From,  
  
Dr. P. Pavani, Post Graduate,  
Department of General Medicine, Warangal.

To,  
  
The CHAIRMAN/MEMBER SECRETARY,  
KIEC  
Warangal.  
  
//Through proper channel//

Respected Sir,

Sub: Submission of Dissertation Protocol “Correlation of Frailty and Sarcopenia with Biochemical Markers of Musculoskeletal Health in Elderly Patients – A Cross-Sectional Study” for registration – Reg.

I, Dr. P. Pavani, Post Graduate in M.D. General Medicine at Kakatiya Medical College, Warangal, joined the PG course for the academic year 2023-2026. I have been assigned the following topic for dissertation entitled “Correlation of Frailty and Sarcopenia with Biochemical Markers of Musculoskeletal Health in Elderly Patients – A Cross-Sectional Study” under the guidance of Dr. B. Thrilok Chander, MD, Professor, Unit Chief and Head of the Department, Department of General Medicine. Therefore, I am submitting the filled-in pro forma of dissertation assignment for registration and hereby request you to kindly grant me permission to do the above-mentioned dissertation work.

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| Forwarded | Yours sincerely, |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Professor & HOD Department of General Medicine Kakatiya Medical College Warangal. | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Post Graduate Department of General Medicine Kakatiya Medical College Warangal. |

Thanking You Sir,

PRINCIPAL  
KAKATIYA MEDICAL COLLEGE,

Warangal.

KAKATIYA MEDICAL COLLEGE  
DEPARTMENT OF GENERAL MEDICINE

PRO FORMA FOR REGISTRATION OF SUBJECTS FOR DISSERTATION

NAME OF THE CANDIDATE: Dr. P. Pavani

NAME OF THE INSTITUTION: Kakatiya Medical College, Warangal

COURSE OF STUDY AND SUBJECT: M.D. General Medicine

DATE OF ADMISSION: 2023

TITLE OF TOPIC: Correlation of Frailty and Sarcopenia with Biochemical Markers of Musculoskeletal Health in Elderly Patients – A Cross-Sectional Study

DURATION OF STUDY: 18 months

PLACE OF STUDY: MGM Hospital, Warangal

GUIDE AND FORWARDED BY: Dr. B. Thrilok Chander, MD

HEAD OF THE DEPARTMENT: Dr. B. Thrilok Chander, MD

**PRINCIPAL:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PROTOCOL FOR DISSERTATION

## TITLE:

Correlation of Frailty and Sarcopenia with Biochemical Markers of Musculoskeletal Health in Elderly Patients – A Cross-Sectional Study

## AIM & OBJECTIVES:

Aim:  
To correlate frailty and sarcopenia with serum albumin, creatinine, and vitamin D levels in elderly individuals aged ≥65 years.

Objectives:  
1. Estimate the prevalence of frailty and sarcopenia in the study population.  
2. Measure serum levels of albumin, creatinine, and vitamin D to assess musculoskeletal status.  
3. Correlate frailty and sarcopenia with these biochemical parameters.

## INTRODUCTION:

The elderly population is increasingly prone to geriatric syndromes like frailty and sarcopenia. Frailty is a state of increased vulnerability characterized by a decline in physiological reserve and function across multiple systems. Sarcopenia is defined as “age-related loss of muscle mass, plus low muscle strength, and/or low physical performance” (AWGS 2019). These syndromes lead to falls, increased dependency, hospitalization, and mortality. Biochemical parameters such as serum albumin, creatinine, and vitamin D are indicators of nutritional and musculoskeletal health. Understanding the correlation can help in timely identification and intervention for at-risk individuals.

## METHODS AND METHODOLOGY:

Type of the study: Hospital-based cross-sectional study  
Study period: 18 months  
Study area: MGM Hospital, Warangal  
Sample size: 144 participants (calculated using Fischer’s formula with 10% adjustment for non-responders)  
Study population: Elderly patients aged ≥65 years attending outpatient/inpatient services  
  
Inclusion Criteria:  
- Age ≥65 years  
- Walks with or without assistance  
- Provides informed consent  
  
Exclusion Criteria:  
- Terminal illness or active sepsis  
- Bedridden or permanent immobility  
- On chronic steroid therapy  
- Diagnosed with metabolic bone disorders, CKD, chronic liver disease  
- Temporarily immobilized due to acute illness

## NEED FOR STUDY:

The study aims to establish correlation between clinical frailty/sarcopenia and serum biochemical markers and to identify simple screening methods for early detection, contributing to effective geriatric care and preventive strategies.

## INSTITUTIONAL ETHICS COMMITTEE:

Ethical approval will be sought from the Institutional Ethics Committee (KIEC), Kakatiya Medical College, Warangal.

## STATISTICAL ANALYSIS:

Descriptive and inferential statistics will be used to analyze the correlation between frailty/sarcopenia and biochemical parameters using appropriate statistical software (e.g., SPSS).

## REFERENCE:

1. Rao GN, et al. BMJ Open. 2020;10(2):e032327.

2. Shalini S, et al. J Clin Gerontol Geriatr. 2020;11(4):232–7.

3. Goel S, et al. J Nutr Health Aging. 2020;24(6):546–50.

4. Narayan A, et al. Indian J Endocrinol Metab. 2019;23(4):454–8.

5. Cruz-Jentoft AJ, et al. Age Ageing. 2019;48(1):16–31.

6. Chaudhary A, et al. J Clin Gerontol Geriatr. 2022;13(1):42–7.

7. Verghese J, et al. Arch Intern Med. 2011;171(2):132–9.

8. Gupta A, et al. BMC Geriatr. 2021;21(1):478.