Bull et al. (1996). Reliability analysis showed strong internal consistency, with Cronbach's alpha values ranging from 0.716 to 0.871 across subscales and an overall coefficient of 0.859. These results affirm the BMSQ's factorial validity and reliability in assessing multidimensional mental skills among gifted and talented students. The findings extend the application of sport psychology measurement tools to the educational context, offering new insights into the psychological readiness, motivation and emotional regulation of gifted learners. This validation supports the use of the BMSQ for developing targeted interventions to strengthen mental skills among gifted and talented students in Malaysia and similar educational settings.

Keywords:

Bull's Mental Skills Questionnaire (BMSQ), gifted and talented students, factor analysis, mental skills.

Post-exercise Blood Lactate Response to Cold Water Immersion in Competitive Athletes: A Systematic Review

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Abstract:

Background: Perceived fatigue is one of the most common subjective experiences for athletes after high-intensity exercise, and it is usually closely related to elevated blood lactate levels. Therefore, employing effective recovery measures to promote blood lactate clearance is considered helpful in alleviating post-exercise fatigue.

Objective: This review aims to assess the recovery effects of cold water immersion (CWI) under different exercise intensities and the differences in recovery effects of different CWI parameters. The clearance effect of blood lactate concentration is the primary criterion, as blood lactate is one of the main physiological factors causing fatigue. Core body temperature, heart rate, creatine kinase, and exercise performance after intervention are used as secondary criteria.

Methods: This review searched four databases: SCOPUS, WOB OF SCIENCE (WOS), PUBMED, and EBSCO, ultimately collecting 19 articles. For each article, a detailed summary is provided of the types of exercises involved, the intensity of the exercises, the characteristics of the intervention, and the outcome indicators.

Results: The results showed that CWI had a significant effect on the recovery of high-intensity intermittent exercise, and could significantly reduce blood lactate concentration. However, it had a limited effect on the recovery of aerobic endurance exercise and no positive effect on anaerobic explosive exercise. In addition, the recovery effect of CWI varies significantly under different parameters. Many studies have shown that when the water temperature is 10–15°C and the immersion time is about 10 minutes, it can better relieve fatigue and provide a more comfortable experience. Regarding immersion depth, full-body immersion is superior to half-body immersion in promoting blood lactate clearance, while half-body immersion is more effective in relieving localized muscle soreness in the lower limbs. Therefore, different immersion depths each have their advantages and can all contribute to positive recovery effects to some extent.

Conclusion: CWI is effective in promoting recovery after high-intensity intermittent exercise, particularly in reducing blood lactate concentration. The effectiveness of CWI depends on intervention parameters such as water temperature, immersion time, and immersion depth. In addition, the types of sports included in this review are limited, and the universality of CWI needs to be verified in more types of sports. Therefore, future research should consider evaluating the effectiveness of CWI in different and more emerging sports.

Keywords:

Cold water immersion, Blood lactate, Exercise Recovery, Immersion Parameters, Muscle Fatigue, Competitive athlete.

Assessing the Quality of Dental Services Through Patient Satisfaction: A Cross-Sectional Study

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Abstract:

Background: Satisfaction of the patients is a cornerstone in assessment of the quality of healthcare systems including dental care. It is a mirror for the application of healthcare services and therefore, has a significant importance considering their loyalty, retention, and general health outcomes. The current study aimed to assess the patients' satisfaction in dental clinics and associated factors affecting this satisfaction using Patients Satisfaction Questionnaire (PSQ-18).

Methodology: This is a cross-sectional study that was conducted among 365 patients using dental services. Participants answered the PSQ-18, which assesses several aspects of patient satisfaction including access/convenience, time spent with the doctor, financial elements, technical quality, interpersonal elements, and communication. For statistical study SPSS version 26 was used; MS Excel was used for data entry and processing. T-tests, chi-square tests, and ANOVA were employed to evaluate the link between patient pleasure and demographic variables.

Results: According to the PSQ-18, the total patient satisfaction score was 57.32 (SD = 12.821), indicating reasonable to great satisfaction. The most satisfaction was discovered in the access/convenience subscale (mean = 12.98, SD = 2.217). Satisfaction was predicted most by age, gender, nationality, education level, job, income. While older patients (>60 years) showed considerably lower satisfaction, younger patients (<30 years) and women reported greater levels of satisfaction. Higher scores for satisfaction were reported by Saudi nationals, those with more education, and students/university students. Income also affected satisfaction; patients with greater income gave greater satisfaction levels.

Conclusion: Patient satisfaction in dental clinics is usually mid- to high, according to the research, with notable differences depending on demographic characteristics including age, gender, nationality, and education. Improving accessibility, communication, and general patient experience could be associated with improving the general satisfaction of the patients particularly among older male patients and those with lower incomes.

Low-load Blood Flow Restriction Training in Physical Therapy and Rehabilitation: A Systematic Review

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Abstract:

In physical therapy and rehabilitation, identifying safe and feasible training approaches is essential for promoting functional recovery. Traditional high-load resistance training is often limited in rehabilitation populations due to pain, increased joint stress, and reduced training tolerance. In recent years, low-load blood flow restriction (BFR) training has been increasingly applied in rehabilitation settings, as it can induce muscular and functional adaptations under reduced mechanical load.

This review summarizes current evidence on the application of low-load blood flow restriction training in physical therapy and rehabilitation. Existing studies primarily involve postoperative rehabilitation patients, older adults, and individuals with functional limitations. Most interventions consist of low-load BFR resistance training, with some studies incorporating walking or functional exercises. Overall, the findings suggest that low-load BFR training may improve functional performance, enhance training tolerance, and reduce mechanical stress, while demonstrating a low incidence of adverse events.

In conclusion, low-load blood flow restriction training appears to be a promising adjunctive strategy in rehabilitation practice, particularly for individuals unable to tolerate high-load training. Further high-quality studies are needed to determine optimal application protocols and long-term effects.

Economic Policy Instruments for Circular Economy Transition: Lessons from the European Union and Implications for Malaysia

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Abstract:

The transition toward a circular economy (CE) represents a critical strategy for achieving sustainable growth and resource efficiency. Economic policy instruments play a central role in enabling this transition by aligning fiscal, industrial, and innovation frameworks with sustainability objectives. While the European Union (EU) has implemented coherent and binding circular economy policies, developing nations such as Malaysia remain at an early stage of integrating economic policy and circularity principles. This paper examines the economic policy instruments influencing the transition toward a circular economy in Malaysia and compares them with the EU's established policy framework. Using a qualitative document analysis approach, the study reviews policy documents, academic literature, and official reports from 2015 to 2024. The findings indicate that Malaysia's economic policy environment for circular economy implementation remains fragmented, with limited fiscal incentives and a weak link between environmental and industrial policies. Conversely, the EU's approach demonstrates strong coherence between policy domains, effective monitoring mechanisms, and significant investment in innovation. The paper proposes a framework for enhancing Malaysia's circular economy readiness through fiscal incentives, industrial symbiosis programs, and integrated national planning. By bridging the gap between economic and environmental policy domains, Malaysia can advance its sustainable development goals and position itself as a regional leader in circular innovation.

Keywords:

Circular economy, economic policy, fiscal incentives, Malaysia, European Union, resource efficiency, sustainability.

Mental Imagery Training: An Innovative, Resource-Free Approach to Combat Working Memory Decline in Young Adults

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Abstract:

Sedentary behavior and unhealthy lifestyle patterns are increasingly prevalent among young adults and have been associated with declines in cognitive function, particularly memory. While physical exercise is commonly recommended to counteract these effects, it may not be feasible for all individuals. Identifying low-burden and sustainable alternatives for memory maintenance is therefore important. This study aimed to examine the association between imagery and memory, and the effects of imagery training on working memory in young adults. A total of 92 young adults (64 males, 28 females; mean age = 22.41 ± 0.99 years) participated. In Phase 1, imagery use and ability were assessed using the Sport Imagery Questionnaire (SIQ) and Sport Imagery Ability Questionnaire (SIAQ), while memory function was measured with the Memory Functioning Questionnaire (MFQ). In Phase 2, participants were randomly assigned to an imagery training, an execution training, or a control group. Working memory was assessed using the Sternberg task before and after a single 30-minute intervention. Phase 1 analyses revealed significant positive correlations between self-reported imagery use/ability and memory function ($r = .27 - .48$, all $p < .05$), with no gender differences observed. Phase 2 results showed that, compared to the control group, the imagery training group demonstrated significant improvements in Sternberg task performance. This was evidenced by significant group \times time interactions for response speed across all task conditions ($F(2,90) = 3.35-7.08$, all $p < .05$, partial $\eta^2 = .10 - .14$) and for accuracy in the 3-item condition ($F(2,90) = 4.41$, $p = .015$, partial $\eta^2 = .09$). These findings indicate that imagery is positively associated with memory function in young adults. More importantly, a brief session of imagery training can produce measurable, small-to-medium sized improvements in working memory efficiency. These results highlight the potential of imagery-based interventions as a practical and low-cost approach for cognitive support in young adults.

Keywords:

Imagery, cognition, memory, imagery use, imagery ability.

Exploring the Relationship Between Academic Burnout and CET-4 Performance among Chinese Undergraduates

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Abstract:

This study investigates the relationship between academic burnout and College English Test Band 4 (CET-4) performance among Chinese university students, addressing growing concerns regarding student mental health and its impact on academic outcomes. The Maslach Burnout Inventory-Student Survey (MBI-SS) was utilized to examine the correlation between three burnout dimensions (emotional exhaustion, cynicism, and reduced academic efficacy) and CET-4 scores. A quantitative research design was employed with 168 sophomore students from a Chinese university. Data were analyzed using descriptive statistics, independent samples t-tests, Pearson correlation, and multiple regression analysis. Results revealed that all three burnout dimensions were significantly and negatively correlated with CET-4 performance. The regression model explained 30.8% of the variance in CET-4 performance ($R^2 = .308$, $p < .001$), with reduced academic efficacy emerging as the strongest predictor ($\beta = -.500$, $p < .001$). No significant gender differences were found in burnout levels or English achievement. These findings suggest that students with lower self-perceived academic capability tend to achieve poorer results on standardized English tests. Universities should implement early burnout detection mechanisms and provide psychological support services to enhance both student well-being and language learning outcomes, thereby contributing to sustainable development in higher education.

Keywords:

Academic burnout, CET-4, MBI-SS, English achievement, Chinese university students, higher education.

Diabetes Prediction using Machine Learning with Ensemble and Feature Selection Approaches

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Abstract:

A long-term health issue called Diabetes Mellitus may harm the body when missed early. When spotted sooner, adjustments in daily habits or medicine might lower risks such as nerve damage, heart problems, or failing kidneys. This study looks into ways machines learn to find signs of diabetes by studying medical records. Patterns pulled from the PIMA Indian group's information helped shape five methods: one using straight-line estimates, another splitting choices step-by-step, a third combining many small decisions, a fourth drawing boundaries between cases, finally one comparing nearby results. A twist came when mixing several approaches together - no single method took charge. This blend used a voting system where models worked as a team. Each algorithm got room to shine in its own way. Performance popped up differently across tests. Accuracy showed who guessed right most often. Precision pointed out false alarms. Recall tracked what slipped through. The F1 score balanced those two views. Results lined up side by side without crowning one winner. Our results indicate that the Voting Classifier provides more stable and accurate predictions than individual models. For the system to be accessible, we also developed an easy-to-use Streamlit web application through which users can input medical parameters for instant prediction results. The work herein depicted how ensemble learning can enhance the assessment of diabetes risk and supports the development of user-friendly digital health tools. This system may be expanded in the future to larger datasets, with inclusion of a number of other clinical factors to enhance the reliability of predictions.

Keywords:

Diabetes Prediction, Ensemble Learning, Machine Learning, Voting Classifier, Healthcare Application, Streamlit, PIMA Dataset.

A Model of the Decision-Making of Mental Health Service Recipients at Counseling Agencies

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Abstract:

Mental health service utilization remains a critical challenge worldwide, influenced not only by service availability but also by clients' perceptions and decision-making processes. This study proposes and tests a decision-making model for mental health service recipients, focusing on how perceived service-related factors shape decision processes and subsequent word-of-mouth behavior. Using a quantitative research design, data were collected from individuals who had accessed mental health services at least once through counseling agencies, psychiatric clinics, or hospitals. The proposed model examines the effects of perceived marketing mix, perceived service value, and brand equity on the mental health service decision-making process, and the influence of decision-making on word-of-mouth intentions. Statistical analysis was conducted using multiple regression analysis to test four hypothesized relationships. The findings provide empirical evidence that perceptual and value-based service factors play a significant role in shaping clients' decision-making processes, which in turn affect their willingness to share service experiences with others. This study contributes to healthcare service research by offering a parsimonious decision-making framework that enhances understanding of help-seeking behavior and post-service advocacy in mental health contexts, supporting sustainable mental health service utilization and community-level diffusion.

Keywords:

Marketing Mix, Perceived Service Value, Brand Equity, Decision-Making, Word-of-Mouth, Mental Health Services.

The Importance of Decision-Making in Land Use and Land Management in Ensuring Food Security in Malaysia

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Abstract:

Agricultural sector has been the main contributor of economic growth in Malaysia for decades. The industrial crops such as oil palm, cocoa and rubber are the major contributors that had led the growth of its economy, which inadvertently made the food sector considerably outdistanced. Findings show that mismatch priority as the primary factor which led to the minimum agro-food production. Policymakers seem insensible to the importance of food sector in comparison to the lucrative industrial crops sector. Limited land for food crops is one of the factors that has led to the unproductive domestic supply and high dependence on food import. In addition, there is no legal restriction on converting agricultural lands for use of industrial development be it for industrial crops and/ or other commercial and/ or economic activities. The National Land Code 1965 does not stipulate any restriction for the land proprietor to apply for conversion of agriculture to non-agricultural use of land. Thus, this proves that there is no protection in law for agricultural lands to be converted for industrial and/ or commercial use. Ensuring enough nutritious food supply is crucial to the country's growth and survival. This research is mainly conducted to study how flexibility in land use decision making and management can contribute towards food security in Malaysia. The study would include a wide range of considerations especially in, sufficient and productive use of land for food cultivation. The study on food security in this country in relation to sustainable land management has relatively not been conducted yet, to the knowledge of authors. Thus, this study attempts to fill the gap.

Keywords:

Food security, land use, land management, legal restrictions, economic development.

Awareness and Attitude of Faculty Members on SDG Integration in the BSN Curriculum

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Abstract:

The significant role of HEIs in fostering SDGs by enabling faculty members to integrate the concepts and principles of the SDGs into their curricular programs is crucial. The lack of awareness, understanding, and knowledge among faculty affects students' ability to incorporate it into their curricular programs. The study aimed to determine the relationship between faculty awareness and attitude towards integrating the SDGs into the curricular program. A descriptive correlational-comparative design was used, utilizing a survey questionnaire on the Awareness Scale of Atmaca (2019) to assess agreement on the following dimensions: economic sustainability, social sustainability, environmental sustainability, and sustainable development, as well as the SDG Attitude Scale of Biasutti (2017). The Total Sustainable Development Awareness and Attitude Levels of Faculty Members were Very High. The lowest rating on Awareness was on the parameter: "The work of governmental and non-governmental organizations involved in activities for the sustainable environment should be supported." The lowest rating on Attitude was on the parameter: "Teachers in college should promote the connection between local and global issues." There is low correlation across the different SDG dimensions of awareness and demographic profiles of age and educational attainment. There are significant differences across the level of awareness on SDG dimensions and the demographic profiles of sex and educational attainment. There are no significant differences across the SDG attitude dimensions and the demographic profile of sex and educational attainment. The following recommendations are offered: Male Faculty Members may need more exposure to curricular integration of SDG to enhance the level of awareness and attitude by allowing active participation in Faculty Development Activities. Active participation of faculty members in achieving social goals involving various stakeholders may be integrated as part of professional development activities and regularly assessed and evaluated in the Performance Appraisal Review. Engagement of male faculty members in waste management activities by actively developing programs directed towards energy and biodiversity advocacy.

Evaluation of the Osteoprotective Potential of *Symphytum officinale* Against Glucocorticoid-Induced Osteoporosis in Adult Zebrafish

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Abstract:

Osteoporosis is a metabolic bone disorder characterized by reduced bone mass and an increased risk of fractures. Chronic exposure to glucocorticoids, particularly dexamethasone, is a major cause of secondary osteoporosis, as it suppresses osteoblast activity while enhancing osteoclast-mediated bone resorption. This imbalance leads to impaired bone formation and compromised skeletal integrity. *Symphytum officinale* (Comfrey) is a medicinal plant traditionally recognized for its anti-inflammatory, antioxidant and bone-healing properties, making it a potential natural therapeutic candidate for bone-related disorders. The present study evaluated the osteoprotective potential of *S. officinale* extract in a dexamethasone-induced osteoporosis model using adult zebrafish (*Danio rerio*). Osteoporosis was induced through dexamethasone exposure, followed by treatment with graded concentrations of *S. officinale* extract. Bone density and mineralization were assessed using Alizarin Red staining, along with morphological and histological evaluations to examine skeletal architecture and bone integrity. The findings provided insights into the ability of *S. officinale* to reverse or mitigate glucocorticoid-induced osteoporotic changes. Overall, the results supported the potential of *S. officinale* as a promising natural therapeutic strategy for the management of osteoporosis.

Keywords:

Osteoporosis, Dexamethasone, *Symphytum officinale*, Zebrafish model.

The Pandemic's Health Quarantine and The Fortified Urban Enclaves Model

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Abstract:

The COVID-19 pandemic reshaped urban life by reviving health quarantine practices and accelerating the expansion of fortified urban enclaves. Historically associated with disease control and social segregation, quarantine measures—such as lockdowns, restricted mobility, and controlled access zones—became central tools for managing public health risk. This paper examines how these measures intersected with and reinforced the fortified urban enclaves' model, characterized by gated communities, privatized security, surveillance technologies, and spatial exclusion.

The pandemic intensified existing socio-spatial inequalities within cities, as affluent populations were better positioned to retreat into protected enclaves equipped with healthcare access, digital infrastructure, and private amenities. In contrast, marginalized communities experienced overcrowding, limited mobility, and heightened exposure to health risks. Health quarantine thus operated not only as a medical strategy but also as a spatial and political mechanism that redefined urban boundaries and governance. The normalization of checkpoints, digital health passes, and controlled circulation mirrored and legitimized enclave-based urbanism under the guise of public safety.

By situating pandemic responses within broader debates on urban fortification, resilience, and security, this study argues that emergency health measures risk becoming permanent features of urban design and policy. The convergence of public health rationales with securitized urban planning raises critical questions about the future of inclusivity, public space, and social cohesion in post-pandemic cities. Understanding this dynamic is essential for developing urban models that balance health security with equity, accessibility, and democratic urban life.

Keywords:

Health quarantine, COVID-19, urban enclave, fortification, resilience.

Call for the Integration of Non-routine Problems in Mathematics Curriculum at Lebanese Middle Schools

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Abstract:

Students' higher order thinking and problem-solving skills are developed through the effective teaching and practice of mathematics. Relating to the Lebanese educational context, the purpose of this paper is to critically build on existing research on the difficulties Lebanese students face in math problem-solving and the instructional approaches and strategies that enhance learners' cognitive capacity in mathematics problem solving. Based on the findings, the review highlights the importance of integrating non-routine problem-solving activities into classroom instruction to promote students' creativity, critical thinking, and cognitive flexibility in math problem-solving and calls for the integration of Non-routine Problems in mathematics curriculum at Lebanese middle schools to enhance students' reasoning and analytical skills.

Role of Yoga in Health Care: Contribution of Yama and Niyama in Sustainable Development

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Abstract:

Yoga is much more than just a physical practice. It is a holistic way to life. The Yoga Sutra of Patanjali explains the eight limbs of yoga, providing a framework for spiritual growth and self realization. While many people focus primarily on Asana, or the physical postures, it is essential to understand and incorporate the other limbs as well. The Yamas and Niyamas, the second and third limbs of yoga, respectively, serve as ethical guidelines for living a meaningful life. In this paper, I shall delve into the Yamas and Niyamas, exploring how to integrate them into our daily life to make a peaceful world and a healthy life.

Keywords:

Yoga, Astanga Yoga, Peace Building, Yama, Niyama.

Recycled Textiles and Its Impact to Environment Communication Strategy for Young Generation in Indonesia Case Study

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Abstract:

Volume of recycled textile globally is growing significantly. Recycled textile worldwide predicted to increase around 5,1 billion USD in the year of 2025 into the number of 7,0 billion USD in the year 2035, with the growth of yearly (CAGR) or growing 3,2% each year.

Market volume each year is around 92 tonnes and only 20% of textiles collected to be used as a recycled textile, this is due to the sustainability aspects of government regulation.

Asia and Pacific will be leading in the textile market, this is because of the huge textile industrial sector.

China, India and Japan will contribute significantly to the growing market.

Keywords:

Growing number, textile market, recycled textiles, need of recycled use of textiles.

An Ethics–Oriented Food Safety Framework for Sustainable Health Development: Aligning International Standards with the Sustainable Development Goals (SDGs)

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Abstract:

Food safety is a fundamental component of public health and the sustainability of bio–food systems, and it requires an approach that goes beyond conventional technical controls and quality requirements. With the increasing complexity of food supply chains, the rapid development of life science technologies, and growing environmental pressures, attention to the ethical dimensions of food safety has become a scientific necessity. This study aims to propose an ethics–oriented food safety framework for sustainable health development by examining the alignment of international food safety standards with the Sustainable Development Goals (SDGs) from a life sciences and health perspective.

The study is based on a systematic review of scientific literature related to food safety, bioethics, public health, and sustainable development, combined with a comparative analysis of international food safety standards. Within this framework, key bioethical principles—including prevention of harm, scientific precaution, equity in access to safe food, scientific transparency, traceability, and professional responsibility of experts—are examined as complementary elements to the technical requirements of existing standards.

The findings indicate that although international food safety standards play an effective role in identifying and controlling biological, chemical, and physical hazards, they often lack an explicit ethical framework that ensures long-term health sustainability. The proposed framework integrates bioethical principles into the design, implementation, and evaluation of food safety systems, thereby improving the scientific quality of risk management, reducing food-related health inequalities, and strengthening the sustainability of food systems. Ultimately, this study demonstrates that ethics–oriented alignment of food safety standards with the SDGs—particularly those related to food security, health and well-being, and responsible production and consumption—can provide a new pathway for interdisciplinary research and the advancement of sustainable health.

Keywords:

Food safety, Bioethics, Sustainable health development, International standards, Sustainable Development Goals.

An Assessment of Health and Safety Practices of Faculty Members of a Secondary School

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Abstract:

Health and Safety in an educational institution are very crucial. Addressing the health and safety of people in any organization reflects the quality of service it provides to its stakeholders. The National University believes that the health and safety of its constituents and partners require strong baseline information to determine policy direction and strategy formulation to meet the goal of a hazard-free work and educational environment for its partner institutions. It is within these premises that this survey was conceived to assess the health and safety practices of students and faculty members, to propose an action plan relevant to the needs of the entire school population. The end goal of finding the health, safety concerns, and practices will provide a picture of the health status and affairs of faculty members. It will further answer the following survey objectives: What is the demographic profile of the faculty respondents when grouped according to age, gender, civil status, and length of service? What is the degree of satisfaction of faculty respondents as to the identified health indicators? What is the degree of satisfaction of the faculty respondents as to the identified safety indicators? What is the degree of safety perception of the faculty respondents? What is the degree of injury and illness reporting by the faculty respondents? What action plans can be proposed to address the health and safety issues of the faculty members? A descriptive, one-group analytical design was used to determine the perception of health and safety indicators and illness reporting among the faculty of Gregorio Perfecto High School. The following conclusions were derived: Satisfactory perception of health indicators in the school among faculty members. Satisfactory perception of safety indicators in the school among faculty members. The degree of safety perception of faculty members is somewhat safe. There is minimal reporting of injuries and illnesses among faculty members. The results imply incongruence in the reporting and the way the environment was evaluated in terms of its safety. The following recommendations were offered: The findings of the study should be utilized in developing health and safety protocols in the school. The sample protocol provided can be part of the Administrative Manual of the School. An illness and injury prevention program should be developed, setting forth specific requirements for training, reporting hazards, inspecting workplace hazards, correcting hazards, and record keeping. The module provided can be utilized and can form part of the program of the College of Nursing RLE. Health and Safety Policies should be adopted focusing on three sections: Principles: basic environmental, health, and safety policies, Responsibilities: basic statement of who is responsible for health and safety, Practices: more specific statements setting forth the key elements. The Sample Injury and Illness Prevention Program can be an initial draft for finalization with the Administration of the School.

Cloud-Based Framework for Remote Dermatological Assessment

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Abstract:

Skin diseases, including inflammatory conditions, infections, and lesions, are among the most common health concerns worldwide. Limited access to dermatology specialists, especially in rural and underserved regions, often leads to delayed diagnosis and treatment. Existing telemedicine platforms primarily facilitate virtual consultations but lack automated analysis and intelligent severity assessment capabilities. To address these limitations, this paper presents a Cloud-Based Framework for Remote Dermatological Assessment designed to provide accurate, scalable, and accessible skin condition evaluation through a web-based system.

The proposed paper integrates advanced computer vision and deep learning techniques to analyze dermatological images uploaded by users. The system processes the image using Deep Convolutional Neural Networks (DCNN) to classify the detected skin condition and evaluate its severity. A structured assessment model calculates a severity index based on visual markers such as inflammation, lesion distribution, and texture variations.

Keywords:

Cloud-Based Platform, Computer Vision, Deep Learning, Tele-Dermatology, Image Classification, Automated Clinical Triage.

Healthcare Security Triad: Addressing Legacy Infrastructure, Data Security, and Vendor Dependencies in Resource-Constrained Healthcare Ecosystems

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Abstract:

India's healthcare sector is undergoing rapid digital transformation through national programmes such as the Ayushman Bharat Digital Mission, yet the cybersecurity infrastructure protecting it has not kept pace. The sector accounted for 22% of all recorded cyberattacks in 2024 — a sharp rise from prior years — driven largely by the continued use of outdated, unsupported operating systems across hospitals and networked medical devices. Globally, 83% of connected healthcare devices run on end-of-life software, and 98% of medical IoT traffic remains unencrypted. The consequences in India have been particularly severe: the AIIMS Delhi ransomware attack, linked to systems not upgraded in over thirty years, disabled operations for two weeks and exposed records of approximately 40 million patients. The ICMR data breach compromised records of 815 million citizens, while the Star Health Insurance incident leaked unencrypted personal and medical data of 31 million policyholders through exploited API vulnerabilities and credentials sourced from the dark web. In October 2024, the Fortis Healthcare breach further underscored how third-party vendor access to hospital systems creates cascading risk across the care delivery chain.

This paper proposes the Healthcare Security Triad, a framework built around three interdependent vulnerability domains commonly observed in resource-constrained healthcare environments: legacy infrastructure, data security, and vendor dependencies. For each domain, it presents targeted countermeasures — including microsegmentation, virtual patching, data tokenization, Zero Trust access models, and mandatory Software Bill of Materials disclosure — designed to work within existing budget and operational constraints rather than requiring wholesale infrastructure replacement. A central argument of this work is that these three domains form a reinforcing cycle: legacy systems cannot support modern encryption, unencrypted data amplifies the impact of vendor-side breaches, and vendor lock-in prevents timely security upgrades. While grounded in the Indian context, the framework is broadly applicable to healthcare systems across developing economies, contributing to sustainable digital health delivery in alignment with SDG 3 (Good Health and Well-being) and SDG 9 (Industry, Innovation, and Infrastructure).

Keywords:

Healthcare cybersecurity, legacy operating systems, data encryption, vendor risk management, Zero Trust architecture, sustainable digital health.

“A Comprehensive Study on Quantum Computing Applications in Cybersecurity”

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Abstract:

This paper focuses on the Quantum computing represents a major innovation in the field of computational science, wherein the laws of quantum physics are used for carrying out complex calculations at much higher rates than classical computers. This has the major impact on information security, wherein most of the cryptographic systems are usable only on classical computers, and they are designed for running only on systems that solve problems in integer factorization and discrete logarithm problems, for which classical computers are very slow. However, the introduction of quantum systems and the use of Shor's algorithm pose a major menace for most of the popular cryptographic systems used today, like RSA and Elliptic Curve Cryptography. But quantum computing also brings about new defenses. Developing technologies in the form of post-quantum cryptography and Quantum Key Distribution are developing with the aim of secure communications from quantum attacks. QKD technologies, based on fundamental physical laws rather than computational complexity, indeed provide theoretically unbreakable key exchange mechanisms. This paper looks at the dual role of quantum computing in cybersecurity with the consideration of the disruptive threats and protective opportunities. Further, it is rooted in the reported latest research development, identified technical implementation challenges, infrastructure transition problems, and strategic requirement for organisations to adapt themselves to quantum-safe cryptographic frameworks. The study finds that even as quantum computing may pose severe challenges for current security architectures, yet it simultaneously gives an opportunity to leverage fully quantum-enabled, future-proof digital protection systems.

Keywords:

Quantum Computing, Cybersecurity, Post-Quantum Cryptography, QKD, Encryption, Shor's Algorithm.

AI - Powered Mental Health Risk Assessment for Schizophrenia

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Abstract:

Schizophrenia is a severe and chronic mental disorder that affects perception, thinking, behavior, and emotional regulation. Early identification of individuals at risk is crucial for timely intervention and improved treatment outcomes. Traditional diagnostic approaches primarily rely on clinical observation and subjective assessments, which may delay early detection.

This paper proposes an AI-powered mental health risk assessment for the early prediction of schizophrenia using machine learning techniques. The integrates clinical, behavioral, demographic, and psychological assessment data to build predictive models capable of identifying high-risk individuals. Various supervised learning algorithms such as Logistic Regression, and Neural Networks are evaluated to determine optimal performance.

The proposed model aims to enhance prediction accuracy, reduce misclassifications rates, and support clinicians in decision-making processes. Feature selection and data preprocessing techniques are applied to improve model reliability and generalization.

Keywords:

Schizophrenia, Artificial Intelligence (AI), Machine Learning, Mental Health Risk Assessment Early Detection, Predictive Modeling.

Continuous-Variable Quantum CNN for Medical Image Classification

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Abstract:

This research explores a Continuous-Variable Quantum Convolutional Neural Network (CV-QCNN) architecture for medical image classification using photonic quantum computing principles. Unlike conventional quantum machine learning models that rely on discrete-variable qubits, the proposed approach utilizes continuous-variable quantum systems based on light properties such as squeezing and displacement operations. The model is implemented using quantum photonic simulators, including Strawberry Fields and PennyLane's continuous-variable framework, and evaluated on standard MedMNIST datasets comprising chest X-ray, retinal, and blood cell images. The performance of the CV-QCNN is systematically compared with classical convolutional neural networks and discrete-variable quantum models in terms of classification accuracy, computational behavior, and robustness under Gaussian noise conditions. This work contributes to the relatively underexplored area of continuous-variable quantum machine learning for medical imaging and provides a foundational framework for future research in quantum-enhanced healthcare diagnostics.

Keywords:

Continuous-Variable Quantum Computing, Quantum Convolutional Neural Network, Medical Image Classification, Photonic Quantum Computing, Quantum Machine Learning, MedMNIST Dataset.

Integrating Sustainable Innovations in Healthcare and Life Sciences for Global Development

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Abstract:

The global healthcare landscape faces unprecedented challenges, necessitating a shift toward interdisciplinary frameworks that harmonize clinical excellence with environmental stewardship. This research explores the integration of sustainable innovations within the life sciences and healthcare sectors to accelerate progress toward the United Nations Sustainable Development Goals (SDGs). Utilizing a systematic review of emerging biotechnologies and green healthcare infrastructure, the study identifies key drivers for sustainable global development, including carbon-neutral medical manufacturing and bio-based pharmaceutical advancements. The methodology involves a comparative analysis of current resource-intensive healthcare models against innovative circular economy frameworks. Results indicate that the adoption of energy-efficient diagnostic tools and biodegradable medical supplies can reduce the healthcare sector's environmental footprint by up to 30% without compromising patient care standards. Furthermore, the findings highlight that life science innovations, such as plant-based vaccines and decentralized bioprocessing, are critical for enhancing health equity in resource-limited settings. The study in this paper concludes that achieving long-term global development requires a synergistic approach where technological breakthroughs in life sciences are explicitly aligned with sustainable delivery models. By fostering cross-sector collaboration between biotechnologists and healthcare practitioners, stakeholders can build resilient systems that support both human health and ecological integrity. These insights provide a strategic roadmap for policy-makers and researchers aiming to implement sustainable health interventions on a global scale.

Keywords:

Sustainable Healthcare, Life Sciences, Global Development, Innovation, SDGs.

“Urban Heat Island Mitigation through Sustainable Green Infrastructure”

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Abstract:

Rapid urbanization and the expansion of built-up environments have intensified the Urban Heat Island (UHI) effect, wherein urban areas experience significantly higher temperatures than their surrounding rural regions. This temperature increase is largely attributed to impervious surfaces, dense infrastructure, diminished vegetation cover, and anthropogenic heat emissions. The UHI phenomenon results in elevated energy consumption, degraded air quality, increased greenhouse gas emissions, and heightened heat-related health risks, thereby posing substantial challenges to sustainable urban development.

This research examines the potential of sustainable green infrastructure as a nature-based solution for mitigating UHI impacts. Key interventions, including green roofs, urban forests, public parks, street vegetation, and permeable pavements, are evaluated for their effectiveness in reducing surface and ambient temperatures through mechanisms such as shading, evapotranspiration, and improved land-atmosphere energy exchange. A comprehensive review of recent studies demonstrates that these strategies significantly enhance urban thermal comfort, reduce cooling energy demand, and improve overall environmental quality.

Beyond temperature mitigation, green infrastructure provides additional ecological and socio-economic benefits, such as biodiversity enhancement, improved public health, and increased climate resilience. The findings highlight the necessity of integrating green infrastructure into urban planning policies and development frameworks to ensure long-term sustainability. By supporting the objectives of Sustainable Development Goal 11 (Sustainable Cities and Communities) and Sustainable Development Goal 13 (Climate Action), this study reinforces the importance of adopting nature-based approaches to foster resilient and climate-adaptive cities

Keywords:

Urban Heat Island (UHI), Sustainable Green Infrastructure, Climate Adaptation, Urban Cooling, Sustainable Cities, Green Roofs.

“Flex Meal: A User-Friendly Fitness and Diet Planning”

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Abstract:

This paper focuses on the approach and development of an intuitive user interface and enhanced user experience for a fitness application aimed at supporting users in achieving their health and fitness goals. The platform offers essential features such as workout tracking, activity logging, progress visualization, and personalized fitness planning. Emphasis is placed on creating a clean, responsive, and user-friendly interface that works seamlessly across different devices. Modern UI/UX design principles and tools are used to ensure easy navigation, visual clarity, and engaging interactions. The proposed approach motivates users to maintain consistency in their fitness routines while promoting a healthier lifestyle through effective digital interaction.

Keywords:

UI/UX Approach, User Interface, User Experience, Health Tracking, Mobile Navigation, Personal health tutor.

Role of AI in Sustainable Healthcare Development

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Abstract:

AI-powered healthcare revolutionizes the health industry and is a key factor in sustainable healthcare development. Sustainable health care is delivering quality medical services in a way that makes them low cost and environmentally friendly while not compromising the needs of future generations. AI, by analyzing medical images, patient records, and test results, will assist in the early diagnosis of diseases. That aids physicians in diagnosing diseases such as cancer, heart complications, and diabetes at an early stage, cutting down on treatment expenses and increasing patient survival rate. AI-driven telemedicine is one of the most important technologies to enable patients, particularly in rural regions, to consult a doctor remotely (online), which saves travel time and effort, as well as reduces levels of air pollution caused by constant visits for patients around hospitals/clinics. Hospitals use it to sort through patient data, forecast bed availability, and allocate resources. This means less waste, more efficiency, and lower costs. Patient data analysis and optimal treatment proposals are other functions of AI that provide personalized treatment. AI can also predict disease outbreaks by parsing vast amounts of health data, which allows for early preventive measures before an outbreak and aids in preparation for government and public health agencies. AI-supported digital health records eliminate the need for paper and promote data accessibility, which leads to environmental sustainability. This paper highlights the importance of AI for sustainable health development through diagnosis, treatment, resource utilization, access, reducing costs, and environmental sustainability.

Keywords:

Artificial Intelligence, Sustainable Healthcare, Telemedicine, Disease Diagnosis, Personalized Treatment, Environmental Sustainability.

AI Based Sustainable Healthcare Monitoring System for Early Diseases Prediction

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Abstract:

As more people face chronic and lifestyle-related illnesses, it's clear we need better and more lasting healthcare options. This paper introduces a new AI-based system for sustainable healthcare monitoring that aims to predict diseases early and keep an eye on patients continuously. The proposed framework integrates wearable sensors, devices connected through the internet, and cloud technology to gather real-time health information like heart rate, blood pressure, blood sugar levels, oxygen levels, and activity levels. By using advanced machine learning techniques, the system can look at this data and spot unusual patterns that could signal the early stages of diseases like diabetes, heart problems, and respiratory issues. Through predictive analytics, the proposed model facilitates catch issues early, which can lead to fewer hospital visits and lower ongoing care costs. This new approach focuses on being sustainable by cutting down on unnecessary doctor visits, making the best use of resources, and encouraging preventive health measures. The design prioritizes secure data transfer, protects patient privacy, and can be scaled up for both city and country health services. Plus, it includes telemedicine features, enabling doctors to check on patients from afar and give tailored advice. By mixing artificial intelligence with real-time monitoring and eco-friendly healthcare practices, the proposed framework looks to improve the accuracy of early diagnoses, boost patient health, and support affordable and environmentally friendly healthcare solutions. This method is an important move toward creating strong and smart healthcare systems for the future.

Keywords:

Artificial Intelligence (AI), Sustainable Healthcare Monitoring, Early Disease Prediction, Machine Learning, Wearable Sensors, Internet of Things (IoT).

Digital Health Consultation Portal: A Web-Based Telemedicine Platform

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Abstract:

The expansion of telemedicine has the demand for secure, scalable, and accessible digital healthcare platforms capable of supporting remote clinical services. This paper presents the implementation of a Digital Health Consultation Portal, a comprehensive telemedicine system that integrates patients, doctors, and hospitals within a unified digital platform. The proposed framework delivers an end-to-end solution in the healthcare process, from appointment scheduling to consultation, diagnosis, and payment, within a centralized platform. The system has a modular architecture incorporating secure user authentication, hospital and doctor management, appointment scheduling, real-time audio and video consultation features, electronic medical record management, digital prescription generation, and integrated online payment processing. Patients are able to search hospitals, book appointments, consult healthcare professionals remotely, and access their medical histories through a centralized platform. Meanwhile, healthcare providers can manage schedules, review patient records, conduct consultations, and generate electronic prescriptions, enhancing workflow efficiency. To ensure data security and regulatory compliance, the platform implements encrypted data transmission, role-based access control, and secure data storage to protect the sensitive medical information. Performance evaluation shows the ability to support many users while maintaining low latency and reliable real-time communication. Additionally, the integrated payment gateway improves transparency and convenience in consultation transactions. To minimize the in-person visit to the hospital from the remote areas, the proposed paper enhances healthcare accessibility and improves patient experience. Overall, the Digital Health Consultation Portal offers a scalable, cost-effective, and deployable telemedicine framework that contributes to improved healthcare delivery and supports the digital transformation of healthcare platform.

Keywords:

Telemedicine, WebRTC, E-prescription, Digital Health, Healthcare Information Systems, Secure Payment Integration.

Prevalence of Cell Phone Vision Syndrome Among College Students

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Abstract:

Background: Increased smartphone usage has led to a rise in digital eye strain among young adults.

Objective: To determine the prevalence of Cell Phone Vision Syndrome (CVS) among college students and assess its impact on visual performance.

Methods: A cross-sectional study was conducted among 400 college students aged 18–25 years. Visual acuity was evaluated using the Snellen chart. Extra ocular muscle function was assessed in nine gazes. Blink rate during smartphone usage, corneal sensitivity reflex, and ocular dryness symptoms using the OSDI questionnaire were recorded.

Results: Of the 400 students, 38.5% showed ocular abnormalities. Abnormal blink rates were observed in 81.1% of participants, with moderate and severe variations noted in 43.8% and 37.3%, respectively. Blink abnormalities were strongly associated with dry eye symptoms. Extra ocular movements and corneal sensitivity were unaffected. A statistically significant variation in visual acuity across departments was observed ($p = 0.002$).

Conclusion: CVS is highly prevalent among college students. Preventive strategies such as screen breaks, ergonomic practices, and awareness programs are recommended to reduce the risk of digital eye strain.

Smart Myopia Control Strategies in Children: Integrating Digital Monitoring for Sustainable Vision Care

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Abstract:

Background: A major worldwide public health problem now is the sharp rise in childhood myopia. Myopia in school-age children has started earlier and progressed more quickly due to increased screen use, intense near work, and less outside activity. The lifelong risk of major ocular problems is increased by progressive myopia, underscoring the necessity of efficient early intervention techniques.

Objective: To assess the efficacy of smart myopia control therapies that include digital compliance monitoring, myopia control glasses, and low-dose atropine therapy.

Methods: 120 myopic youngsters between the ages of 6 and 15 participated in a prospective study. Customized myopia control interventions were given to the participants. Optical biometry was used to assess refractive error and axial length progression at regular intervals over a 12-month period. To track adherence and promote regular therapy use, a mobile-based compliance tracking system was implemented

Results: Children receiving combined therapy demonstrated a 45% reduction in myopia progression compared to baseline rates. Mean axial elongation showed a 44% decrease relative to expected age-matched progression. Higher treatment adherence was significantly associated with improved refractive stability, with compliant children showing better control outcomes. Implementation of digital compliance monitoring resulted in a 30% increase in adherence levels. Greater compliance was positively associated with slower axial elongation and reduced myopic progression, indicating a strong relationship between adherence and overall treatment effectiveness.

Conclusion: Technology-assisted, multimodal myopia management provides an effective, sustainable, and scalable approach for pediatric eye care, reducing long-term visual disability risk.

Keywords:

Myopia control, Pediatric optometry, Digital health, Sustainable eye care.

Gridlock Guardian: Automated Bus Scheduling and Route Management System

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Abstract:

The increasing rate of the city's population has resulted in an increasing need for efficient public transportation systems with effective scheduling, optimized route planning, and constant monitoring of the operations. Manual scheduling methods result in inefficient use of resources, unexpected delays, and fluctuating levels of service quality. To overcome these issues, this paper proposes an Automated Bus Scheduling and Route Management System (ABS-RMS) that utilizes a data-driven backend solution to optimize the use of the fleet. The system automatically assigns the bus and staff based on the availability of resources, staff needs, and operational requirements to minimize human error and optimize dispatch accuracy. It also comprises a module on route overlap analysis that identifies possible congestion areas and identifies better routes. The GPS is integrated into the system and can be utilized to monitor the buses continuously, and a set of automated notifications are sent to the drivers regarding delay, route deviation, or other mechanical problems. Additionally, the system comprises dashboards that offer a variety of information on fleet performance, staff productivity, and route efficiency to aid in planning. The ABS-RMS can be adapted to suit different depot settings and is adaptable to suit different fleet sizes and city infrastructure. Although the system does not directly engage with commuters, the faster turnaround time and fewer service disruptions that automation offers are expected to significantly improve the overall commuting experience.

Keywords:

Automated Bus Scheduling, Route Management System, Real-Time GPS Tracking, Crew Scheduling, Route Optimization.

Effectiveness of Birthing Ball on Labor Pain Intensity in the First Stage of Labor

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Abstract:

Maternal mortality remains a major global health issue, particularly in developing countries such as Indonesia. Prolonged labor is one of the contributing factors to maternal mortality, as it is closely associated with increased pain, maternal exhaustion, and obstetric complications. Non- pharmacological interventions, including the use of a birthing ball, have been recommended to support comfort and pain management during labor. This study aimed to examine the effect of birthing ball use on labor pain intensity during the first stage of labor.

A quasi-experimental study with a pretest-posttest control group design was conducted at PMB Dewi Elliana, Semarang City. A total of 30 laboring women were selected using purposive sampling and assigned to an intervention group (n = 15) and a control group (n = 15). The intervention group received birthing ball therapy during the active phase of the first stage of labor, while the control group received standard care. Labor pain intensity was measured at baseline and during two subsequent observations. Data were analyzed using independent t-tests.

The results demonstrated a statistically significant difference in labor pain intensity between the intervention and control groups ($p < 0.001$). In the birthing ball group, the mean pain score before intervention was 57.00 and increased moderately to 62.67 and 68.93 at the first and second measurements, respectively. In contrast, the control group showed a sharper increase in pain intensity, with a mean pretest score of 50.80 rising to 75.40 and 88.80 at the first and second measurements. These findings indicate that birthing ball use effectively moderates the increase of labor pain during the first stage of labor.

Conclusion: Birthing ball therapy is a simple, safe, and effective non-pharmacological intervention for managing labor pain and may be integrated into midwifery and maternity nursing care to improve maternal comfort during labor.

Keywords:

Birthing ball, labor pain, first stage of labor, midwifery care, maternity nursing.

A Sustainable Telemedicine Framework for Rural Healthcare Delivery

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Abstract:

Significant obstacles confront rural healthcare systems, such as inadequate infrastructure, a lack of qualified medical personnel, and limited access to specialist care. By facilitating remote consultation, diagnosis, and follow-up services, telemedicine provides a long-term solution. This study suggests a sustainable telemedicine architecture that uses a scalable and modular digital method to enhance healthcare delivery in remote locations. Electronic health records, secure teleconsultation, automated follow-up alerts, and patient and physician interfaces are all integrated. Through the utilization of cloud-based platforms and lightweight apps, the paradigm guarantees accessibility in environments with limited resources. Reducing patient travel, making the most of healthcare resources, cutting expenses, and lessening the impact on the environment are all ways to achieve sustainability. To solve issues like poor connectivity and low digital literacy, the study also places a strong emphasis on data security, privacy protection, and user-friendly design.

Keywords:

Telemedicine, Rural Healthcare, Sustainable Healthcare, Digital Health, Electronic Health Records (EHR), Healthcare Accessibility.

Proactive Patient Care Using Smart Sensing and Health Data Fusion

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Abstract:

Proactive patient care has emerged as a critical requirement in modern healthcare systems to facilitate early risk detection and minimize reliance on hospital-centered treatment models. Continuous monitoring through smart sensing technologies enables the collection of essential physiological parameters such as heart rate, body temperature, oxygen saturation, and blood pressure. However, conventional single-sensor or isolated data analysis approaches often suffer from fragmented health assessment, data redundancy, and delayed clinical interpretation. This paper proposes a conceptual proactive patient care framework based on intelligent sensing and health data fusion to enhance the accuracy and reliability of health monitoring. The proposed framework integrates multi-sensor data through systematic preprocessing, feature extraction, and fusion-based analytical techniques to generate a comprehensive representation of patient health status. By combining heterogeneous physiological inputs, the model aims to support early identification of abnormal patterns and potential disease risks.

Keywords:

Multi-Sensor Monitoring, Intelligent Sensing, Health Data Fusion, Preventive Healthcare, Clinical Decision Support, Smart Healthcare Systems, Early Risk Detection.

Agnext

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Abstract:

AGNEXT is an Internet of Things (IoT)-based smart farming is developed to improve agricultural monitoring, decision-making, and resource management through continuous real-time data acquisition and intelligent alert mechanisms. Modern agriculture increasingly demands automated and data-driven solutions to address challenges such as water scarcity, climate variability, and crop safety. The proposed system leverages an ESP32 microcontroller integrated with multiple environmental sensors, including soil moisture, temperature, humidity, light intensity, rain, water level, and flame sensors, to monitor critical field parameters. These sensors collectively enable comprehensive observation of environmental and soil conditions affecting crop growth.

The acquired sensor data is transmitted to a backend server via wireless communication protocols and systematically stored in a MongoDB database for centralized access, visualization, and long-term analysis. By employing predefined threshold values and rule-based evaluation of environmental parameters, the system provides smart irrigation guidance aimed at optimizing water usage and preventing over-irrigation. This functionality supports farmers in making informed, data-driven decisions that enhance crop productivity while conserving resources.

Furthermore, the paper incorporates a real-time alert framework to detect abnormal or hazardous conditions, such as fire incidents, extreme temperature fluctuations, insufficient soil moisture, and irregular water levels. Upon detection of such events, instant SMS notifications are delivered using Twilio services, enabling rapid response and mitigation of potential losses. This paper facilitates remote farm monitoring, enhances situational awareness, and minimizes manual intervention. Overall, the proposed solution contributes to precision agriculture by improving operational efficiency, promoting sustainable farming practices, and reducing risks associated with environmental uncertainties.

Keywords:

Internet of Things (IoT), Smart Farming, Environmental Sensors, Smart Irrigation, Precision Agriculture, Twilio SMS Alerts.

“AI-Driven Frameworks for Climate-Resilient Healthcare Systems: A Sustainable Digital Approach”

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Abstract:

This paper focuses on the Climate change affects global health infrastructure considerably by increasing the frequency of extreme climatic events, the transmission rate of climate-sensitive diseases, destruction of vital health infrastructure, and supply chain volatility. Conventional management practices in the field of health infrastructures are mostly reactive in nature and follow fixed trends from the past without the presence of predictive intelligence to respond to the increasing challenges of climate change. This research aims at developing an Artificial Intelligence-based Sustainable Digital Model for addressing climate change responses in the field of health infrastructures. The novel framework involves three closely interconnected parts: climate analytics, epidemiological time series prediction, and dynamic healthcare resource allocation. In addition, a Long Short-Term Memory Network is adopted for identifying complex non-linear relationships between climate factors like rainfall, humidity, and temperature, and disease activity. This is useful for precise prediction of climate-driven disease outbreaks. On the other hand, a Reinforcement Learning architecture is also created, allowing for the dynamic allocation of vital healthcare resources during disease outbreaks. Experimental validation based on past climate and public health data sets verifies the enhanced accuracy in forecasting, along with reduced forecasting error and greater efficiency in resource utilization, through this hybrid model of LSTM and RL. The proposed framework, through proactive decision-making, will not only support Sustainable Development Goal 3: Good Health and Well-being, but will also support Sustainable Development Goal 13: Climate Action.

Keywords:

Artificial Intelligence, Climate Resilience, Sustainable Healthcare, LSTM, Reinforcement Learning, Predictive Analytics.

“Powerful General AI Systems for Mastering Board and Video Games”

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Abstract:

This paper focuses on the design and development of powerful general Artificial Intelligence (AI) systems capable of playing and mastering a wide range of board games and video games. The main objective is to create intelligent agents that can learn, adapt, and make effective decisions across different environments without being programmed specifically for each game. Gaming platforms provide structured rules, defined objectives, and measurable outcomes, making them ideal for evaluating AI performance.

The proposed system uses modern machine learning approaches such as reinforcement learning, neural networks, and self-play techniques. These methods enable the AI to improve through experience, discover strategies, and respond to new challenges. The paper aims to support both turn-based board games that require planning and real-time video games that demand quick reactions and perception.

Emphasis is placed on generalization and scalability so that knowledge learned from one game can be applied to others. The paper demonstrates how progress in general game-playing AI contributes to broader applications, including automation and intelligent decision-support systems.

Keywords:

Artificial Intelligence, General AI, Reinforcement Learning, Game Playing, Neural Networks, Decision Making.

Sustainable Hospital Waste Management using Biological Treatment Methods

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Abstract:

Hospitals produce significant quantities of waste, including medical supplies, food waste, laboratory waste, and medical waste contaminated with hazardous bacteria. The inability to properly manage this waste can have serious consequences for the ecosystem by contaminating the air, water, and soil surrounding hospitals, which can lead to harm to the people in the surrounding areas. One safe method of managing waste is to use biological treatment, which uses microorganisms to break down harmful materials into safe materials. Biological treatments such as composting and anaerobic digestion reduce the amount of waste in our landfills, provide us with valuable materials such as nutrient-rich soil and biogas, and also provide us with an opportunity to treat wastewater. Although biological treatments require significant infrastructure and trained staff, they provide long-term environmental and economic benefits. Proper management of medical waste allows hospitals to provide public safety and encourage sustainable development.

Keywords:

Hospital waste management, biological treatment, Composting, Anaerobic digestion, Wastewater treatment, Environmental protection.

Optimizing Urban Energy and Carbon Neutrality Through Green Roof-Integrated Solar Photovoltaic Systems

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Abstract:

Rapid urbanization has intensified the Urban Heat Island (UHI) effect and increased energy demand in cities, creating significant challenges for achieving carbon neutrality. This paper examines the potential of Biosolar roofs, an integrated system combining rooftop vegetation with photovoltaic (PV) panels, as a sustainable urban infrastructure solution. Conventional solar panels often experience efficiency losses under elevated temperatures; however, vegetated roofs provide passive cooling through evapotranspiration, lowering panel surface temperatures and enhancing electricity generation. Evidence indicates that this cooling interaction can improve PV performance by approximately 6% to 15% during peak summer periods. In addition to boosting power output, PV structures provide partial shading that protects vegetation from excessive heat and moisture stress, thereby supporting plant growth and strengthening urban biodiversity. The integrated configuration contributes to climate action through a dual carbon-reduction pathway: rooftop plants absorb atmospheric carbon dioxide via biological processes, while PV systems replace fossil-fuel-based power with renewable energy. The paper evaluates the thermal, environmental, and energy performance of Biosolar roofs in comparison with conventional roofing systems. Results indicate that Biosolar installations can reduce building cooling energy demand by up to 70% and decrease rooftop ambient temperatures by as much as 20°F. By merging ecological and technological elements within a unified rooftop design, Biosolar roofs present a multifunctional approach to lowering emissions, reducing urban heat impacts, and advancing sustainable city development. Overall, Biosolar infrastructure represents a viable pathway toward net-zero targets and resilient urban environments.

Keywords:

Biosolar roofs, Urban Heat Island, Carbon neutrality, Photovoltaic performance, Green infrastructure, Evapotranspiration.

Care Connect App for Elders

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Abstract:

Older adults who live alone often struggle with managing daily tasks, accessing healthcare, and receiving quick help during emergencies. Many existing solutions provide limited support and do not properly connect monitoring, service requests, and emergency response in one system. This paper introduces *Care Connect*, a web-based platform developed using the MERN stack to support the safety, independence, and well-being of elderly individuals through an integrated digital care system. Care Connect combines key features such as activity reminders for medication, exercise, and daily routines, a home-care service request module, fall-detection alerts, and a 24/7 notification system through SMS or phone calls. With real-time communication and automation, the system immediately informs family members or nearby volunteers in case of emergencies, ensuring faster assistance. The platform is designed with a simple and user-friendly interface so that seniors can use it easily without technical knowledge, while caregivers and family members can also stay connected. By integrating monitoring, emergency alerts, and community support into one unified system, Care Connect aims to improve the quality of life of older adults and provide reliable care whenever needed.

Keywords:

Elder Care, MERN Stack, Activity Tracking, Fall Detection, Emergency Alerts, Home-Care Services, Volunteer Network, Web Application, Senior Citizen Safety, Real-Time Notifications.

Psychometric Evaluation of Bull's Mental Skills Questionnaire among Gifted and Talented Population in Malaysia

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Abstract:

Mental skills play an important role in supporting the psychological well-being and performance of gifted and talented students in educational and co-curricular settings. Although Bull's Mental Skills Questionnaire (BMSQ) has been widely used in sport psychology research, empirical evidence on its validity and reliability among gifted and talented students in Malaysia remains limited. Therefore, evaluating the psychometric properties of this instrument is essential to ensure its suitability within the local educational context. This study evaluated the psychometric properties of BMSQ among gifted and talented students in Malaysia. A total of 214 students which is 54.2% male, 45.8% female aged 12 to 17 years participated in this study. Descriptive analysis indicated moderate to high levels across seven mental skill domains, with mental readiness and imagery ability recording the highest mean scores. The data met normality assumptions, with skewness and kurtosis values within ± 1 . The Kaiser-Meyer-Olkin (KMO) measure of 0.840 and Bartlett's Test of Sphericity ($\chi^2 = 2775.911$, $p < .001$) confirmed sampling adequacy and factorability. Exploratory Factor Analysis (EFA) using Principal Component Analysis with Varimax rotation extracted seven components explaining 65.82% of the total variance, consistent with the original theoretical model proposed by Bull et al. (1996). Reliability analysis showed strong internal consistency, with Cronbach's alpha values ranging from 0.716 to 0.871 across subscales and an overall coefficient of 0.859. These results affirm the BMSQ's factorial validity and reliability in assessing multidimensional mental skills among gifted and talented students. The findings extend the application of sport psychology measurement tools to the educational context, offering new insights into the psychological readiness, motivation and emotional regulation of gifted learners. This validation supports the use of the BMSQ for developing targeted interventions to strengthen mental skills among gifted and talented students in Malaysia and similar educational settings.

Keywords:

Bull's Mental Skills Questionnaire (BMSQ), gifted and talented students, factor analysis, mental skills.

Evaluation of the Osteoprotective Potential of *Symphytum officinale* Against Glucocorticoid-Induced Osteoporosis in Adult Zebrafish

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Abstract:

Osteoporosis is a metabolic bone disorder characterized by reduced bone mass and an increased risk of fractures. Chronic exposure to glucocorticoids, particularly dexamethasone, is a major cause of secondary osteoporosis, as it suppresses osteoblast activity while enhancing osteoclast-mediated bone resorption. This imbalance leads to impaired bone formation and compromised skeletal integrity. *Symphytum officinale* (Comfrey) is a medicinal plant traditionally recognized for its anti-inflammatory, antioxidant and bone-healing properties, making it a potential natural therapeutic candidate for bone-related disorders. The present study evaluated the osteoprotective potential of *S. officinale* extract in a dexamethasone-induced osteoporosis model using adult zebrafish (*Danio rerio*). Osteoporosis was induced through dexamethasone exposure, followed by treatment with graded concentrations of *S. officinale* extract. Bone density and mineralization were assessed using Alizarin Red staining, along with morphological and histological evaluations to examine skeletal architecture and bone integrity. The findings provided insights into the ability of *S. officinale* to reverse or mitigate glucocorticoid-induced osteoporotic changes. Overall, the results supported the potential of *S. officinale* as a promising natural therapeutic strategy for the management of osteoporosis.

Keywords:

Osteoporosis, Dexamethasone, *Symphytum officinale*, Zebrafish model.

