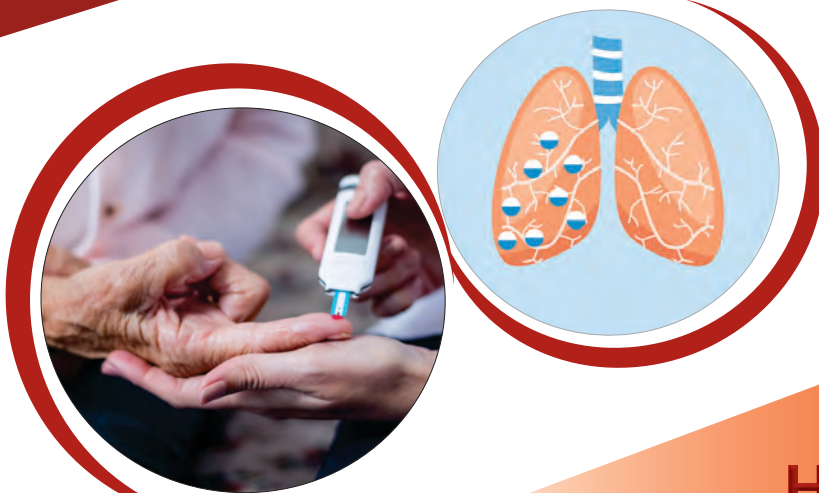


# IJGC

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## HIGHLIGHTS

- Innovative Non-Invasive Technology to Detect Pulmonary Congestion in Heart Failure Patients ◆
- Care of Elderly with Diabetes Special considerations, challenges and education ◆
- Geriatrics & Geriatric Giants: A Review Article ◆
- Suryanamaskar: Unlocking the Potential of Chrono-Physiology for a Elderly Healthy Heart ◆
- Sepsis in Elderly: Early Diagnosis and Management ◆
- An Unusual Case of Fever With Rash in Elderly ◆
- Exercise for Elderly Diabetic Patients - Which one, How and How Much? ◆



## Announcement

# GSICON 2023

**15<sup>th</sup> – 17<sup>th</sup> December 2023**

with a pre-conference workshop on  
Emergencies in Geriatric Practice  
on 15<sup>th</sup> December 2023.

*It will be held in association with*

**Yenepoya University and API DK chapter and  
Karnataka Chapter**

**Venue:** Yenepoya Deemed to be University,  
Mangalore, Karnataka

**Org. Chairperson** - Dr. Prabha Adhikari

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**Dr. M. V. Jali**

Medical Director & CE,  
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## Sepsis in the Elderly: An Emerging Crisis

### INTRODUCTION

#### The Ageing Population and Sepsis

With the ageing population on the rise, the management and understanding of sepsis in this demographic has become increasingly pertinent. Like many countries, India is witnessing a demographic shift towards an ageing population. This demographic change comes with unique challenges in healthcare. One such challenge is the increased susceptibility of the elderly to infections and, subsequently, sepsis. Sepsis, a life-threatening condition resulting from the body's response to an infection,<sup>1</sup> can be particularly complex in older individuals. Sepsis in the elderly is an emerging issue requiring attention and understanding. As people age, their immune systems weaken, making them more susceptible to infections. Sepsis occurs when the body's response to an infection becomes uncontrolled and spreads throughout the body, leading to organ failure and, in severe cases, death.<sup>2</sup>

Several factors make sepsis particularly challenging in the elderly population:

1. Older adults often have multiple chronic health conditions, making it harder to diagnose sepsis early.<sup>3</sup>
2. They may have atypical symptoms, such as confusion or decreased overall functioning, which can be mistaken for other age-related conditions.
3. The immune system of older adults may not respond as effectively to infections, making it harder for their bodies to fight off the infection and prevent sepsis.

#### Why Are the Elderly More Vulnerable?

Several factors contribute to the heightened susceptibility of

the elderly to sepsis. Age-related changes in the immune system, known as immune-senescence, can reduce the ability to combat infections effectively.<sup>4</sup> Chronic medical conditions often accumulate with age, weakening the body's defences.

#### Chronic Conditions and Sepsis

Patients with Cancer, Heart Disease, and Diabetes are at a higher risk of infection if their blood sugar levels are poorly controlled. In the case of sepsis occurring in individuals with diabetes, the clinical picture can become more complex, requiring careful management to maintain both the underlying condition and the illness.

#### Diagnostic Challenges, Early Recognition and Diagnosis

The timely recognition of sepsis is paramount for improving outcomes, particularly in elderly patients. The subtle signs and symptoms of sepsis in older individuals may easily be confused with other age-related conditions, necessitating a keen clinical acumen and a low suspicion threshold to initiate timely treatment. Managing sepsis in the elderly requires a collaborative approach among various medical specialities, including infectious disease specialists, intensivists, and geriatricians. Therefore, a multidisciplinary effort is essential to ensure optimal patient care.

#### Preventive Strategies

Prevention is crucial in reducing the impact of sepsis among older individuals. Vaccination against common pathogens, such as influenza and pneumococcus, can significantly



lower the chances of infection and subsequent sepsis. Promoting good hygiene practices, especially in healthcare settings and long-term care facilities, is essential to prevent infections among vulnerable elderly individuals.

## Advancing Therapeutic Approaches

The effective management of sepsis in elderly individuals necessitates a comprehensive, multidisciplinary approach. In concert with the early administration of appropriate antibiotics and source control, novel therapies are being investigated to modulate the dysregulated immune response observed in sepsis. Immunomodulatory drugs, including cytokine inhibitors and immune checkpoint blockers, hold promise in enhancing outcomes for elderly septic patients. However, further research is imperative to evaluate their safety and efficacy, specifically in this population.

## Raising Awareness and Education

It is important to note that sepsis is a severe issue among elderly individuals, and it requires a joint effort to spread awareness among healthcare providers, caregivers, and older adults. Educational campaigns should emphasise the importance of recognising sepsis symptoms early, the need for prompt medical intervention, and preventative measures. Furthermore, interdisciplinary collaborations between geriatricians, infectious disease specialists, and critical care physicians can help develop customised management strategies for elderly septic patients.

As we work towards addressing the challenges posed by sepsis in older adults, we must prioritise improved awareness, diagnostic tools, and treatment approaches to minimise the impact of this growing public health concern on our vulnerable elderly population. Combining preventive measures, early detection, and targeted interventions can achieve better outcomes and lower mortality rates. Healthcare systems, policymakers, and researchers must come together to address this emerging crisis and protect the health and well-being of our ageing population.

## Advancements in Treatment and Research

Sepsis is a severe medical condition that occurs when the body's reaction to an infection becomes imbalanced,

causing organ dysfunction and, in extreme cases, even death.<sup>5</sup> Although sepsis can affect people of all ages, it presents particular challenges for the elderly. Experts in the field are actively exploring innovative approaches to manage sepsis in older adults better. This includes the development of more accurate diagnostic tools, improved treatment guidelines, and the use of cutting-edge therapies, such as immunomodulatory drugs.

This editorial aims to highlight the increasing incidence of sepsis in elderly patients and stress the need for heightened awareness, advanced diagnostic capabilities, and improved therapeutic strategies to tackle this critical public health issue. Ongoing research leads to a better understanding of sepsis, resulting in more effective treatment options. This knowledge is crucial in ensuring that older adults receive the highest quality of care possible.

## CONCLUSION

The issue of sepsis in older adults demands our attention, understanding, and proactive measures. By raising awareness, improving early detection, and advancing research, we can strive for better outcomes for those affected by this condition. This challenge is especially pertinent in India's changing demographics, and as a clinician and leader, you can address it effectively. Prioritising early detection, multidisciplinary care, and staying abreast of the latest research can result in better outcomes and enhance the recovery process for our ageing population.

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# Innovative Non-Invasive Technology to Detect Pulmonary Congestion in Heart Failure Patients

Amit Garg\*

## ABSTRACT

*Congestive heart failure (CHF) affects about 8 million people in India. It is a prevalent condition among geriatric patients, presenting unique challenges in diagnosis and management. Pulmonary fluid overload, a hallmark of HF, often leads to acute decompensation and high rate of admission, re-admission, and mortality as per registry data. There are specific issues associated with HF in geriatric patients, particularly building up of pulmonary congestion. This article discusses the significance of accurate fluid assessment, explores current monitoring techniques, and proposes potential solutions to optimize fluid management in this vulnerable population. The findings underscore the importance of implementing effective strategies to enhance outcomes and quality of life for geriatric HF patients. However, till recently, there were no definitive non-invasive tool for assessing the pulmonary congestion. ReDS PRO technology is a recently introduced method to non-invasively determine the pulmonary congestion status which is found to be useful in breaking the cycle of hospitalization and rehospitalization in heart failure patients.*

## INTRODUCTION

Heart-related illnesses are responsible for most non-communicable disease deaths and are the primary cause of death worldwide. CHF is a cardiac condition characterized by the inability to meet the systemic demands of circulation due to functional or structural heart abnormalities that cause the left ventricle to be incapable of pumping adequate blood to satisfy the minimum metabolic demands.<sup>1</sup> Congestive heart failure (CHF), one of the cardiovascular diseases, affects approximately 26 million individuals globally.<sup>2</sup> In India, CHF affects about 8 million people. The incidence of heart failure due to pre-existing comorbidities such as coronary heart disease, hypertension, obesity, diabetes, and rheumatic heart disease in India was estimated to be between 1.3 and 4.6 million.<sup>2</sup> The prevalence of heart failure increases with age, and geriatric patients often exhibit distinct clinical features and comorbidities, making their management challenging. Pulmonary fluid overload is a critical aspect of heart failure management, as it directly affects patients' symptoms, functional status,

and hospitalization rates. This article examines the major issues associated with heart failure in geriatric patients and focuses on the importance of pulmonary fluid monitoring to optimize patient care.

## HEART FAILURE IN GERIATRIC PATIENTS

Heart failure (HF) is a prevalent condition among geriatric patients, and it poses significant challenges due to atypical symptoms, multiple comorbidities, reduced functional reserve and medication complexities.

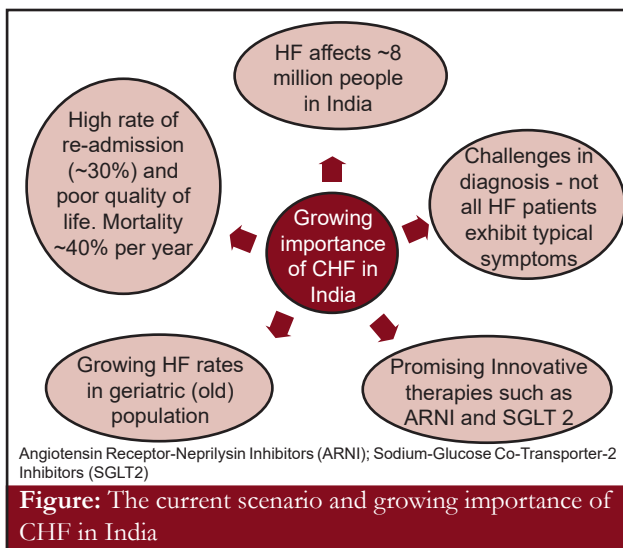
### 1. Multiple Comorbidities

Geriatric patients frequently present with multiple comorbidities, such as hypertension, diabetes, and chronic kidney disease, which complicate heart failure management. These comorbidities interact with heart failure, further exacerbating fluid imbalance and worsening symptoms.<sup>3</sup>

Moreover, atypical symptoms and delayed diagnosis further contribute to higher hospitalization rates in this population. Rehospitalization rates in geriatric HF patients are alarmingly high, leading to increased health-care costs and decreased quality of life.<sup>4</sup>

---

\*Dr. Amit Garg, GSI - Life Member, Senior Director, Terumo India Gurugram - India



## 2. Atypical Presentation

Geriatric patients often exhibit atypical symptoms of heart failure, leading to delayed diagnosis and treatment initiation. Symptoms such as fatigue, weakness, and decreased exercise tolerance can be mistakenly attributed to the normal aging process, resulting in underdiagnosis and delayed interventions. Hence, early detection of warning signs using appropriate, absolute, and actionable signals is warranted in this subset of vulnerable population.<sup>5</sup>

## 3. Polypharmacy and Medication Compliance

Geriatric patients often take multiple medications for various comorbidities, increasing the risk of drug interactions and non-adherence.<sup>6</sup> Medication non-compliance further compromises heart failure management and exacerbates fluid imbalance.

Comprehensive management strategies targeting medication optimization, patient education, and transitional care interventions are crucial to reduce hospitalization and rehospitalization rates in geriatric HF patients, ultimately improving outcomes and enhancing patient well-being.<sup>7</sup>

Monitoring of heart failure in geriatric patients can be challenging due to atypical symptoms and overlapping comorbidities. Of particular concern is the accurate assessment and monitoring of pulmonary fluid overload, which directly impacts patient symptoms, functional status, and hospitalization rates.<sup>7</sup> Pulmonary fluid overload leads to dyspnea, decreased exercise tolerance, and increased hospitalization rates. Accurate assessment of pulmonary fluid status is crucial for prevention of acute decompensation. A comprehensive understanding of the

major issues surrounding pulmonary fluid monitoring is necessary to optimize care and improve outcomes for geriatric heart failure patients.

Advanced diagnostic tools, including imaging modalities and biomarkers, aid in accurate diagnosis and allow for timely interventions.

## CHALLENGES WITH CHF MANAGEMENT IN GERIATRIC PATIENTS

Despite various interventions including education, modifications in lifestyle, guidelines directed medical therapy, and strict follow-up in improving post-discharge outcomes, the effectiveness remains limited and heart failure readmission rates continue to pose a challenge.

The rate of hospital readmission for CHF in India is around 37%.<sup>8</sup> Also, one-year mortality rate of CHF is estimated to be around 40%.<sup>9</sup> This points to the high burden of CHF to the Indian population.

Each episode of heart failure and subsequent hospitalizations impose significant distress on patients and an increased economic burden on healthcare systems.<sup>10</sup> Also, after each hospitalization, there is a noticeable deterioration in the cardiac and renal functions of patient and a worsening of the long-term prognosis of CHF which finally leads to the death of the patient.<sup>11</sup>

Congestion is a major contributor to symptoms and hospitalization in patients with CHF. Currently, clinical examination is the primary method for evaluating fluid status in patients. However, this approach can be difficult for patients with limited mobility or for those who exhibit subclinical congestion, as symptoms may not be apparent. Hospitalization due to fluid retention and congestion is a common occurrence among patients with HF, and it is associated with poor outcomes. Early detection of congestion is therefore crucial for altering the course of the disease. The ReDS PRO fluid monitoring system offers a non-invasive, safe, and rapid means of assessing fluid retention in patients, which could be valuable in this regard.

ReDS PRO is a Food and Drug Administration (FDA) and Conformité Européenne (CE) approved innovative electromagnetic radio detection and ranging (RADAR) sensor-based system which accurately quantifies lung fluid concentration noninvasively and acts as a measure to predict future exacerbations of heart failure. The measurements obtained from ReDS PRO has a correlation of 0.95 with those obtained from Computed Tomography (CT) scans.<sup>12</sup> Safety of ReDS PRO is approved by FDA, and it has only around 1/1000th of radiation exposure of



that of a cell phone. The device is put on top of the clothes, and it gives an accurate reading in 45 seconds making it convenient and easy to use. ReDS PRO has patency for multiple applications around pulmonary congestion and fluid measurement. Although > 300 devices are operational in US and EU, this technology is still in its nascent stage in India.

Cone Health Medical Care conducted a prospective pilot study to evaluate the effect of ReDS-guided management strategy in discharged patients. The study examined the effect of ReDS on fluid overload/lung congestion at 30-day and 90-day follow-ups in randomized patients. Despite planned discharge, 32% of patients (30% in the treatment arm and 35% in the control arm;  $p=0.55$ ), had clinically significant persistent fluid overload while, 12% of patients had mild lung congestion supporting the fact that this may be a risk factor for short-term heart failure readmissions. The volume overloaded group in treatment arm ( $N=18$ ) underwent additional diuretic therapy which extended the hospital stay by an average of  $2.6 \pm 1.6$  days resulting in a mean decrease of  $7.1 \pm 5.1\%$  in ReDS value ( $p<0.001$ ) in 7 (44%) patients. This drop in ReDS measurements supported its physiologic validity and diuretic responsiveness. ReDS-guided management led to mean additional weight loss of  $5.6 \pm 4.8$  pounds ( $p<0.001$ ) without significant safety concerns (i.e., worsening renal function or hypotension). Control arm in comparison to treatment arm demonstrated higher rates of 30-day readmissions (4.2% vs. 1.7%;  $p=0.44$ ) and lower rates of 90-day (12.5% vs 16.7%;  $p=0.54$ ) readmissions due to recurrent heart failure.<sup>13</sup>

Another retrospective, single-centre, observational cohort studied the impact of performing ReDS assessments after heart failure hospitalization on 30-day outcomes in 220 ADHF patients who were divided to ReDS performed

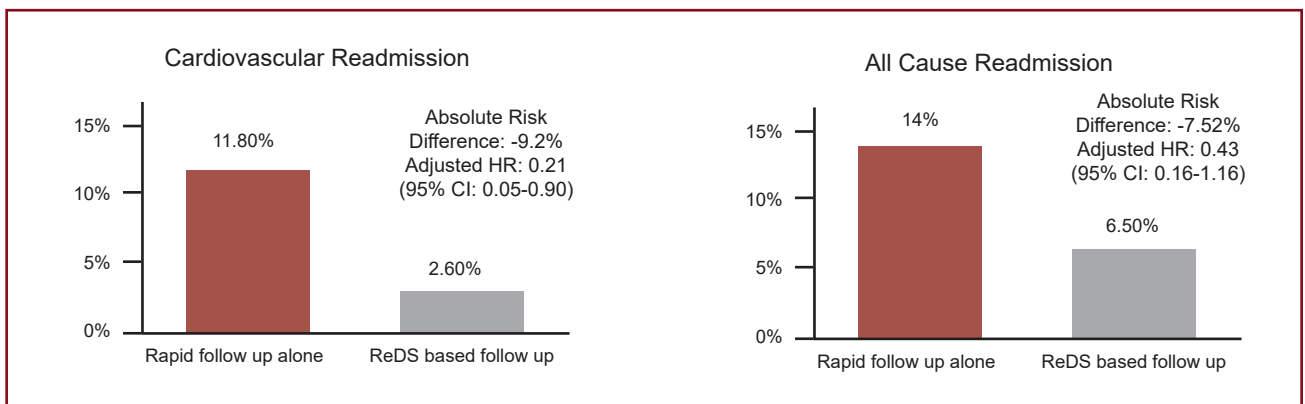


( $N=80$ ) and ReDS not performed ( $N=140$ ). The findings of the study show that the use of ReDS technology during a rapid follow-up clinic visit was associated with a lower risk of 30-day readmission. A ReDS assessment was associated with significantly lower 30-day cardiovascular readmissions (2.6% vs. 11.8%; HR: 0.21; 95% CI: 0.05–0.90;  $p=0.04$ ) with a trend towards lower rates of 30 day all-cause readmissions (6.5% vs. 14.0%; HR: 0.43; 95% CI: 0.16–1.15;  $p=0.09$ ) as compared with those of patients in whom ReDS was not utilized.<sup>14</sup>

Clinical evidence on ReDS PRO use has been documented from more than 4000 patient publications, 50 clinical studies, and 150 hospitals in 15 territories worldwide. The device has regulatory approval in the US, EU, India, and Brazil.

Proper implementation of ReDS device in India will ensure:

- Lower rates of hospital re-admission with ReDS PRO monitoring technology
- Prevention of hospitalization by early detection
- Effective and early detection of pulmonary congestion in CHF



Graph Title: Impact of ReDS based management in 30-day readmission rates<sup>14</sup>

## CONCLUSION

Effective management of pulmonary fluid overload is essential in optimizing outcomes for geriatric heart failure patients. Accurate monitoring techniques and medication optimization strategies can assist healthcare providers in assessing and managing fluid status effectively. Implementing evidence-based solutions such as ReDS Pro, tailored to the unique needs of geriatric patients will contribute to improved symptom management, reduced hospitalizations, and enhanced quality of life.

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# Care of Elderly with Diabetes:

## Special considerations, challenges and education

Sudhir Kumar\*

### ABSTRACT

*Managing diabetes in the elderly requires a multifaceted approach that prioritizes individualized care, considers comorbidities and cognitive function, and utilizes technology and assessment tools to enhance overall well-being. The goal is to achieve a balance between glycemic control and avoiding adverse outcomes, ultimately ensuring a good quality of life for older individuals with diabetes.*

*This article addresses the unique challenges and strategies for managing diabetes in the elderly population. Population aging is a global concern, leading to a significant increase in the number of older individuals with diabetes. Managing diabetes in older adults can be complex, as it often presents with atypical symptoms and is frequently complicated by comorbidities, cognitive impairment, and frailty. Poor glucose control in older adults can have adverse effects on daily activities, increasing the risk of hypoglycemia and related complications. Furthermore, there is a growing recognition of the link between diabetes and cognitive dysfunction, suggesting a need for tailored approaches to care.*

*This article also emphasizes the importance of personalized care plans that consider comorbidities, cognitive function, and life expectancy. It highlights the need for adjustments in glycemic targets to reduce hypoglycemia risk and discusses the role of technology, including artificial intelligence and digital tools, in diabetes management. Additionally, the article underscores the significance of educating both elderly patients and their caregivers on safe self-management practices. It advocates for comprehensive geriatric assessments and the utilization of assessment tools to tailor care plans effectively.*

### INTRODUCTION

#### Diabetes in the elderly is an entirely different mode.

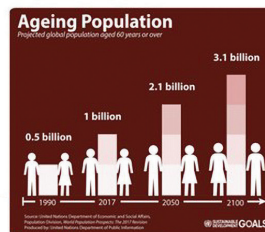
Ageing is a natural process that affects every living and non-living object on Earth. It is a gradual process and not an instant event. However, development theorists and practitioners overlook it as aged individuals are often viewed as disempowered and lacking resources. Economists and sociologists do not consider them a separate class category or status group. Old age is now a well-defined stage of life with a clear chronological limit, resulting in a distinct three-part division of the life cycle.

Population ageing has become a global concern in the last century, challenging every country. It is an inevitable and irreversible demographic reality, and the number of older people is rapidly increasing in developing and developed countries. This increase is especially felt in less developed countries, where it is placing significant demands

on healthcare systems. Developed countries are also facing the challenge of looking after their ageing population. With the ageing population, there is an increased need for special care services.

It was predicted that by 2020, the number of people aged 60 and older will outnumber children younger than five. In 2050, 80% of older people will live in low- and middle-income countries.

#### Global Data on Ageing



The global population aged 60 years or over numbered 962 million in 2017, more than twice as large as in 1980 when there were 382 million older persons worldwide. The number of older persons is expected to double again by 2050, when it is projected to reach nearly 2.1 billion.

\*Dr. Sudhir Kumar is Consultant Physician & Diabetologist with special interest in the care of elderly. Advanced Medicentre, HB-5, City Centre, Sector -4, Bokaro (Jharkhand) - 827004

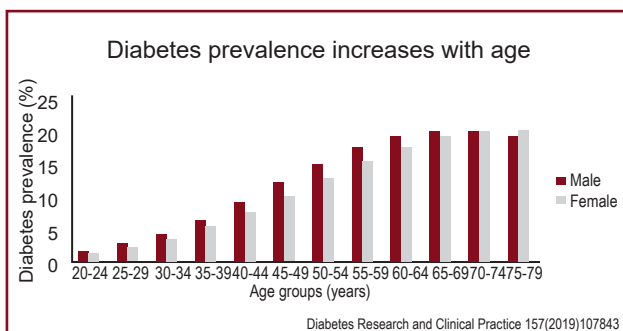


Figure 1: Diabetes prevalence by age and sex in 2019

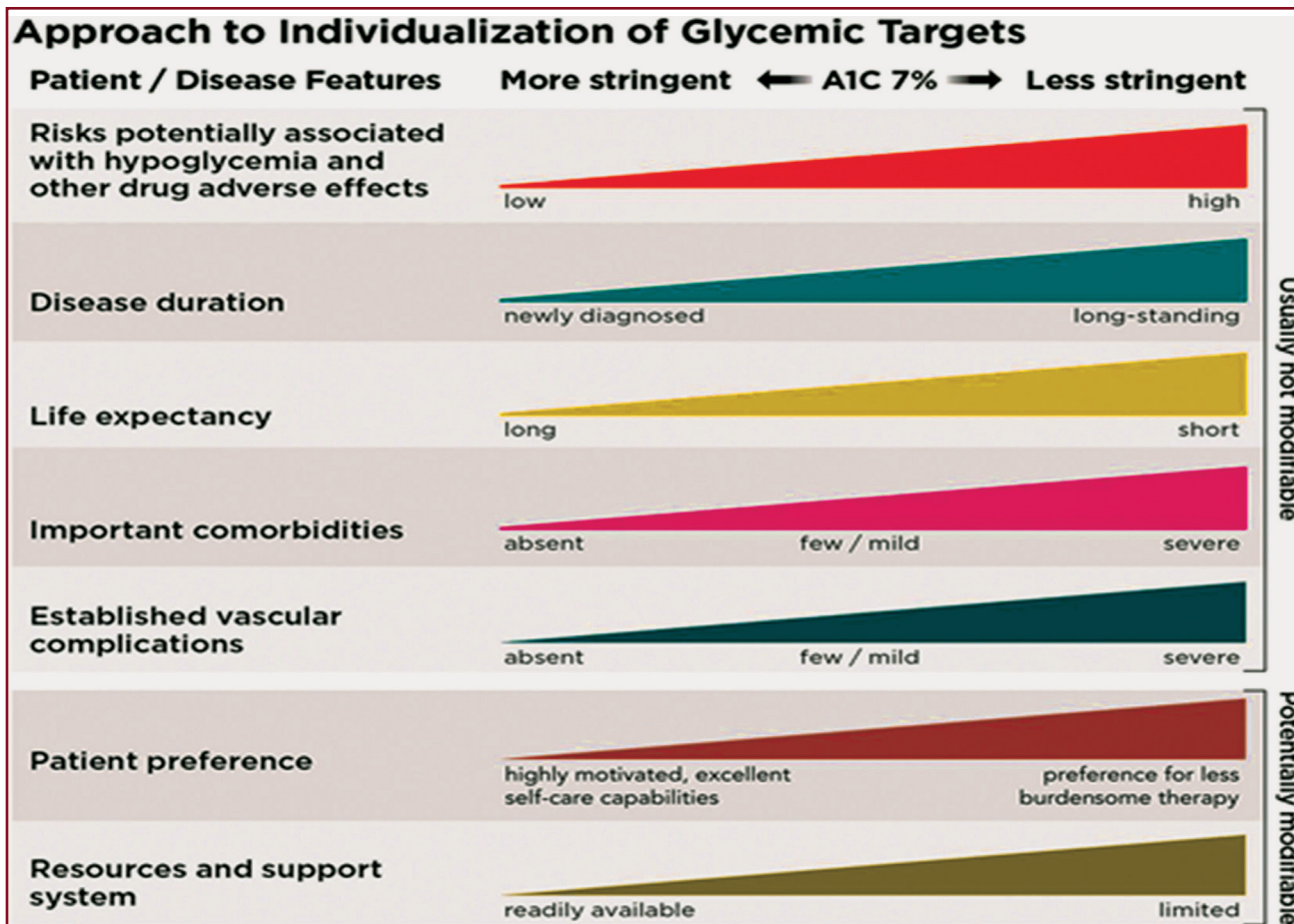
Older patients with diabetes are increasingly common in clinical practice due to the ageing (Figure 1).

### CHALLENGES

Managing diabetes in older individuals can be relatively easy, especially if they have no other underlying health conditions, good functional ability, and no signs

of frailty or vascular complications. However, diabetes in older adults can have varying symptoms and may be difficult to diagnose. Classic diabetes symptoms, such as excessive thirst and urination, may not be present. Instead, older individuals may experience dehydration, confusion, incontinence, and complications related to diabetes, such as neuropathy or nephropathy. Furthermore, as the population ages, the prevalence of comorbid diabetes and cognitive impairment increases. The development of cognitive dysfunction can significantly impact the care of older individuals with diabetes. Diabetes and dementia may share a common pathogenic link, as Alzheimer’s disease (AD) is associated with increased cerebral insulin resistance, suggesting that AD is an insulin-resistant brain state or type 3 diabetes.

Due to poor glucose control with or without medications, older adults may experience adverse effects on their daily activities, such as eating, walking, bathing, dressing, grooming, housework, driving, cooking, shopping, etc. Improper regulation of glucose levels



among elderly patients is associated with an increased risk of hypoglycemia. This risk can be intensified with intense glycemic control, which may lead to severe consequences such as falls, traumatic fractures, exacerbation of comorbidities, adverse cardiovascular events, and impaired cognition and function. Additionally, hyperglycemia can lead to dehydration, impaired vision, and decreased cognition due to osmotic diuresis. Like any other organ in the body, the ageing process affects the kidneys. These changes occur in the third decade of life and progress gradually. These changes affect all individuals regardless of the presence or absence of concomitant comorbidities; any present comorbidities, however, can affect the rate and severity of decline in renal function. A steady reduction in GFR represents functional renal age-related changes.

### SPECIAL CONSIDERATIONS

Elderly patients are more likely to die from cardiovascular (CV) events as opposed to developing ESRD. Multiple risk factors, including medications and associated medical conditions, increase hypoglycemia risk.

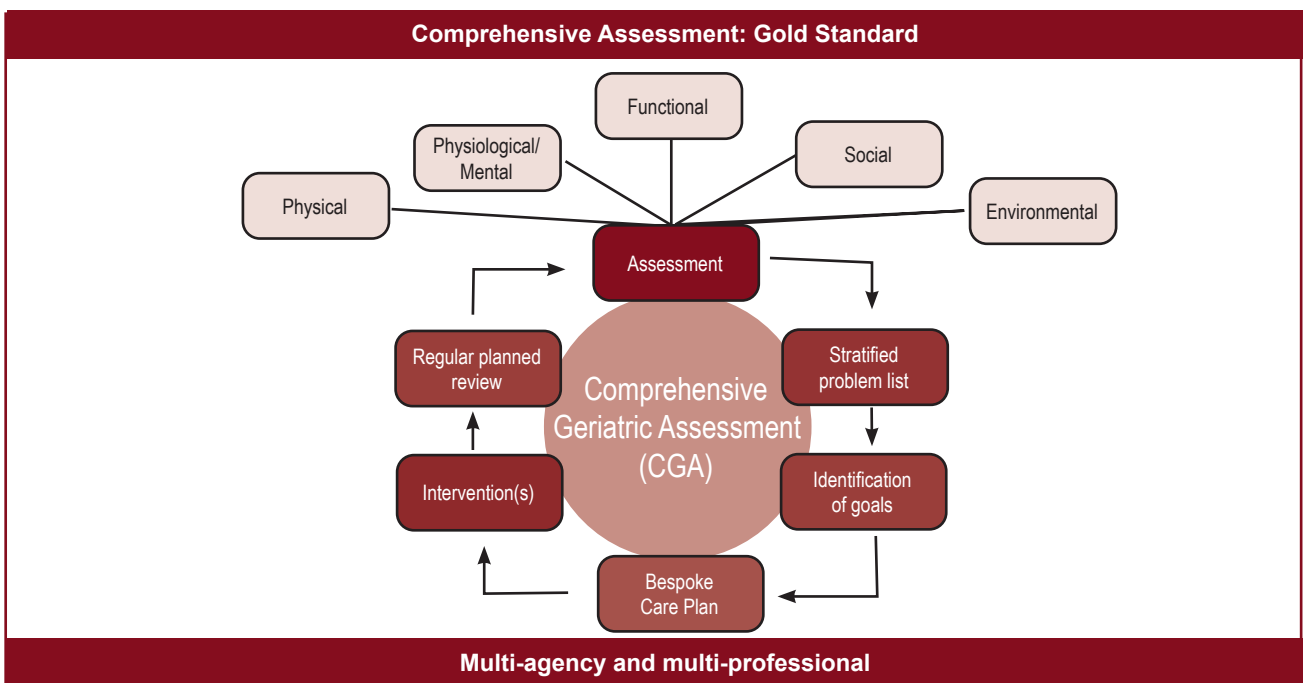
As mentioned, older adults have a far greater risk of hypoglycemia than young adults, which can increase the risk of falls (related fractures). This is the most frequent and dreadful “geriatric giant” and should be educated to older people to keep their blood glucose levels under modest control to avoid the risk of hypoglycemia. This

must be clearly explained to the patients through mutual discussion. All points related to safety issues and therapy monitoring for better glycemic control and glycemic variability measures must be conveyed along with timely action to prevent such accidents.

Effective management of diabetes mellitus hinges on one’s ability to perform self-care tasks, regulate blood sugar levels, and prevent acute and long-term complications. For seniors with diabetes and coexisting dementia, cognitive impairments in memory and executive function can make adhering to prescribed regimens, maintaining consistent eating habits, and ensuring proper nutrition quite tricky. These challenges may lead to weight loss and malnutrition, putting them at risk. Furthermore, cognitive dysfunction can significantly impact the overall care of older individuals with diabetes.

### EDUCATION

Diabetes and frailty are two conditions that often occur together and are becoming more common among older patients. In this review, we will discuss the concept, epidemiology, and consequences of frailty, as well as the implications of frailty in the management of diabetes. Frailty can result in a decreased quality of life, an increased risk of falls, new or increased disability, hospitalisation, and higher mortality rates. Therefore, it is essential to consider the individual needs of frail elderly patients,



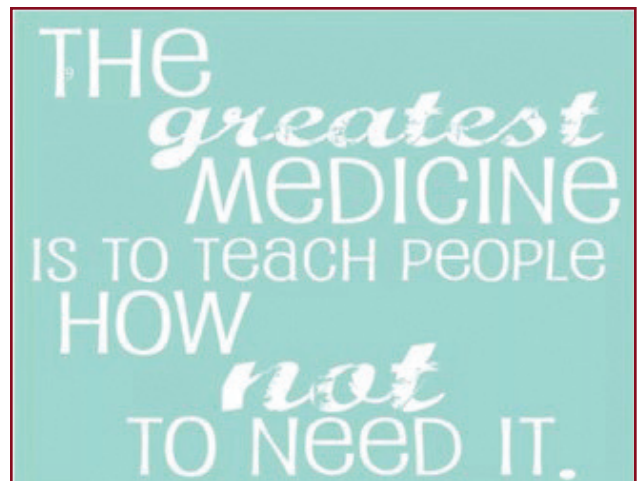
considering their physical and mental status. Older adults with diabetes should receive regular comprehensive clinical and laboratory evaluations to monitor their metabolic control and screen for complications. Different assessment tools can be used to check the current status of elderly diabetic patients, tailoring and targeting care based on the established geriatric assessment tools. The Standardized Assessment of Elderly People (STEP) can be used as a starting point to identify relevant differences in self-reported health problems between diabetic and non-diabetic patients.

ASSIST is an example of a specifically designed self-management application for older adults with type 2 diabetes mellitus. Implementation of self-assessment digital tools such as INSPIRE ICOPE-CARE (ICOPE MONITOR) and the ICOPEBOT conversational robot for the management of different life situations, which aims to improve, maintain, or slow declines in intrinsic capacity by assessing and longitudinally monitoring six core domains of intrinsic capacity: locomotion; vitality; vision; hearing; cognition; and psychology. The intrinsic capacity construct differs from other approaches by being framed as a dynamic continuum, and its trajectory can be monitored across the second half of a person’s life course to provide insight into the effectiveness of clinical actions, as well as its effectiveness in public health, and on the needs of older populations.

Several other evidence-based established indicator are intrinsic capacity (IC) correlated with walking speed, resilience score, and MMSE score and negatively correlated with frailty, SARC-F score, IADL score, GDS score, and physical and mental fatigue. The IC score was not associated with body composition variables such as fat-free mass, fat percentage, or visceral fat area. Higher IC was associated with a better quality of life and SARC-were 0.817, 0.843, 0.954, 0.912 and 0.909 respectively.

. The area under the curve of the receiver operating characteristic (AUC-ROC) for the ICOPE screening tool vs. Fried phenotype, FRAIL, ADL disability, IADL disability,

The Geriatric Nutritional Risk Index (GNRI) is a valuable tool for evaluating geriatric patients’ nutritional status and weight requirements. It is often used with the WHO BMI and Edmonton Obesity Scoring Scale (EOSS). It is crucial to consider a patient’s physical condition when determining their nutritional needs. Moreover, when educating seniors on dietary requirements, healthcare professionals must consider the 8 A’s of the senior diet prescription: Accuracy, Appropriateness, Accessibility, Acceptability, Attractiveness, Achievability, Affordability,



and Absorbability/Digestibility.

The Comprehensive Geriatric Assessment (CGA) comprehensively evaluates older adults covering eight domains. These domains include the Comprehensive Older Age Assessment (COAA), Geriatric Evaluation Management and Treatment (GEMT), Electronic Frailty Index (EFI), Berg Balance Scale, Activities of Daily Living (ADL), Instrumental Activities of Daily Living (IADL), Charlson Comorbidity Index (CCI), and more. CGA uses various assessment tools such as the Katz Index of Independence in Activities of Daily Living, Lawton Instrumental Activities of Daily Living Scale, Barthel Index for Activities of Daily Living (ADL), SARC-F (which evaluates strength, assistance with walking,



CGA's processes are depicted in the figure above

rising from the chair, climbing stairs, and falls), 25-item Resilience Scale (RS), HALFT Scale, 5-level EQ-5D (EQ-5D-5L), EQ Visual Analogue Scale (EQ-VAS), Pittsburgh Fatigability Scale, and Life-H Daily Habit Assessment Test, among others.

In today's world, educators need to thoroughly understand modern technological devices, including wearables, the Internet of Things, remote health monitoring, and brain-computer interface devices. This knowledge is particularly crucial for individuals with dementia who require access to medical alert wearables, app-based clinical decision support systems, and patient decision support systems. Moreover, numerous multitasking systems are available for use across various platforms, such as Android, iOS, Windows, and Ubuntu. Additionally, combining wearable trackers with AI can help establish healthy habits, while CGM with alarms can prevent severe glycemic dysregulations.

Non-supportive family behaviours sabotaged the subjects' efforts to perform the recommended behaviours. Family members can help an affected individual's motivation to self-manage diabetes.

Non-adherence and non-persistence to medications can be harmful to elderly patients. The term "polypharmacy" describes a situation where patients are taking multiple medications. Polypharmacy can be dangerous for several reasons, including increased risk of adverse events, drug-to-drug interactions, interactions with food, coexisting comorbidities, increased cost of therapy, decreased quality of life, and non-adherence. There are several causes of polypharmacy in the elderly, including multiple chronic illnesses, healthcare from multiple doctors, purchasing medications from multiple pharmacies, "the prescribing cascade", and the discovery of a broad range of pharmaceuticals for a wide variety of conditions. In addition, complementary and alternative medicines, such as herbal therapies, are becoming increasingly popular among all patients, including the elderly. To address the issue of polypharmacy in elderly patients, a "brown-bag strategy" can be used to examine the patient's medication regimen and educate them on how to improve adherence.

All the modifiable risk factors correction should be given utmost priority, such as prolonged fasting, erratic eating and dietary errors, alcohol intake, smoking cessation, etc.

Patient heterogeneity must be considered by clinicians and diabetes educators for older adults with diabetes while setting & prioritising treatment goals—the need for glucose evaluation as frequently as needed and periodic assessment of geriatric co-morbidities and diabetes complications.

The diabetic educator must be concerned about talking openly with relatives, putting into the centre the geriatric conditions of the elderly patient to develop a healthy eating plan, monitoring blood glucose levels to ensure reaching the recommended target range, and appropriate training to ensure proper medication institution. Communication related to any small muscle (fine motor) issues is necessary when planning rehabilitative exercises that match the activity level or exercises that can work into the patient's daily routines.

Individuals should be well informed about the benefits of exercise and available resources for becoming more active. Older adults with diabetes and any caregiver should receive education about risk factors for foot ulcers, amputation, and prevention strategies. The need for deprescribing education in homecare or ambulatory settings must be done while educating the family members and caregivers with the help of concerned physicians; family education about behavioural and symptoms management; and non-drug therapies and non-pharmacological measures should be imparted.

When developing a dietary regimen for elderly patients, it is crucial to consider their specific requirements. Their meals' quality, quantity, and frequency must be tailored to their needs while adhering to the standard dietary protocol regarding calorie intake and distribution. Additionally, patients should be instructed to maintain a log of their daily activities, foot care, travel arrangements, and any other concerns that necessitate additional care.

## CONCLUSION

The proclamation changed over time as it brought more life each year. The concept of healthy ageing has started. Preventive geriatrics has emerged. The use of gadgets is starting to get famous. The definitions of older people are being revised. Young elderly, old elderly, very old elderly, fit elderly and disabled elderly terms are coming into use. The care of elderly patients with diabetes should be individualised, considering their comorbidities, medications, cognitive function, home care situation, and life expectancy. Frail, elderly patients require less emphasis on strict glycemic control and more on avoiding malnutrition and hypoglycemia and achieving a good quality of life. To improve medication adherence, it is essential to implement personalised and multifaceted intervention strategies that utilise technology solutions.

Diabetes care can benefit from artificial intelligence in clinical diagnosis, interpretation, monitoring, treatment planning, and drug design. It is recommended that elderly

individuals who are diagnosed with type 2 diabetes undergo a comprehensive evaluation for medical comorbidities and age-related conditions, which may include physical or cognitive impairments, as well as financial or personal concerns. This assessment is imperative in ensuring that appropriate medical interventions are implemented, and the individual's overall well-being is effectively managed.

Glycemic targets may need to be adjusted in older patients to reduce hypoglycemia risk. Cognitive dysfunction, hypoglycemic unawareness, and medical comorbidities require appropriate education by the healthcare team. Lifestyle modification recommendations should be individualised, but general nutrition and exercise recommendations are similar to those for younger adults. A goal-based treatment algorithm can be followed when stepping up in medical therapy is needed.

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# Geriatrics & Geriatric Giants: A Review Article

Chinmoy Kumar Maity \*

## ABSTRACT

*“Geriatrics” is a special branch of medicine which deals with health and diseases in the elderly. Though the concept of geriatric care was there in Ayurveda as early as 1500 BC, modern geriatrics started its journey only about a century ago. However, with the rapid increase of geriatric population in the world, it has already become the largest practising medical specialty in the developed countries.*

*Complexity and multiplicity of problems are the cornerstones of geriatrics. A group of conditions that lead to significant morbidity, mortality and complexity in treating geriatric patients were described as the “Geriatric Giants”, which include 4 I’s – Immobility, Instability & falls, Incontinence and Impaired memory. These are the consequences of a combination of multiple co-morbidities in the elderly and a geriatric syndrome called “frailty”.*

*A comprehensive geriatric assessment (CGA) is essential to diagnose the complexity and multiplicity of problems underlying geriatric giants and their satisfactory management.*

## INTRODUCTION

“Geriatrics” is a special branch of medicine which deals with health and diseases in the elderly. The term ‘**Geriatrics**’ is derived from the Greek words ‘**Geras**’ (= old age) and ‘**iatrikos**’ (=healing / treatment). Though the journey of modern Geriatrics started only over a century ago, the concept of geriatric care was mentioned and practised as early as 1500 BC in Ayurveda and this branch of medicine was named as “**Jara / Rasayan**”. The birth of modern geriatrics dates back to 1909, when Dr. Ignatz Leo Nascher, an Austrian-American medical doctor from the USA, now known as the ‘**Father of Modern Geriatrics**’, declared – “**Geriatrics**, from **geras**, old age and **iatrikos**, relating to the physician, is a term I would suggest as an addition to our vocabulary; to cover the same field that is covered in old age that is covered by the term pediatrics in childhood, to emphasize the necessity of considering senility and its disease apart from maturity and to assign it a separate place in medicine”.

However, the need and importance of specialist geriatric care was not realised by the medical community across the globe until the Second World War. Dr. Marjorie Warren from the UK, now known as the ‘**Mother of**

**Modern Geriatrics**’, in her study (1936 – 1946) with frail elderly patients at West Middlesex County Hospital (now a University Hospital) showed us that specialist geriatric care and treatment considerably improves the quality of health in the elderly. She published two seminal papers in the British Medical Journal (BMJ) in 1943 and 1946 and promoted - “..the importance of multidisciplinary team care, early mobilization and active engagement of the older person in their daily activities, and the whole-person approach which included a patient’s social and functional issues in addition to their medical issues.” She published the goals for the healthcare of the elderly patients, which form the foundation of the principles of geriatric medicine:

- To prevent disease whenever possible.
- To reduce medical disability to a minimum.
- To obtain and maintain maximum independence, and
- To teach the patient to adjust himself intelligently to his residual disability.

The age boundary for geriatric age group has considerably changed with time and place. Currently, in the developed countries an age of 65 years and above is considered ‘geriatric’; whereas in the developing countries including India an age of 60 years and above is considered ‘geriatric’. However, a person much below this age mark may suffer from geriatric health issues needing specialist geriatric care and a person in the so-called ‘geriatric’ age

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group may be pretty healthy with no geriatric health issues. The geriatric population has again been divided into these subgroups depending on the degree of disability and need for assistance:

- Young elderly – 60-70 years (usually independent),
- Middle elderly – 70-80 years (need assistance) and
- Old/elderly elderly – above 80 years (mostly dependent).

Due to outstanding developments in the fields of science, technology and medicine during the last century, the overall nutrition, sanitation and medical facilities for the population have improved significantly. This has led to remarkable increase in life expectancy from around 45 years in 1900 to around 83 years in 2020 in the developed countries and from around 30 years in 1900 to around 70 years in 2020 in the developing countries. The life expectancy of the world population at large in 2023 is 73.4 years (Female 76 yrs and Male 70.8 yrs). The United Nations' World Population Estimate and Projection reveals the proportion of population aged 60 years and above as follows:

	1980	1990	2000	2010	2020
World	8.6	9.2	9.9	10.8	12.9
Developed	15.2	16.8	18.4	19.7	22.4
Developing	6.3	7.0	7.7	8.7	10.9
Africa	4.9	4.8	4.8	4.9	5.6
Latin America	6.5	7.0	7.7	8.8	11.0
Asia (excluding Japan)	6.5	7.4	8.5	9.8	12.8
China	7.4	9.0	10.5	12.4	16.6
India	6.5	7.3	8.4	9.9	12.6

The current world population is over 8 billion and the population in India is over 1.4 billion. The percentage of population aged 60 years and above being 13% in the world and 10% in India, the current elderly population in the world is around 1 billion and in India around 140 million. This geriatric population is at the centre of a complex milieu of physical, mental, psychosocial and financial problems, which needs specialist and long-term management. About 20% of doctor's visits, 30% of hospital days and 50% of bed-ridden days are ascribed to elderly care. This has created enormous pressure on the already over-burdened health systems worldwide, especially in the developing world.

With the progressive rise in the elderly population

across the globe, the importance of specialist geriatric care has been realised, especially by the developed nations where Geriatrics has become the largest practising medical specialty. However, in developing countries including India which house most of the elderly population in the world, geriatric specialty remains in its infancy.

Complexity and multiplicity of problems are the cornerstones of geriatrics. The elderly are a more heterogeneous group than the youth. Due to age-related changes in all body systems, they have altered response to illness, altered presentation of illness and they also have communication problems. They suffer from multiple medical co-morbidities and functional impairments, are on poly-pharmacy, live in isolation and loneliness and in financial difficulty. However, a group of conditions that lead to significant morbidity, mortality and complexity in treating geriatric patients were described as the "Geriatric Giants" by Dr. Bernard Isaacs, a Scottish medical doctor, in 1965 include 4 'I's – Immobility, Instability & falls, Incontinence and Impaired memory. These are the consequences of a combination of multiple co-morbidities in the elderly and a geriatric syndrome called "frailty". Frailty is a geriatric syndrome resulting from age-related cumulative declines across multiple physiologic systems, with impaired homeostatic reserve and a reduced capacity of the organism to withstand stress, thus increasing vulnerability to adverse health outcomes including falls, hospitalization, institutionalisation and mortality. The common health problems in the elderly include - impaired vision and hearing, confusion and depression, TIA and stroke, Neurodegenerative disorders, Osteoporosis, Arthritis, Fractures, Sarcopenia, COPD, IHD, Hypertension, Orthostatic hypotension, Diabetes mellitus, Cancers and Organ failures etc.

## IMMOBILITY

Immobility means - inability to move independently, leading to a chair-bound or bed-bound condition. There are numerous underlying causes for immobility like – advanced frailty of old age, arthritis, fractures, strokes, Parkinsonism, dementias, motor neuron disease, multiple sclerosis, spinal cord injury, advanced heart failure and respiratory failure etc. Long term immobility can lead to – development of pressure sores, constipation, recurrent infections and continuous care burden on family and the health care system. We have to take all possible measures to control underlying medical conditions adequately - to keep the elderly mobile and to prevent / delay immobility as long as possible.

## INSTABILITY & FALLS

Instability, often leading to fall, is a very common problem in the elderly and another component of 4 Is of the geriatric giants. About 30-35% of the elderly above the age of 65 years and 50% of those above the age of 80 years living in the community have at least one fall annually. "Fall" is defined as "unintentionally coming to rest on the ground or on a lower level with or without loss of consciousness". Falls can be classified into three groups –

1. Simple / explainable falls (70%)
  - a. Accidents – Slips / Trips / Knock downs
  - b. Acute illness
  - c. An increased tendency to fall – because of impairment of gait, balance or vision, secondary to disability caused by neurological or musculoskeletal disorders, drugs or alcohol etc.
2. Funny turns / Drop attacks (15%)
  - a. Suddenly falling without any warning, or apparent cause or loss of consciousness.
  - b. Accounts for 15 - 20% of patients presenting to Falls service.
  - c. Elderly females are more affected than males.
  - d. Systematic evaluation reveals the following underlying causes:
    - i. Carotid Sinus Syndrome – 40%
    - ii. Orthostatic Hypotension & Vaso-vagal Syncope – 30%
    - iii. Cryptogenic / Idiopathic – 30%
3. Falls with T-LOC (15%).
  - a. Fall with transient loss of consciousness may be caused by syncope or syncope mimics
  - b. Syncope is defined as transient loss of consciousness resulting from temporary global reduction of cerebral blood flow, leading to postural collapse with spontaneous recovery.
  - c. Syncope mimics – following conditions may mimic syncope:
    - i. Metabolic – anaemia, hypoxia, hypocarbia, hypoglycaemia etc.
    - ii. Anxiety attacks, hysterical fainting etc.
    - iii. Seizure disorders.

Falls with or without loss of consciousness has numerous underlying aetiology and can lead to serious complications like – fractures, institutionalisation and even death. Detailed clinical and laboratory evaluation is necessary to diagnose relevant underlying causes and formulate plan of management. Multi-factorial falls intervention programme is effective in reducing simple falls by up to 33% and it consists of – strength and balance

training, home hazards assessment and modification, visual assessment and correction, medication review and withdrawal, if appropriate. This should be combined with measures to reduce the impact of falls like – use of hip protectors, adaptation of floor areas, assessment for osteoporosis and vitamin-D supplementation.

Dizziness and syncope should be managed according to underlying causes. There are various models of care pathways for dizziness, falls and syncope management. According to available local resources and guidelines, we should follow some standard pathway for management of these complex problems.

## INCONTINENCE

Incontinence is the loss of sphincter control leading to involuntary passage of urine or stool or both.

Along with local control mechanisms in the urinary bladder, ano-rectal sphincters and pelvic floor muscles, the intact spinal and cerebral control play significant roles for normal continence.

Urinary incontinence (UI) is a very common and significant problem in the elderly. The prevalence of UI in the community dwelling elderly is around 10-18% and in the institutionalised elderly it can be as high as 50%. UI can be of several types like – urge incontinence, stress incontinence, overflow incontinence, continuous incontinence, post-micturition dribble and nocturnal enuresis. There are numerous underlying causes for UI like – prostatic pathology and surgery, obstetric pelvic injuries, cystocele, spinal cord injury, stroke, dementias and other chronic neurodegenerative disorders, recurrent urinary tract infections and drugs. Thorough clinical and laboratory assessment is necessary to diagnose the underlying cause and plan treatment accordingly.

Investigations for UI include - Urine RE & CS, USG of KUB, X-Ray KUB / IVU / CT of KUB and Urodynamic studies – Uroflowmetry and Cystometry .

Management measures include - Behavioural therapy, Bladder training, Changes in lifestyle, Pharmacological therapy including antibiotics for UTI, Neuromodulation with electrical stimulation, use of Continence gadgets (e.g. hand-held urinals, bedside portable commodes, adult diapers, condom catheter, urethral / supra-pubic catheterization) and various surgical procedures.

### Pharmacotherapy for Urinary Incontinence:

**Stress Incontinence** - Duloxetine (a serotonin & noradrenaline reuptake inhibitor) – 20-40 mg BD.

**Urge Incontinence** – 1) Anti-cholinergics– Flavoxate

(200 mg TDS), Oxybutynin (2.5–20 mg /day), Oxybutynin Patch (36mg) twice weekly, Tolterodine (1–4 mg /day), Fesoterodine (4mg OD), Darifenacin (7.5–15 mg OD), Solifenacin (5–10 mg OD), Tropsium (20 mg BD), Propiverine (15 mg OD–QDS). 2)  $\beta_3$ -receptor agonist – Mirabegron (25–50 mg OD).

**Nocturnal Enuresis** – i) For adult – Propantheline bromide (15–30 mg TDS), ii) For children – Imipramine (25–75 mg OD), iii) For both – Desmopressin (200 mcg OD).

### Pharmacotherapy for Urinary Retention:

Atonic Bladder (autonomic neuropathy) - Bethanechol – 10–25 mg TDS-QDS.

Bladder Outflow Obstruction (BPH) – i)  $\alpha_1$ -receptor blockers–Alfuzosin (2.5 mg TDS/XL 10 mg OD), Doxazosin (1–8 mg/day), Indoramin(20–100mg/day), Tamsulosin (400 mcg OD), Terazosin (1–10 mg OD) and Silodosin (4–8 mg OD). ii)  $5\alpha$ -reductase inhibitors – Dutasteride (0.5 mg OD), Finasteride (5 mg OD). iii) Phosphodiesterase type-5 inhibitors – Tadalafil (5 mg OD).

Faecal incontinence (FI) may occur with either constipation or diarrhoea and can be more distressing and stigmatized leading to social isolation, perianal and sacral pressure sores and recurrent infections. FI is defined as ‘recurrent involuntary passage of stool / bowel contents through the anal canal in an individual with a developmental age over four years’. FI is a common problem in the elderly, the prevalence is around 2.2% in the community dwelling adults, 8.39% among non-institutionalised elderly and 50% among institutionalised elderly. FI can be of two types – urge incontinence (where the person experience a defecation urge before leakage) and passive incontinence (where there is no sensation before leakage). Puborectalis sling, forming the ano-rectal angle is responsible for gross continence of solid stool. Internal anal sphincter (IAS) is an involuntary muscle contributing about 55% of resting anal pressure and maintains continence of flatus and liquid stool during rest. External anal sphincter (EAS) is a voluntary muscle, able to double the pressure in the anal canal during contraction. Overall the anal continence mechanism is maintained by IAS (70%) and EAS (30%). Urge FI is associated with weakness of the EAS and passive FI is associated with weakness of the IAS. Anal incontinence is a continuous spectrum with leakage of flatus, mucus, liquid stool and solid stool. Incontinence of formed / solid stool is defined as complete or major incontinence and anything less than that is called partial or minor incontinence. Encopresis, like enuresis in case of UI, is a term used in case of children over the age of four years with voluntary or involuntary

loss of soft or semi-liquid stool. According to ICD-10, nonorganic encopresis is classified under ‘behavioural and emotional disorders with onset usually in childhood and adolescence’ and organic encopresis is classified with FI. Several FI severity scales exist and the severity index is based on – four types of leakage (flatus, mucus, liquid stool and solid stool) and five frequencies (1–3 times per month, once per week, twice per week, once per day and 2 or more per day). Like UI, there are numerous underlying causes for FI and thorough clinical and laboratory evaluation is necessary to diagnose the underlying causes and plan appropriate management accordingly.

The common causes of FI are – Obstetric pelvic injury, complications of anorectal surgery, anorectal abnormalities (sphincter injury or degeneration, sphincter weakness from scleroderma or radiation, perianal fistula, anal fissure, rectal prolapse), neurological disorders (multiple sclerosis, spinal cord injury, spina bifida, stroke, autonomic neuropathy etc), cognitive or behavioural disorders (dementia, learning disabilities etc), Inflammatory bowel diseases, food intolerance, various drugs, constipation with overflow incontinence, receptive anal sex and functional.

Evaluation of FI needs thorough medical history and examination including digital rectal examination (DRE). Apart from relevant routine investigations we may need anorectal physiology tests to assess the functioning of the anorectal anatomy and that may include – Anorectal manometry, Anal electromyography, Proctography/defecography, Dynamic pelvic MRI/MRI defecography, Procto sigmoidoscopy and Endoanal USG.

Conservative management of FI includes – dietary modification, stopping offending drugs and giving necessary drugs, retrograde anorectal irrigation, biofeedback training, pelvic floor and anal sphincter exercises, behavioural therapy and use of incontinence gadgets like – anal plugs, perianal pads and diapers/nappies. As FI can be associated with both diarrhoea and constipation, the dietary advice must be tailored to address the underlying cause and individualized. Pharmacotherapy may include – i) anti-diarrhoeal/constipating agents like loperamide, opiates, TCA, codeine and aluminium containing antacids, ii) laxatives/stool bulking agents like bran, ishpaghula husk, methyl cellulose, lactulose, polyethylene glycol, MgSO<sub>4</sub>, Na picosulphate, bisacodyl, senna etc, iii) topical anti-inflammatory medications, antifungals, moisturisers and skin protectants and sometimes oral antibiotics to treat perianal complications.

Surgical management is necessary where conservative measures alone fail to control incontinence. There are a number of procedures suitable in different situations like –

Sphincteroplasty, Sacral nerve stimulation, Radiofrequency therapy (SECCA procedure), Anal encirclement, non-dynamic graciloplasty, artificial bowel sphincter, dynamic graciloplasty and finally faecal diversion (e.g. colostomy).

**IMPAIRED MEMORY**

Impaired memory or cognitive impairment is present when a person has trouble remembering, learning new things, concentrating, or making decisions. It may be acute and fluctuating i.e. delirium or chronic and progressive i.e. dementia.

Delirium is characterized by a disturbance of consciousness and a change in cognition that develops over a short period of time. The disorder has a tendency to fluctuate during the course of the day, and there is evidence from the history, examination or investigations that the delirium is a direct consequence of a general medical condition, drug withdrawal or intoxication (DSM – IV). All four of the following features must be present to diagnose delirium: i) A disturbance of consciousness. ii) A change in cognition or perceptual disturbance. iii) Develops over a short period of time (usually hours to days) and fluctuates during the course of the day. iv) Caused by direct physiological consequence of a general medical condition, substance withdrawal or intoxication.

Delirium can be subdivided into:

- Hypoactive (quiet) – commonest with poorer prognosis.
- Hyperactive – agitation, hallucination & inappropriate behaviour.
- Mixed type.

Average prevalence of delirium in the elderly in general hospital 20%. Hospital mortality is 6 – 18%, twice that of matched controls. Patients with delirium are three times more likely to develop dementia (cf: patients with dementia are five times more likely to develop delirium). Delirium appears to be an important marker of risk for dementia or death.

Common causes of delirium are – sepsis, dyselectrolytaemia, hypoxia, hypoglycaemia, myocardial infarction, heart failure, stroke, fractures, medications like sedatives and antidepressants, alcohol intoxication or withdrawal, hospitalization and invasive procedures like catheterization, Ryle’s tube insertion etc.

Evaluation of delirium starts with detailed medical history for which we need reliable information from the family and friends, carers and GP of the patient. Thorough medication review, physical examination, cognitive function assessment using one of the standard tools (e.g.

Comparison between Delirium & Dementia:	
DELIRIUM	DEMENTIA
Sudden onset	Insidious onset
Usually reversible	Slowly progressive
Short duration	Long duration
Fluctuating course	Relatively stable
Altered consciousness	Normal consciousness
Associated acute illness	No associated acute illness.

AMT, MMSE, CAM etc) and relevant investigations are necessary to diagnose the underlying cause for delirium.

Management of delirium is centered around adequate treatment of the underlying acute medical condition and removing any offending drugs or agents. A delirious patient must be treated in a monitored quiet environment with least restrictive option. If necessary, sedatives and major tranquilizers should be used in minimum doses (e.g. Haloperidol 0.5-2 mg every 2 hourly to a maximum of 5 mg daily or Lorazepam 0.5-1 mg every 2 hourly to a maximum of 3 mg daily) and tailed off after 24-48 hours.

Mild cognitive impairment (MCI) is a state intermediate between normal cognition and dementia, with essentially preserved functional abilities.

Dementia is a syndrome usually chronic, characterized by a progressive, global deterioration in intellect including memory, learning, orientation, language, comprehension and judgment due to disease of the brain. Dementia is typically diagnosed when acquired cognitive impairment has become severe enough to compromise social and/or occupational functioning. Dementia is defined when there is progressive memory impairment along with one of the following four items – Apraxia / Aphasia / Agnosia / Abstraction, plus Absence of clouding of consciousness and loss of Ability to function.

As the population is aging, the incidence and prevalence of dementia is gradually increasing. Every 3 seconds there is one more person diagnosed with dementia in the world, leading to a rise of 10 million cases yearly. Dementia population in the world is increasing from 57 million now to 153 million by 2050. Incidence in India is also rising from 4 million now to 11.4 million in 2050. India will be the 2nd worst hit country, next only to China. Prevalence of dementia increases progressively with age – with 1% between 60-64 years to over 50% above 95 years.

Aetiologically dementia can be broadly classified into following groups – Primary neurodegenerative, Vascular (e.g. Multi-infarct and Binswanger’s disease), Infective (e.g. Creutzfeldt-Jacob, AIDS and Neurosyphilis), Traumatic

(e.g. Sub dural haemorrhage, Dementia pugilistica and Radiotherapy), Normal pressure Hydrocephalus and associated with other diseases (e.g. Parkinson's, Wilson's, Multiple sclerosis, Tumours and Vasculitis). Primary neurodegenerative dementia can again be divided in to two groups – Cortical (e.g. Alzheimer's disease and Pick's disease or Fronto-temporal dementia) and Subcortical (e.g. Progressive supra nuclear palsy, Lewy body dementia and Huntington's disease).

Diagnosis of dementia is based on – comprehensive clinical assessment (general, neurological and psychometric), relevant laboratory investigations, brain imaging (e.g. CT, MRI), EEG and rarely CSF study. Detailed assessment of mental health of patients with dementia is essential not only for a proper diagnosis, but also for monitoring their ongoing cognitive ability and behavioural competence and it includes three categories:

- A) Cognition – commonly used tests are:
  - 1) Abbreviated Mental Test (AMT)
  - 2) Mini Mental State Examination (MMSE)
  - 3) Clifton Assessment Procedures for the Elderly (CAPE).
  - 4) Alzheimer's Disease Assessment Scale (ADAS).
- B) Affect – commonly used tests are:
  - 1) Geriatric Depression Scale (GDS-100 / GDS-30 / GDS-15).
  - 2) Hospital Anxiety and Depression (HAD) Scale.
  - 3) Hamilton Depression Rating Scale (HDRS).
- C) Behaviour – commonly used tests include:
  - 1) Clifton Assessment Procedures for the Elderly (CAPE).
  - 2) Behavioural Pathology in Alzheimer's Disease (BEHAVE-AD) Rating Scale.
  - 3) Manchester and Oxford Universities Scales for Psychopathological Assessment of Dementia (MOUSEPAD).

Management of dementia patient largely depends on the stage and severity of dementia. In the early stage with minimal symptoms, patient may benefit from medical management which includes both – drug therapy and psychotherapy. However, in advanced stage of the disease with moderate to severe symptoms the management is centred around the care and support of the patient as well as the care-giver. They may need all sorts of supports – physical, psychosocial, financial and spiritual. Supports from the family and friends, NGOs and Government are crucial for proper care of a patient with advanced dementia.

Pharmacotherapy to improve cognitive function has some limited role, especially in the early stage of the disease. Currently available anti-dementia medicines are

divided into two groups:

- A) Cholinesterase Inhibitors:
  - 1) Donepezil (1996) ..... 5 – 10 mg once daily.
  - 2) Rivastigmine (2000) ..... 1.5 – 6 mg twice daily.
  - 3) Galantamine (2001) ..... 4 – 12 mg twice daily.
- B) NMDA Receptor Antagonist:
  - 1) Memantine (2003) ..... 5 – 20 mg daily (in one or two divided doses).
- C) Donepezil + Memantine (2014) ... in one or two divided doses.

Quality of Life (QoL) is a broader concept of overall well-being of a person encompassing every aspect of human life – physical, mental, financial, social, emotional and spiritual well-being. QoL assessment using one of the standard scales, e.g. Short Form 36 (SF-36), is therefore an important measure to assess the well-being of a person with dementia.

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# Suryanamaskar: Unlocking the Potential of Chrono-Physiology for a Elderly Healthy Heart

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## ABSTRACT

*This manuscript explores the potential of Suryanamaskar (Sun Salutation) and the importance of restoring our body clock's rhythm for a healthy heart. Suryanamaskar, an ancient yogic exercise, offers physical and mental benefits, improving flexibility, muscle strength, and energy levels. It positively affects our cardiovascular health by enhancing metabolic rate, heart function, and respiratory capacity. Practicing Suryanamaskar from a young age promotes physical growth and a healthy mind. Additionally, adopting healthy sleep patterns, adjusting meal times, and spending time outdoors can reset our body clock and contribute to overall well-being. By implementing these strategies, including the practice of Suryanamaskar, we can prevent cardiovascular diseases and maintain a healthy heart.*

**Keywords:** Suryanamaskar, Cardiovascular health, Circadian rhythm, Cardiovascular diseases, Sleep patterns

## DEMOGRAPHY BACKGROUND

In our fast-paced modern lives, maintaining a healthy heart is essential for overall well-being. Recent research suggests that incorporating practices like Suryanamaskar (Sun Salutation) into our daily routine can have a positive impact on our cardiovascular health. Suryanamaskar, an ancient yogic exercise consisting of a sequence of postures, not only benefits our physical fitness but also has the potential to modulate our chrono-physiology—the interplay between our body's internal clock and physiological processes. This article explores how integrating Suryanamaskar practices can help in regulating the rhythm of cardiovascular physiology, leading to a healthier life. Furthermore, we delve into the significance of adopting an “early to bed, early bird” sleep pattern for optimizing heart health and highlight the potential detriments associated with a “late sleep, like owl” pattern. Understanding the profound influence of our sleep-wake cycle on cardiovascular function can empower individuals to make informed choices for promoting heart well-being. Join us on this journey to uncover the

benefits of Suryanamaskar, the importance of timely sleep patterns, and how aligning our daily routines with chrono-physiology can contribute to maintaining a healthy heart and overall vitality.<sup>1,2</sup>

## SURYANAMASKAR AND CARDIOVASCULAR FITNESS

Suryanamaskar, also known as Sun Salutation, is a dynamic yoga practice that offers numerous benefits for cardiovascular health and overall well-being. Regularly performing Suryanamaskar can improve joint strength and flexibility, enhance blood circulation, stimulate internal organs, aid in digestion, promote toxin elimination through sweat, and optimize gas exchange in the lungs. Studies have shown that Suryanamaskar helps increase muscle power, improve cardiovascular measures, and enhance endurance. The practice can contribute to muscle strength and stamina, while also reducing body fat and body mass index (BMI). By incorporating Suryanamaskar into daily routines, individuals can maintain healthy BMI and basal metabolic rate (BMR), supporting overall fitness.

Research has demonstrated the positive impact of Suryanamaskar on cardiorespiratory performance. It has been found to lower heart rate, body fat, cholesterol, lipid, and LDL levels. Moreover, Suryanamaskar is beneficial for individuals with coronary artery disease, as

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it positively influences heart function and cardiovascular health. Furthermore, Suryanamaskar is an exercise that engages the heart and lungs, leading to increased oxygen consumption and energy expenditure. The number of calories burned during Suryanamaskar varies depending on factors such as weight, pace, and deep breathing, but it can be an effective way to manage weight and maintain cardiovascular fitness.<sup>3</sup> In conclusion, Suryanamaskar offers a holistic approach to cardiovascular health. Its combination of physical movements, controlled breathing, and mind-body connection provides numerous benefits for the heart, lungs, muscles, and overall well-being. By integrating Suryanamaskar into our daily lives, we can enhance our cardiovascular fitness, improve flexibility, and promote a healthy lifestyle.

## **CARDIOVASCULAR DISEASE AND CIRCADIAN RHYTHM**

Certain physiological processes in our body, such as heart rate, blood pressure, and the activity of certain chemicals, follow a 24-hour pattern. Interestingly, these patterns align with the occurrence of cardiovascular diseases (CVD). Specifically, in the morning hours (between 6 a.m. and 12 p.m.), there tends to be an increase in negative cardiovascular events like stroke, heart attack, irregular heart rhythms, and sudden cardiac arrest.<sup>4</sup> It has been observed that individuals who experience a heart attack in the morning are more likely to have a larger stroke and a worse outcome compared to those who have a heart attack at other times of the day.

## **AUTONOMIC NERVOUS SYSTEM AND CIRCADIAN RHYTHM**

The autonomic nervous system plays a crucial role in how our circulatory system functions normally and when something goes wrong. There are two main parts of this system: the sympathetic system and the parasympathetic system. The sympathetic system increases heart rate, strengthens the heart's ability to contract, and raises resistance throughout the body. On the other hand, the parasympathetic system has the opposite effect. It slows down the heart rate and slightly decreases the heart's ability to contract. Both these systems work in a way that follows a 24-hour cycle. The sympathetic system is most active in the morning, while the parasympathetic system is most active at night. Additionally, in the early morning, certain receptors in our arteries are highly sensitive. The increase in blood pressure and heart rate that we experience

in the morning is due to the peak activity of the sympathetic nervous system, increased activity of the renin-angiotensin-aldosterone axis (which affects blood pressure regulation), and the slowing down of the parasympathetic nervous system.<sup>2,4</sup> These changes that occur in the morning are likely contributing to the higher risk of cardiovascular diseases during that time period.

## **BLOOD PRESSURE AND CIRCADIAN RHYTHM**

Blood pressure follows a pattern throughout the day. It remains relatively stable for 24 hours but tends to be higher in the morning and lower at night. Around 11 a.m., there is a temporary pause after the morning rise, and then it gradually decreases until reaching its lowest point around midnight. Generally, blood pressure is 10 to 20% lower at night compared to daytime. Changes in the activity of the sympathetic nervous system, which is linked to blood pressure regulation, occur in sync with our sleep-wake cycle. During sleep, blood pressure tends to be lower because the activity of the sympathetic nervous system decreases, while the vagal activity (part of the parasympathetic system) increases. Various factors can also influence blood pressure, such as physical activity, emotions, diet, light exposure, and darkness. Interestingly, the rise in blood pressure in the morning corresponds to an increased occurrence of cardiovascular events during that time. The increased blood pressure in the morning can make weak plaques in blood vessels more likely to rupture, leading to sudden heart problems. It's important to note that the risk of cardiovascular disease (CVD) is not solely linked to the rise in morning blood pressure. Research has shown that if blood pressure remains high at night and doesn't decrease, the risk of CVD is higher. In fact, CVD is more likely to occur if blood pressure doesn't drop at night. A study called MAPEC demonstrated that using chronotherapy (adjusting medication timing) can lower blood pressure at night, reducing the risk of CVD.<sup>5</sup>

## **VASCULAR ENDOTHELIUM AND CIRCADIAN RHYTHM**

The vascular endothelium, which is a layer of cells lining our blood vessels, plays a vital role in protecting against the development of artery-clogging plaques, facilitating blood clotting, and maintaining open and healthy blood vessels. When the endothelium doesn't function properly, it can have negative effects on the heart and cardiovascular system. One important function of the



endothelium is to regulate the production and usage of a molecule called nitric oxide, which helps keep blood vessels relaxed and open. In the morning, there is usually a reduced production of nitric oxide, resulting in a decrease in the ability of blood vessels to widen (vasodilation). This impairment in vasodilation, caused by the endothelium not working optimally, can contribute to conditions like high blood pressure, stroke, and heart attack. Additionally, when the endothelium is not functioning properly, the body may produce and utilize nitrogen gas in an imbalanced way. This imbalance further impacts the cardiovascular system and can lead to adverse effects on heart health.<sup>6</sup> In summary, the endothelium's role in widening blood vessels and protecting against diseases like high blood pressure, stroke, and heart attack is compromised when it doesn't work correctly. This dysfunction, particularly in the morning when nitric oxide production is reduced, could be one of the reasons why cardiovascular events are more severe during that time.

## BLOOD CLOTTING AND CIRCADIAN RHYTHM

When someone is bleeding heavily, the ability of blood to clot can be life-saving. However, blood clots can also cause serious problems like stroke, heart attack, or sudden cardiac death. To counteract blood clots, there is a process called thrombolysis that helps break them up and keep blood flowing through the vessels. Throughout the day, the balance between clotting and bleeding tendencies in our blood changes. In the morning, the likelihood of blood clotting is higher because certain markers related to platelet activity are at their peak between 6 a.m. and 12 p.m. At the same time, the ability to break down clots (thrombolysis) is reduced in the morning. This is partly due to lower levels of a substance called plasmin-plasmin inhibitor complex and higher levels of another substance called plasminogen activator inhibitor-1 (PAI-1), which prevents the breakdown of blood clots. These factors contribute to an increased risk of blood clots forming in the morning, which may help explain why cardiovascular events are more common during that time. Cardiovascular diseases (CVD) result from various factors, including how different processes in our body interact with each other, our behaviors (such as exercise), and our individual risk factors. The circadian rhythms of these processes, like changes in the morning, usually have advantages because they predict how our behavior and body functions will change throughout the day. However, for individuals

prone to CVD, the morning circadian changes can push them closer to the risk threshold, increasing the chances of adverse heart events. It's important to determine whether the circadian rhythm is the actual cause of CVD or if it simply highlights existing weaknesses.<sup>2,6,7</sup> Considering the impact of circadian rhythms on CVD is crucial when treating the condition. The timing of drug administration may affect its metabolism and effectiveness. Taking into account the circadian rhythm as a whole during treatment could enhance its efficacy and minimize side effects. Combining certain medications, such as low-dose aspirin and atorvastatin, may also reduce the likelihood of cardiovascular events. Additionally, tailoring drug treatment to align with the circadian cycle, as seen with acetylsalicylic acid (aspirin), may play an important role in improving outcomes.<sup>8</sup>

## SURYANAMASKAR IN RESTORING REGULAR CIRCADIAN RHYTHM

Suryanamaskar, also known as Sun Salutation, is a series of yoga postures combined with synchronized breathing. While it is widely recognized for its physical benefits, such as improving flexibility and strength, recent studies suggest that practicing Suryanamaskar can also have a positive impact on cardiovascular health. Let's explore how this ancient practice can benefit our heart and overall well-being. Firstly, Suryanamaskar involves dynamic movements that promote blood circulation throughout the body. The various postures, including forward bends, backbends, and inversions, create a pumping action that enhances blood flow to the heart and vital organs. This increased circulation helps deliver oxygen and nutrients more efficiently, supporting the optimal functioning of the cardiovascular system. Moreover, the rhythmic breathing patterns associated with Suryanamaskar have a calming effect on the autonomic nervous system, particularly the sympathetic and parasympathetic branches. By engaging in slow, deep breathing during the practice, we activate the parasympathetic nervous system, which is responsible for promoting relaxation and reducing stress. This, in turn, helps lower blood pressure and heart rate, reducing the risk of cardiovascular diseases. Regular Suryanamaskar practice has also been shown to improve cardiac function. Studies have indicated that it can increase the efficiency of the heart muscle, improving its ability to pump blood. This enhanced cardiac function can contribute to a stronger cardiovascular system, reducing the strain on the heart and lowering the risk of heart-related ailments. Additionally,

Suryanamaskar aids in weight management, which is closely linked to cardiovascular health. Obesity and excess weight can significantly increase the risk of conditions like high blood pressure, diabetes, and heart disease. The dynamic movements involved in Suryanamaskar help burn calories, build lean muscle mass, and improve metabolism, all of which contribute to maintaining a healthy body weight. By managing weight effectively, we can reduce the burden on the cardiovascular system and mitigate the risk of cardiovascular diseases. Beyond the physical benefits, Suryanamaskar also promotes mental well-being, which indirectly affects cardiovascular health. Stress and anxiety are known contributors to heart disease. The meditative and mindfulness aspects of Suryanamaskar help calm the mind, reduce stress levels, and promote mental clarity. By fostering a state of inner calmness and emotional balance, Suryanamaskar supports overall cardiovascular health.<sup>9</sup>

It is important to note that Suryanamaskar should be practiced under proper guidance, especially for individuals with pre-existing cardiovascular conditions. Consulting a healthcare professional or a certified yoga instructor is advised to ensure the practice is safe and suitable for individual needs. In conclusion, incorporating Suryanamaskar into our daily routine can offer numerous benefits for cardiovascular health. The combination of dynamic movements, synchronized breathing, improved circulation, enhanced cardiac function, and stress reduction contribute to a healthier heart and overall well-being. By embracing this ancient practice, we can take proactive steps towards maintaining a strong and resilient cardiovascular system. Remember, consistency and mindfulness are key; enjoy the practice, listen to your body, and reap the rewards of a healthier heart through Suryanamaskar.

## FEW STEPS TO RESTORE OUR BODY CLOCK'S RHYTHM

1. **Being in the light:** Exposing yourself to natural sunlight and bright light in the morning helps regulate your body clock. Turn on bright lights if your room lacks natural light. Avoid screens, as the blue light they emit can disrupt sleep. Create a dark environment in the evening by using dark shades or a sleep mask to combat light pollution.
2. **Adjusting meal times:** Meal timing affects your sleep clock. Research suggests that fasting for about 16 hours can help reset your sleep schedule. Try eating dinner early and not eating again until breakfast the next morning. Consistency in meal timing, with about

12 hours between breakfast and dinner, helps maintain a steady circadian cycle. It's also advised to have a smaller dinner and a full breakfast.

3. **Going camping:** Spending time outside, particularly camping, helps reset your biological clock. Camping provides natural light exposure, moderate to intense exercise, and fresh air. Even a single weekend of camping can reset your body's melatonin production and restore your sleep-wake cycle.
4. **Establishing a sleep routine:** Staying awake until your regular bedtime can help reset your sleep schedule. Gradually shifting your bedtime earlier by 30 minutes every few days can be effective. Avoid spending excessive time in bed and maintain a consistent sleep routine. Relaxing activities before bed, like taking a bath or reading a book, can promote better sleep.
5. **Slowly adjusting sleep schedule:** For long-term effects, make slow and steady changes to your sleep schedule. Small adjustments are easier on your body and mind. Change your bedtime and wake-up time by 15 minutes every few days until you reach your desired schedule. This method can help reset your sleep clock in about a month.
6. **Tips for good sleep:** Follow basic sleep hygiene rules throughout the process. Aim for 6 to 8 hours of sleep each night. Maintain a regular sleep routine, even on weekends. Limit caffeine intake after lunch. Relax before bed and avoid gadgets and bright lights. Keep your sleep environment cool, quiet, and dark. Seek professional help if needed to address any underlying sleep issues or health problems affecting your sleep cycle.

By implementing these strategies, you can reset your sleep clock and establish healthy sleep patterns for improved overall well-being.

## CONCLUSION

Suryanamaskar, derived from ancient Indian physical training, is a popular asana routine that offers numerous benefits for overall health. It improves flexibility, strengthens muscles, and boosts energy levels. Suryanamaskar also has positive effects on metabolic rate, heart health, and breathing. It enhances mental well-being and supports the proper functioning of the body's endocrine glands. In addition to physical benefits, Suryanamaskar has advantages related to puberty, the menstrual cycle, and childbirth. It is beneficial for people of all backgrounds, not

just those who regularly practice yoga or seek spirituality. Even for the average person looking to maintain good physical, physiological, and mental health, practicing Suryanamaskar requires minimal time investment. Initiating Suryanamaskar practice from a young age, around 7 or 8 years old, can contribute to better physical growth and a healthy mind. It can become a family activity, allowing everyone to stay healthy together. Suryanamaskar is particularly advantageous for individuals who are unable to dedicate an hour a day to yoga but still wish to enjoy its benefits. To restore our body clock's rhythm, we can follow these steps: expose ourselves to natural light in the morning, adjust meal times, spend time camping to reset our biological clock, establish a consistent sleep routine, gradually adjust our sleep schedule, and follow good sleep hygiene practices. Implementing these strategies, along with practicing Suryanamaskar in the morning, can help prevent cardiovascular diseases and promote overall well-being. In essence, Suryanamaskar is a wonderful practice that can be easily incorporated into daily life. It provides a multitude of benefits, making it accessible and beneficial for individuals seeking to enhance their overall well-being.

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# Sepsis in Elderly: Early Diagnosis and Management

M E Yeolekar

## ABSTRACT

*The incidence of sepsis and related mortality risk are both increased significantly in the elderly. Physical factors that contribute include poor coordination, dementia at different stages, excess injury/falls, poor gag and cough reflexes, compromised immune function – qualitative and quantitative, poor locomotion and immobility, delayed healing ulcers, indwelling catheters/neurogenic bladder, obstructive condition like cholelithiasis and neoplasms. The disease conditions that may precipitate include- malnutrition/micronutrient deficiency, diminished cardiopulmonary reflexes, reduced physiological reserves, co-morbidities like malignancy, but Diabetes, often of a long duration with poor control tops the list in India. The general presenting symptomatology includes- confusion, disorientation, tachycardia, dyspnoea, discomfort, an pain, clammy and sweaty skin and hypotension- and early warning signs, a high index of clinical suspicion/detection is crucial and matters most. Hospitalisation, Intensive Care/Monitoring - Cardiopulmonary, Renal and Gastrointestinal/Nutritional is vital with data demonstrating high morbidity/mortality outlined in the text. Importance of immunity is highlighted and approach underlined.*

**Keywords:** Sepsis, immunosenescence, frailty, sequential organ failure assesment score, septic shock

Sepsis continues to be a prevalent serious medical condition with substantial morbidity and mortality, particularly in the elderly. The incidence has increased around 9% annually in the general population over the last years and specially in aged patients group.<sup>1</sup> Increasing life expectancy helps understand the different characteristics of severe sepsis in older patients making it both a clinical priority and challenge for clinicians.

Several risk factors such as comorbidities, preadmission status, malnutrition, frailty and an impaired function of the immune system called immunosenescence are involved in the higher predisposition to sepsis in the elderly.

Immunosenescence that came into sharp focus in covid pandemic where the elderly borne the brunt, consists of functional impairment in both the cell-mediated immunity and humoral immune responses, increases not only the risk to develop sepsis but also lead to more severe presentation of infection and may be related to a higher mortality. Age

alone as a factor should not be used to determine treatment options because the poorer outcomes are thought to be due to increased co-morbidities and frailty prevalent in the age group. Population aging can result in an increased incidence and severity of diseases, such as sepsis both in the forms of community-acquired and hospital acquired, as compared to younger counterparts. The incidence and mortality of severe sepsis in older patients has increased progressively to a rate of 26.2 cases per 1000 persons, with a 38.4% mortality rate in patients older than 85 years.<sup>2</sup> In a study for mortality in critically ill patients- overall hospital mortality was 48.8%, being 47.4% in elderly age group of 65-79 years and 54.2% in very elderly above age 80 years.<sup>3</sup> As sepsis becomes worse, complications of sepsis in elderly will arise- organ damage, organ failure and death. In yet another study, the hospital mortality rate was 14.3% in below 65 year age group, 21.5% in 65-79 years age group and 30.4% in above 80 years age group.<sup>4</sup> Sequential Organ Failure Assessment (SOFA) Score can be effectively used as predictive scoring for critically ill elderly patients.<sup>5</sup> Having looked into incidence and mortality related to sepsis in the elderly, it is worthwhile to consider presenting features and attempts at early detection

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A) Poor functional status- disuse atrophy related to sedentariness and inactive lifestyle, presence of sarcopenia due to muscle wasting and loss, endocrine changes in responsiveness to trophic hormones (growth hormone, androgens, oestrogens), neurologic alterations, changes in food intake- qualitative and quantitative, and changes in protein intake / metabolism The pre-admission functional status is as /more important than comorbid illnesses/ conditions and is an independent predictor of outcome in elderly patients. Thus Nutritional Status, Endocrine Deficiency, Aging, Susceptibility to infections- particularly gram negative, affected innate immunity / functional impairments in both cell mediated and humoral responses with age, decreased ability to produce specific opsonophagocytic antibodies against neoantigens – as such or in combination may compromise the status of defence and response in elderly.

## SYMPTOMS

Older patients may present often with atypical/ non specific symptom commonest example being that of altered mental status, a non specific and yet important indicator. Lethargy, tachypnoea, dehydration, loss of appetite, generalized and sometimes profound weakness, dizziness, falls, incontinence. Older patients with bacteremia may not present with typical fever and chills. With respiratory

system involvement /pneumonia, hypoxemia may the only feature. The typical signs of sepsis and SIRS criteria may be uncommon. Suffice to say, a high index of suspicion is necessary in diagnosis of sepsis in elderly in general and critical care.<sup>6</sup> Septic shock is the last and dangerous stage of sepsis. Antibiotics, fluids and vasopressors have been the mainstay of treatment, steroids being controversial. Cephalosporins, Aminoglycosides, Imipenem, carbapenems and other antimicrobials demand a judicious use.

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# An Unusual Case of Fever With Rash in Elderly

Pradnya Diggikar<sup>1</sup>, Hansini Reddy<sup>2</sup>, Mundada Mayank<sup>3</sup>

## ABSTRACT

*IgA vasculitis, also known as Henoch Schönlein Purpura (HSP) is an immune mediated small vessel vasculitis most commonly seen in children. It is typically triggered by antecedent infections like upper respiratory infection.<sup>1</sup> HSP, although uncommon in adults, presents as a more severe form of disease. In children, the renal involvement is characterized by isolated hematuria or minimal proteinuria, which is often self-limiting. While in adults, glomerulonephritis progresses most often to end stage renal disease. A 65-year-old male, who is a known case of hypertension presented with fever, polyarthralgia & palpable purpura in both lower limbs. A diagnosis of HSP was made after skin biopsy showed leucocytoclastic vasculitis with IgA antibody deposition. Kidney biopsy immunofluorescence showed IgA mesangial deposits. The patient was treated with Tablet Prednisolone at 1mg/kg/day for 2 months, after which it was tapered.*

**Keywords:** Fever, Purpura, Hematuria, Polyarthralgia, Henoch Schönlein Purpura, IgA vasculitis

## INTRODUCTION

IgA vasculitis (IgAV), previously termed as Henoch Schönlein purpura (HSP), is a small vessel vasculitis affecting the skin, joints, gut, and kidneys. It predominantly affects children. It is defined by tissue deposition of IgA. The nephritis associated with IgAV is characterized by diffuse mesangial IgA deposition.<sup>2</sup> A palpable purpuric rash, which may be recurrent, occurs on extensor surfaces. There may be polyarthralgia and abdominal pain caused by gut vasculitis. This may be severe, with bloody diarrhea if intussusception develops. Use of Cyclophosphamide and Azathioprine along with steroids reduces proteinuria. Although HSP is very rare in elderly, it should always be considered in a patient presenting clinical description compatible with the same.

## CASE REPORT

A 65-year-old male presents with complaints of low-grade intermittent fever with rashes on both lower limbs since 7 days. He also gives complaints of bilateral knee and ankle pain which was migratory in nature associated with swelling since 7 days. Since 2 days patient has diffused

colicky type of pain abdomen with black color stool. No other bleeding tendencies and no small joint involvement. No complaints of burning micturition or decreased urine output. Patient had history of similar rash and joint pain 1 year back which resolved on its own. The patient has been on regular treatment with telmisartan 40mg daily for hypertension since 3 years. General examination showed Pulse rate of 88bpm regular in nature with all peripheral pulses felt, Blood Pressure of 130/90mmhg and Oxygen



Figure 1: Lower Limbs showing Maculo-papular palpable purpura [non blanching] around ankle

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Figure 2: Lower Limbs showing Maculo-papular palpable purpura [non blanching] around ankle

Saturation of 98% on Room air. On local examination, knee joint and ankle joint tenderness with swelling present not associated with redness or raised local temperature (Figure 1, 2). On systemic examination, per abdomen was soft, nontender & bowel sound present with no hepatosplenomegaly. Other Systemic examination was grossly normal.

Initial investigation revealed hematuria, mild proteinuria & malena (Table 1)

Chest X-Ray & ECG were normal. Bilateral knee joint x-ray showed decreased joint space with no deformity. Ultrasonography of abdomen & pelvis showed no abnormality with normal kidney size & no free fluid. Upper GI endoscopy done to evaluate the cause of severe pain abdomen and malena, which revealed no obvious abnormality.

Patient was initially investigated for infective causes of fever with rash with joint involvement, like dengue fever, chikungunya, malaria, leptospira disease, rheumatic fever which came out to be negative (Table 2)

Skin biopsy from the lesion was taken to evaluate for small vessel vasculitis. Histopathology shows dense perivascular neutrophilic infiltration in superficial & deep dermal vessels. There is variable fibrinoid necrosis of the vessel wall. The above findings are suggestive of Leucocytoclastic vasculitis. In Immunofluorescence IGA/ IGG/IGM/C3 are negative (Figure 3).

Renal biopsy on microscopy shows Glomeruli

Table 1: Shows initial investigations	
INVESTIGATION	VALUE
Hb/ TLC/ Platelet count	12.3gm%/ 8600/ 3,18,000mm
Urea/ creatinine	40/ 0.9 mg/dl
Sodium/ potassium/ chloride	138/ 4.2/ 102 mEq/L
Total bilirubin/ conjugated bilirubin	1.02/ 0.6 mg/dl
HIV/ HBsAg/ anti HCV	Non-reactive
Urine R/m	Protein trace, RBC- 30-40/hpf
UPCR	4.48
24-hour urine protein	4560
Dengue/ Chikungunya/ Rapid Malaria Test/ Leptospira	Negative
CRP/ ESR	3/ 65
Stool R/M	Occult blood positive
Blood and urine culture	Negative
ASO titre	Negative

Endocapillary Hypercellularity in 2/10 glomeruli & mesangial hypercellularity seen in 4/10 glomeruli. Glomerular Basement Membrane thickening/wrinkling not seen. On Immunofluorescence IgA came Positive (++) with coarsely granular mesangial deposits (Figure 4). IgG, IgM, C3, C1q, are negative. The above findings suggest IgA Nephropathy (M0 E1 S0 T0 C0). So, a final diagnosis of IgA Vasculitis [Henoch Schönlein Purpura] was made.

The patient was started on Tablet Prednisolone 50mg once daily after which patient improved symptomatically with resolution of palpable purpura. Prednisolone 50mg was continued for 2 months, & later tapered to 0.2mg/kg/day for next 1 month. On follow up, patient lab investigation revealed resolution of hematuria.

Table 2: Investigations done for inflammatory cause of fever with rash & joint involvement	
INVESTIGATION	VALUE
Rheumatoid factor / anti CCP	Negative
ANA by IF	Negative
ANA blot	Negative
P-ANCA	Negative
C-ANCA	Negative
C3, C4	Normal
Serum IgA	224

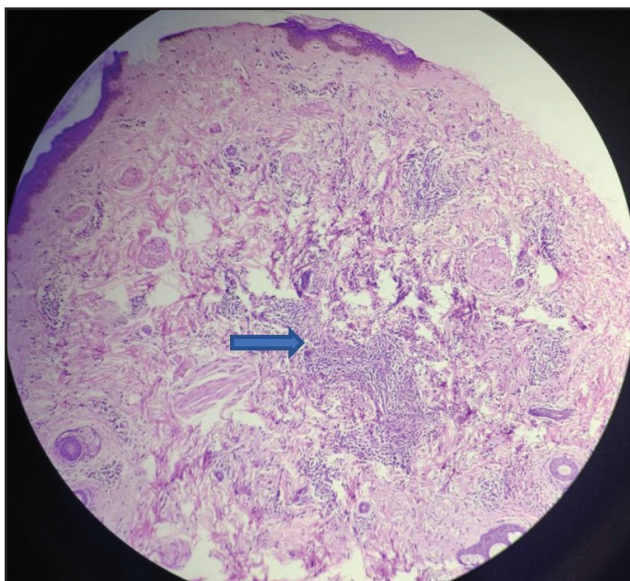


Figure 3: Shows leukocytoclastic vasculitis

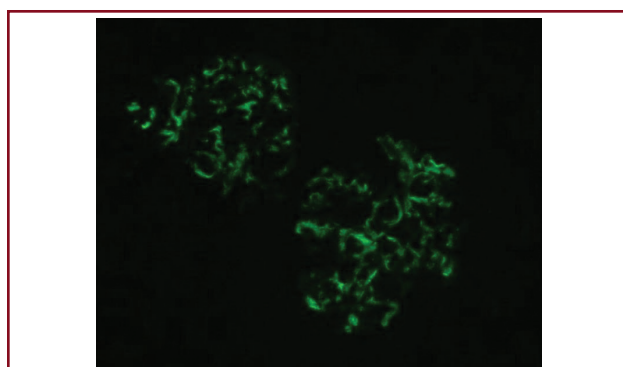


Figure 4: Shows IgA mesangial deposits

## DISCUSSION

IgA vasculitis (Henoch-Schönlein) is an immune-mediated small-vessel vasculitis characterized by palpable purpura, arthralgias, gastrointestinal signs and symptoms, and glomerulonephritis. More than 90% of the cases of HSP is seen in children of ages 4–7 years. It is uncommon in adults and often under-recognized in the elderly population.<sup>1</sup> Upper respiratory tract infections, drugs, foods, insect bites, and immunizations might trigger IgA vasculitis. Leucocytoclastic vasculitis seen in vessel wall is the characteristic feature of HSP. Immune complexes consisting of IgA antibody, c3 & fibrin is deposited in the vessel wall. In children polyarthralgia with gastrointestinal symptoms is the most common presenting feature in more than 70% of the cases. Gastrointestinal symptoms include colicky abdominal pain, nausea, vomiting, diarrhea, or constipation, associated with passage of blood and mucus per rectum. In severe cases bowel intussusception may also be seen.<sup>2</sup> While in adults, presenting symptoms are more often related to the skin and joints while gut involvement is less common. The typical rash of HSP is bilateral, symmetric palpable purpura seen on the extensor surface of legs and gluteal region. In adults, renal involvement is more severe and might progress to rapidly progressive glomerulonephritis (RPGN) & stage 5 CKD.<sup>3</sup> Laboratory findings include mild leukocytosis & eosinophilia, a normal platelet count. Serum complement components are normal, and IgA levels are elevated in one-half of patients. The diagnosis of IgA vasculitis is mostly by clinical signs and symptoms. Skin biopsy showing leukocytoclastic vasculitis with IgA and C3 deposition by immunofluorescence

confirms the diagnosis. In mild cases HSP is managed symptomatically with hydration and NSAIDs for arthralgias but recurrences are common. In severe cases with renal and gastrointestinal involvement, systemic corticosteroids are used.<sup>1</sup> Treatment is with glucocorticoids like prednisone, which is given at 1 mg/kg per day and tapered according to clinical response. It decreases tissue edema, arthralgias, and abdominal discomfort. In Patients with rapidly progressive glomerulonephritis, glucocorticoids alone or in combination with another immunosuppressive agent help in delaying the progress of the disease to CKD. Disease recurrences is seen in 10–40% of patients.<sup>2</sup>

## CONCLUSION

HSP should be considered as a potential diagnosis in adults & elderly population presenting with skin vasculitis. The renal prognosis is worse in adults than in children with IgAV. Hence a high index of suspicion, prompt evaluation, and appropriate therapy, is required to prevent deadly outcome of RPGN in adults.

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# Exercise for Elderly Diabetic Patients - Which one, How and How Much?

Atulya Saurabh

## INTRODUCTION

Type 2 diabetes is highly prevalent in the elderly. Some of the main factors responsible for the increased prevalence of diabetes in this population are age-associated changes in body composition, obesity and sedentary behaviour.

Elderly patients experience significant and specific issues, including the association of comorbidities and geriatric syndromes, the use of multiple medications, dependence, and the presence of frailty.

Physical activity has been shown to be as effective for treating diabetes in the elderly as in younger patients, so its practice should be strongly encouraged.

Resistance activities are better for weak and frail diabetic elders. Aerobic activities should be scheduled whenever possible, and a combination of both modalities is the best option.

Moderate to high intensity exercise is more effective for glycemic control and, contrary to earlier thought, is generally safe for the elderly population.

The frequency of exercise should be at least 3 days/week for aerobics and atleast 2 days/week for resistance exercises.

Balance exercises may be beneficial in special circumstances. In the elderly patient, special care should be taken for the presence of contraindications to the practice of each exercise method; restrictions and limitations imposed by medications, chronic comorbidities, and geriatric syndromes; Higher likelihood of developing hypoglycemia, especially if insulin is used for treatment, and prevention of orthostatic hypotension which may be worsened by dehydration.

Exercise prescription tailored to each patient's preferences and limitations is highly effective not only for glycemic control, but also for improving independence, self-esteem, and quality of life.

According to an estimate, more than 30 percent of adults aged 65 and older have diabetes.

If you have a senior loved one suffering from diabetes, exercise is generally recommended to maintain optimal health and keep symptoms under control.

Here are six top exercises that can be beneficial for senior diabetics. But please do consult your Geriatrician before starting these or any other exercises to ascertain suitability of exercise to you.

## 1. WALKING

For optimal health, it is essential for seniors with diabetes to adopt healthy habits, including regular exercise.

Maintaining a high quality of life can be challenging for some seniors, but professional caregivers can help them achieve this goal.

Families can rely on experts (Geriatrician or Physiotherapist or physical therapist) to help their elderly loved ones focus on lifestyle choices that increase their chances of living a long and healthy life.

A daily routine of about 30 to 60 minutes walk at medium pace is recommend. If going out is not possible, 5000 to 6000 steps in a day at home is equally good.

## 2. YOGA & TAI CHI

It has been noted that loss of coordination is a common problem with diabetes when there is neurological damage contributing to muscle weakness. Yoga and Tai Chi can improve balance and coordination in diabetic seniors because they use slow, controlled movements that target the core and lower body muscle groups.

A review of several studies published in the Journal of Diabetes Research found that practicing Tai Chi reduced blood sugar and A1C levels.

Additionally, according to Diabetes UK, certain yoga poses may increase insulin regulation by gently stretching the pancreas, which creates insulin-producing beta cells.

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Yoga and Tai Chi can also reduce stress and promote relaxation – two other things that are beneficial for seniors with diabetes.

### 3. WEIGHT TRAINING

If diabetic seniors have low muscle mass, it may be challenging for the body to manage blood sugar levels.

Weight training is an effective way to increase muscle mass and keep glucose numbers within acceptable limits.

Recommended weight training exercises for seniors include:

- Overhead shoulder presses
- Forward lunges
- Arm curls

### 4. STATIONARY BICYCLING

Aerobic exercise of this nature is often recommended for people with diabetes to enhance heart and lung health, burn calories, and promote circulation.

A study published in the American Journal of Health Promotion found that casual cycling on a stationary bike can lower blood pressure.

It is beneficial for seniors with diabetes, as diabetes damages the arteries and increases the risk of developing high blood pressure.

### 5. SWIMMING

Low-impact exercise such as swimming may be

especially beneficial for senior diabetics.

Swimming is also ideal for older adults as it does not put much stress on the joints due to the buoyancy of water.

It may also be better for seniors who already have difficulty with land-based exercises.

What's more, swimming in a heated pool allows seniors with diabetes to increase circulation and tissue healing, two of the top benefits associated with heat.

Other water-based forms of exercise, such as water aerobics, can produce similar benefits.

### 6. DANCING

Not every exercise for senior diabetics involves weights, a trip to the pool or a gym. The simple act of dancing, whether done standing or sitting (for older adults with limited mobility), can provide an assortment of diabetes-friendly benefits. According to the Cleveland Clinic, these include shedding extra pounds, reducing stress, increasing flexibility and lowering blood sugar.

### CONCLUSION

Regular exercises as per one's capacity and ability is essential for maintaining optimal muscle mass and flexibility of joints. It has to be done on regular basis and consistency is very important. Combination of Proper Physical Activity with Proper diet and rest will help maintain good health in older age.

News from Vijayapura

**WORLD ELDER ABUSE AWARENESS DAY 2023**

Department of Geriatric Medicine, Geriatric Society of India, (GSI) Delhi, Silver Innings Mumbai & International Network for Prevention of Elder Abuse jointly organised the Stop Elder Abuse campaign in order to create awareness & empathised public at large for the same.

The “Caption and Cartoon drawing competition” was organized to commemorate Elder Abuse Awareness Day held on June 15, 2023. Twenty-one students from Karnataka, Maharashtra, Mizoram and Odisha participated in the contest and submitted the cartoons through mail, giving important message regarding prevention of Elder Abuse for the society.

Ms. Susan Somers, President of International Network for Prevention of Elder Abuse, United States of America was the judge for the competition.

The winner for the first prize was Tanisha N, Tumkur & for the second prize was Muskan Gupta, Mangalore. “A Hand Book of Geriatric Care” was presented as token of appreciation to the winners. Certificate of participation was awarded to all the participants.

Dr. Anand P Ambali, Vice President of Geriatric Society of India was coordinator for this program.

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**Department of Geriatric Medicine**  
**Geriatric Society of India, (GSI) Delhi, Silver Innings Mumbai & International Network for Prevention of Elder Abuse**

Invites students (UG and PG) of medical, dental and nursing colleges to participate in

**#StopElderAbuse**  
**Caption and Cartoon drawing competition**  
 (To commemorate Elder Abuse Awareness Day June 15, 2023)

Write or draw a caption with a cartoon and win exciting prizes

**Dr. R. S. Mudhol**  
Honorable Vice Chancellor, BLDE DU

**Dr. Aravind Patil**  
Principal and Dean Faculty of Medicine, BLDE DU

**Dr. O. P. Sharma**  
General Secretary, GSI

**Dr. V. G. Warad**  
Chairman, GSI Vijayapura

**Dr. Muddasir Indikar**  
Dr. Md Abrar Ul Haq  
Moderators, Dept of Geriatric Medicine

**Rules and regulations**

1. UG and PG students of Medical and Nursing Colleges are eligible
2. Write a original caption with suitable cartoon highlighting prevention of elder abuse in a jpeg or pdf Format, relevant to the topic that gives a strong message to the society.
3. Share the presentation to [geriatrics@bldedu.ac.in](mailto:geriatrics@bldedu.ac.in)
4. Decision of the judges is final
5. The pictures downloaded from google will not be accepted.
6. Last date for submission is 12/6/2023.
7. The results will be declared on 15/6/2023
8. There will be no registration fees
9. Share your Full name, mobile number, name of college, and e mail id along with submission.

Coordinator  
**Dr. Anand P. Ambali**  
 Vice- President, GSI

*"To care for those who once cared for us is one of the highest honors." - Tia Walker*

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**World Elder Abuse Awareness Day June 15, 2023**  
**#StopElderAbuse campaign**

**First Prize**  
**Tanisha N, SMCRI, Tumkur**

**Second Prize**  
**Muskan Gupta, NITTE DU, Mangalore**

**Winners**

**Caption & Cartoon Drawing Contest held on 15/6/2023**

**Congratulations**

**Judge – Susan Somers, President INPEA, USA.**

**Organized by**  
 BLDE DU, Department of Geriatric Medicine in collaboration with International Network for the prevention of Elder Abuse USA, Silver Innings Mumbai, & Geriatric Society of India, Delhi.

**Coordinator- Dr. Anand P. Ambali, Vice President, Geriatric Society of India.**

## News from Belagavi

The Indian Medical Association of Belgaum Branch organized Continuing Medical Education 2023 on 3rd & 4th June 2023 at Shoonya Retreat, Belagavi.

Dr. Anand P. Ambali was invited as Guest Faculty and his topic was “Geriatric Medicine – Young and emerging concept” on 04th June 2023.



Dr. Ambali discussed in detail, the evolution of geriatric medicine in India and western world, basic concepts and principles of geriatric medicine and emerging digital technology in Geriatric Care.

A total of 200 doctors of all specialties had attended the CME.

## News from Pune

2 CMEs were conducted by the GSI Pune Chapter in April 2023.

First CME was on 1st April 2023, CME on “ Medical Architecture for Elderly “ was organized at Shrimati Kashibai Navale College of Architecture, Pune “, jointly by GSI Pune Chapter and the College. Principal Dr. Sudhir Chavan, Dr. Surekha Chavan and Dr. Vijay Rhayakar were the speakers. They discussed various issues related to Environmental Modification and Medical Architecture for Elderly.

New Managing Committee members of GSI Pune



Chapter also officially took charge this time.

Second CME was on 22nd April 2023. This was organized jointly by GSI Pune Chapter and “ AASTHA by Athashri “ Dr. Shirraj Kane, Consultant Geriatrician from Pandharpur was a Guest Speaker who spoke on Parkinson’s Disease. Dr. Shubhangi Kanitkar gave important Practical Health tips for Elderly. Dr. Vijay Rhayakar informed about the “ AASTHA “, Assisted living facility for Seniors.

Both CMEs were well attended.

**HEALTH AWARENESS CAMP**

Health Awareness Camp Conducted on 10th August 2023 in Medicine OPD at Dr. D.Y Patil Hospital, Pune under the guidance of Dr. Pradnya Diggikar Professor. Patients were provided with free investigations like Blood sugar levels, HbA1c, Thyroid function test, Fasting lipid



profile, Electrocardiogram, Bone Mineral Density. Cardiac chest pain awareness lecture was conducted for undergraduate students by Dr. Pradnya Diggikar. The participants of the camp were Residents and Interns of Dr. D.Y Patil hospital, Pune Dr. Mayank, Dr. Hansini, Dr. Tushar, Dr. Bhavya, Dr. Varsha, Dr. Dheeraj, Dr. Sushmita, Dr. Mrunal, Dr. Mansi & Dr. Nayan

**ANNOUNCEMENT FOR FELLOWSHIP OF GSI**

Every year, Geriatric Society of India elects amongst its members, eligible candidates for Fellowship of Geriatric Society of India.

The elected fellows will be conferred upon the Fellowship of GSI in convocation ceremony during GSICON 2023 at Mangalore on 16-17 December 2023.

Interested members may apply for fellowship using the form below before 10 November 2023.

**Fellowship Form**

Name of Member \_\_\_\_\_

LM No. & Year \_\_\_\_\_

E-Mail ID & Ph. No. \_\_\_\_\_

GSI Conferences Attended \_\_\_\_\_

Papers in IJGC \_\_\_\_\_

Orations Received \_\_\_\_\_

Any Other Achievement \_\_\_\_\_

Proposed by \_\_\_\_\_

Seconded by \_\_\_\_\_

Signature \_\_\_\_\_

- ❖ Membership should be Minimum 5 Years old.
- ❖ Elected Fellow will be Required to pay Fellowship Fee of Rs. 10,000/- (Rupees Ten Thousand only)

**CONGRATULATIONS**

**Nadoja Dr. P. S. Shankar for Sahitya Ratna Award by Writers and Publishers Organisation presented by The Chief Minister of Government of Karnataka Sri Siddaramaiah..**



## CONGRATULATIONS

Dr. Pradnya Diggikar for attending IFA - 2023 in 16<sup>th</sup> International Federation on Ageing conference at Bangkok, Thailand from 27th to 30th June 2023 & presenting a scientific paper on challenges in Immunisation.



Dr. Pratibha Pereira on being awarded as the session’s best presenter of the technical session “COVID-19” and being awarded as the overall best presenter held at the 4<sup>th</sup> International Conference Gerontology and Geriatric Medicine on 25-26 May 2023, Colombo, Sri Lanka (Hybrid).

## CONGRATULATIONS

Dr. Bijoy Mondal Our senior member & overseas coordinator for UK Felicitated by the High Sheriff of South Yorkshire on 10th May 2023.



*With Best Compliments From*

**Dr. Satish Gulati**

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