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RESEARCH ARTICLE

NUTRITIONAL ASSESSMENT ON ESRD PATIENTS USING SGA SCALE : A CROSS SECTIONAL STUDY

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Key words:-
Malnutrition, Haemodialysis, Subjective Global Assessment, C-Reactive Protein, Serum Albumin, End Stage Renal Disease

Abstract

Back ground information: The aim of the study is to assess the nutritional status among ESRD patients on Haemodialysis by means of Subjective Global Assessment (SGA) and also to know the impact of comorbid illnesses on nutritional status.

Materials and methods: The study group included respondents suffering from ESRD who were patients of the Dialysis centre at Vedanta Hospitals in Guntur. The study was conducted in 50 Dialysis patients (36 men and 14 women).Those patients who met the study criteria were enrolled into the study. Relevant data such as demographics details, comorbid illnesses, past medical history, duration of dialysis, dialysis complications, were collected from patient proforma and a standardized SGA scale and other relevant biochemical parameters like Serum Albumin, and C reactive protein were used to evaluate the nutritional status of the patients.

Statistical consideration: All the raw data was collected,entered in Excel sheet 2007 in windows 7 version. Statistical analysis methods like Pearson correlation coefficient test was used to compare variables and p value

Results: The study shows that malnutition was significantly higher among those who had received HD for >3 years($p=0.008$). HD patients with increase in number of comorbidities and the number of chronic medications taken had a significantly higher level of SGA ($p<0.001$).There is a moderate positive correlation between SGA score and CRP values($p<0.0001$ the result is significant at $p<0.05$)A regression analysis is done for SGA and serum albumin findings showed that a negative correlation was there between SGA and serum albumin values (p value is 0.480905) the result is not significant at $p<0.05$.

Conclusion: In our study there is a positive correlation between SGA and CRP values and a negative correlation between SGA score and serum albumin values. No significant association was found between a patients BMI and their nutritional status and also observed that socioeconomical status had a impact on nutritional status

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Introduction:-

Chronic kidney disease is a global public health challenge since ESRD patients are supposed to live on haemodialysis for the rest of their lives unless a successful kidney transplantation is carried out**Error! Reference source not found.**.

Malnutrition was regarded as the late complication of chronic kidney disease and it is the most commonly observed condition in maintenance haemodialysis patients with prevalence ranging from 18-56% and it may occur secondary to several etiological factors such as anorexia (inadequate protein and calorie intake),metabolic acidosis(stimulation of amino acid and protein degradation)loss of appetite,infection/inflammation(stimulation of protein degradation), loss of residual renal function, inadequate dialysis,insulin resistance and superimposed comorbid condition.Anorexia resulting into decreased intake is probably the most important factor causing malnutrition in haemodialysis patients **Error! Reference source not found.**.

The patients who are malnourished or at the risk of malnutrition should be identified and intervened at an early stage to improve both the nutritional status and the overall prognosis of the patients.The risk of malnutrition in these patients must be monitored routinely through nutritional screening to decrease morbidity and mortality rate.Nutritional screening is a process of identifying various factors that are known to be associated with malnutrition by using standard nutritional assessment tools **Error! Reference source not found.**.

Various methods commonly used for assessment of nutritional status are dietary recall(adjustments), anthropometric measurements and biochemical parameters like serum albumin, C-reactive protein(inflammatory biomarker),Total iron binding capacity along with strong validating nutritional assessment tool i.e subjective global assessment scale(7pointSGA)**Error! Reference source not found.**. It is a well validated tool for screening of malnutrition and is a practical non-invasive and inexpensive composite to that is widely used in clinical practice.SGA is thought to give a valid composite measure of nutritional status in CKD patients however its value as a nutritional assessor depends on its mortality predictive capacity**Error! Reference source not found.**.

The main aim of study is to assess nutritional status among ESRD patients on haemodialysis by means of subjective global assessment (SGA) and to know the impact of comorbid illnesses on nutritional status**Error! Reference source not found.**.

Material And Methods:-

Study site and study population :

This study was carried out at Vedanta hospital, Guntur, Andhra Pradesh. The study included adult patients (both males and females) from age group 18 to 80 years who are on hemodialysis of greater than Or equal to 6 months.

Study design :

This project approach employed a descriptive cross-sectional design to achieve the study objectives.

Study period and sample size :

The sample size included in the study are about 50 hemodialysis patients. The study is being conducted for about 6 months.

Inclusion criteria :

Patients are included in this study if they were between age group 18 to 80 years;conscious, alert and responsive;ESRD patients receiving haemodialysis for greater than Or equal to 6 months ; Receiving HD atleast twice weekly with atleast 3 hours per session; including both males and females and their medical file should contain all the demographic, clinical and biochemical data required for the study.

Exclusion criteria :

Patients who are not willing to participate in the study ; patients with lack of physical and mental stability to communicate with the interviewer ; and patients with age group less than 18 years and greater than 80 years ; patients receiving haemodialysis less than 6 months are excluded from the study.

Study method :

1. Study is conducted at VEDANTA HOSPITAL, GUNTUR.
2. The patients included in the study were on hemodialysis for more than 6 months with frequency atleast twice weekly and 3 hrs per session.
3. The laboratory parameters for patients required for the study like CRP and Serum Albumin are collected.
4. Patients with diabetes, hypertension, CVD, i.e; co-morbid diseases and any medications using for them,whether the patient have kidney biopsy prior to hemodialysis are assessed using the proforma.

The tools used in this study are as follows :
1. PATIENT PROFORMA
2. SCORED PATIENT - GENERATED SUBJECTIVE GLOBAL ASSESSMENT SCALE (SGA Scale)

Statistical Considerations:
All the raw data was collected,entered in Excel sheet 2007 in windows 7 version. Statistical analysis methods like Pearson correlation coefficient test was used to compare variables and p value is obtained and is significant at < 0.05.

Results:-
A Total of 50 patients were included in the study during the period from January to June 2020. 70% (n=44) of the patients were male. Majority of the patients 50% (n=25) were in a age group of 50 to 65 years and the mean age was 48.74 years.

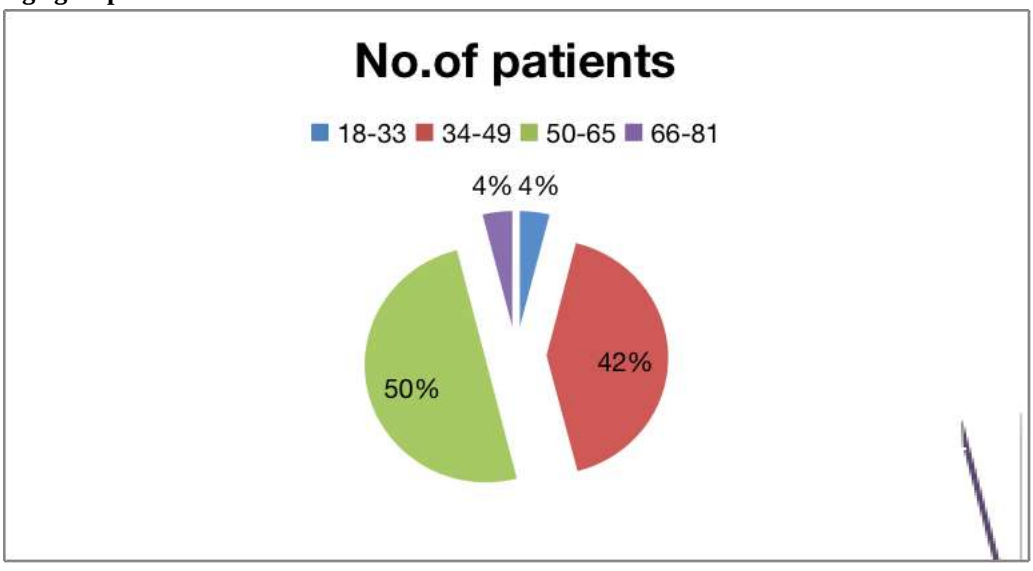
Dialysis Patient Distribution

AGE GROUP	FREQUENCY	PERCENTAGE	CUMULATIVE FREQUENCY	CUMULATIVE PERCENTAGE
18-33	2	4%	2	4%
34-49	21	42%	23	46%
50-65	25	50%	48	96%
66-81	2	4%	50	100%

Age Group Distribution

AGE GROUP	No.of patients
18-33	2
34-49	21
50-65	25
66-81	2

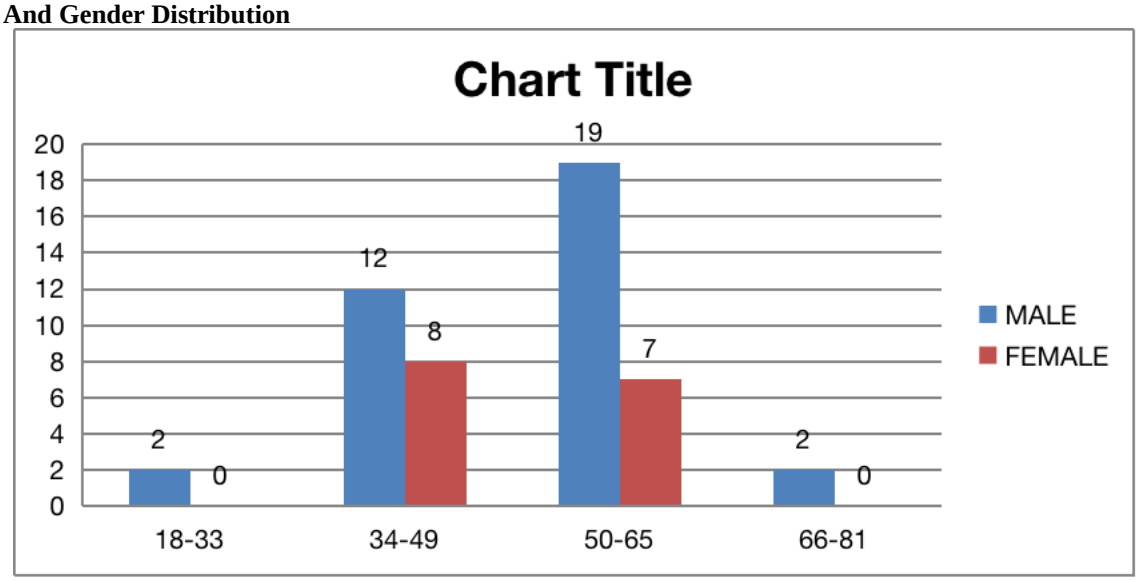
Age group distribution.



.**Age And Gender Distribution**

AGE GROUP	MALE	FEMALE
18-33	2	0
34-49	12	8
50-65	19	7
66-81	2	0

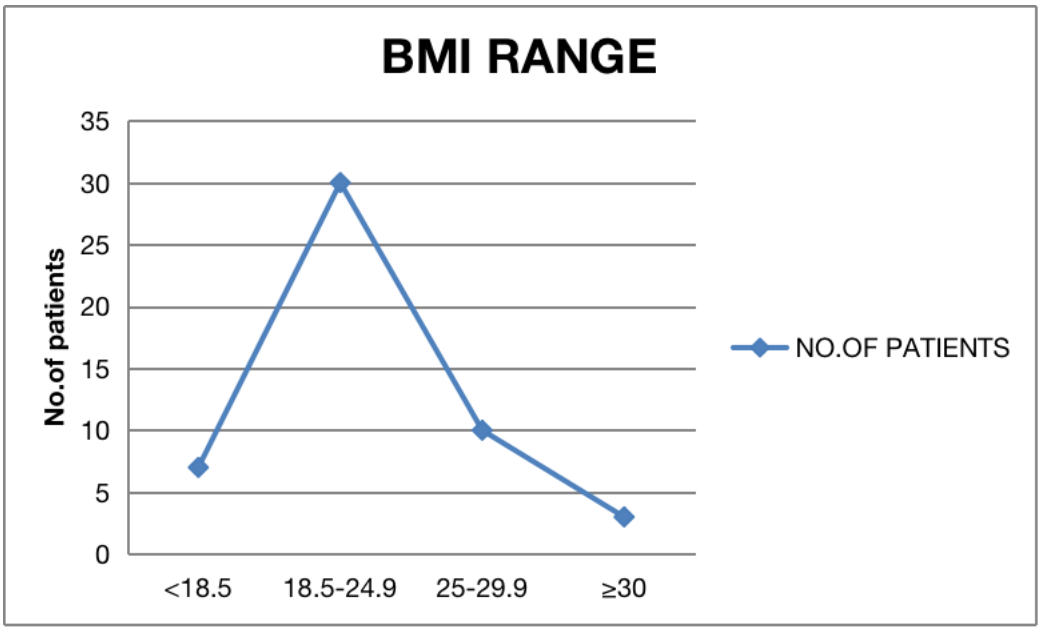
Age And Gender Distribution



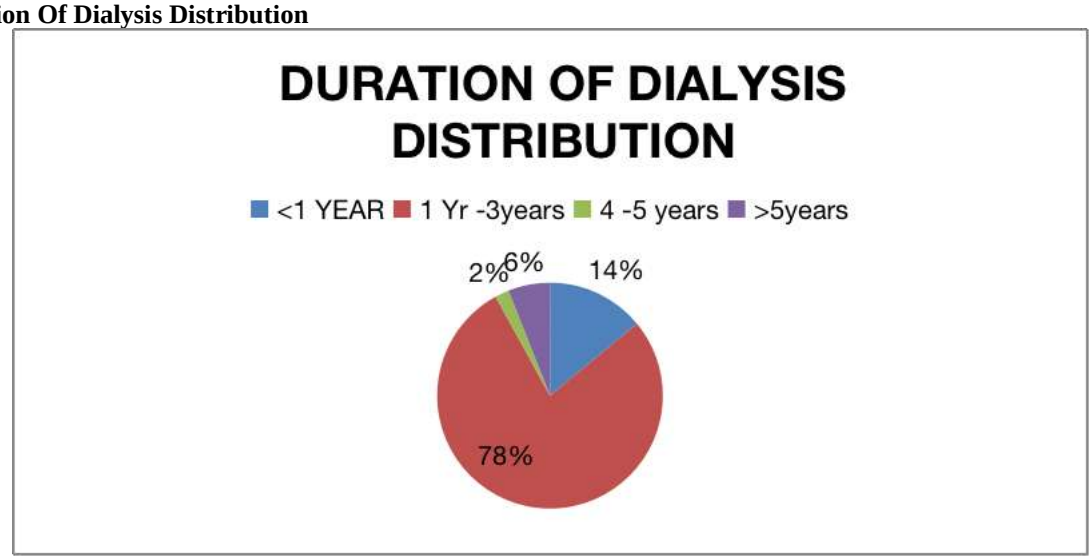
BMI RANGE	NO.OF PATIENTS
<18.5	7
18.5-24.9	30
25-29.9	10
≥30	3

BMI Range Distribution

BMI Range Distribution

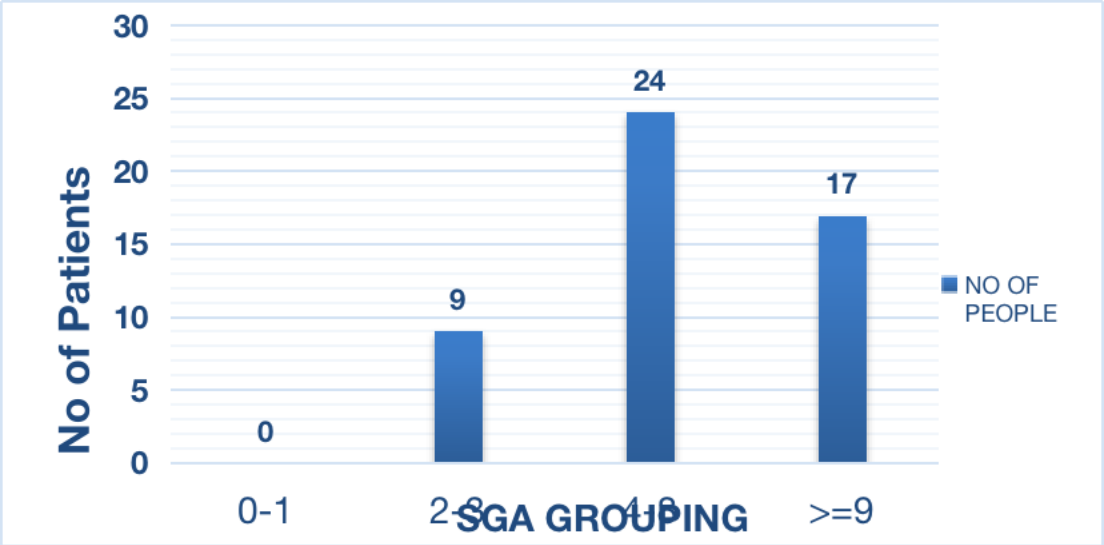


Duration Of Dialysis Distribution



SGA Scoring Distribution

Dialysis Duration V/S Sga Score Distribution



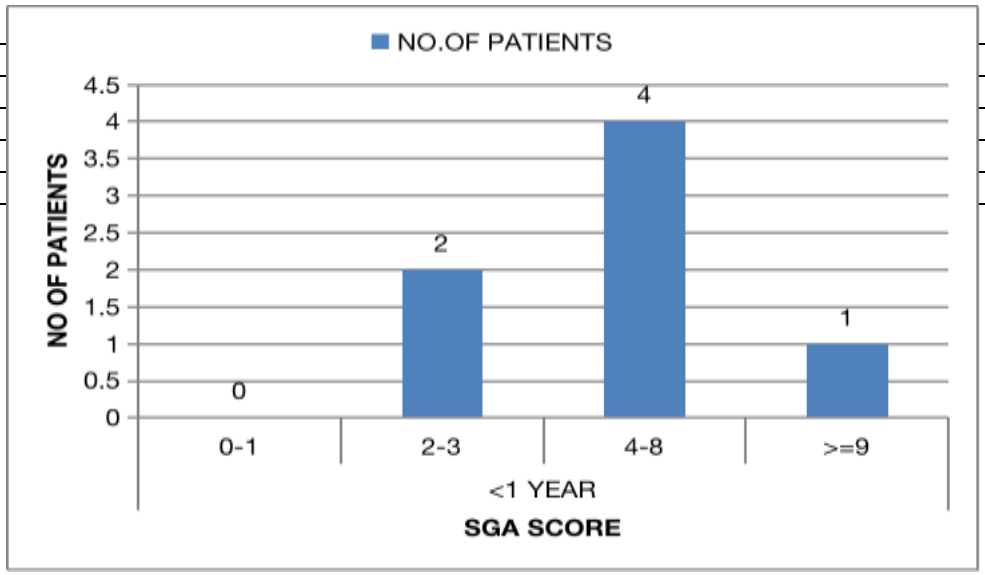
GROUPING BASED ON SGA SCORE	NO OF PEOPLE
0-1	0
2-3	9
4-8	24
>=9	17

Dialysis Duration V/S Sga Score Distribution

DIALYSIS DUARATION	GROUPING BASED ON SGA SCORE	NO.OF PATIENTS
<1 YEAR	0-1	0
	2-3	2
	4-8	4
	>=9	1

Dialysis Duration V/S Sga Score Distribution

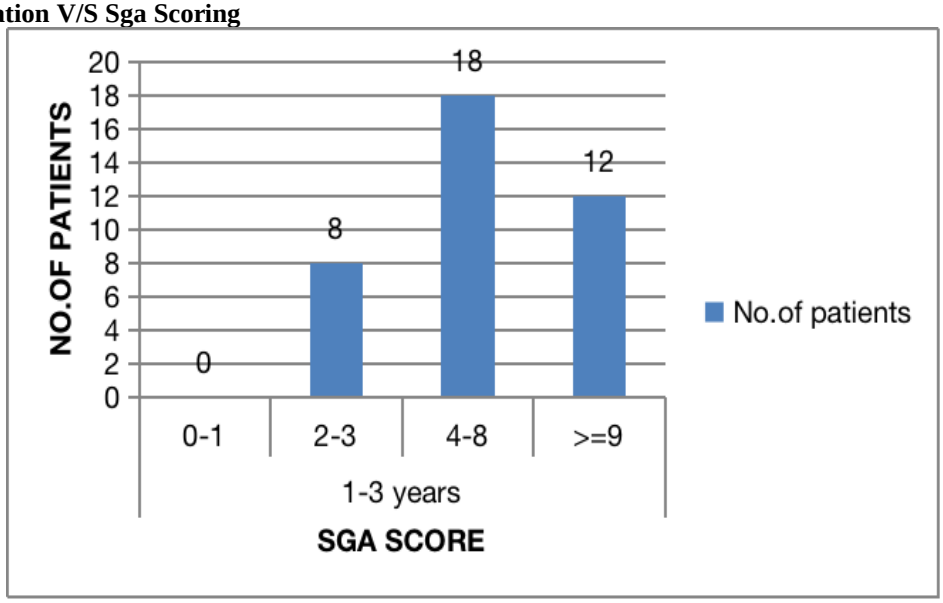
DIALYSIS
<1 YEAR
1 -3years
4 -5 years
>5years



Dialysis Duration V/S Sga Scoring

DIALYSIS DURATION	GROUPING BASED ON SGA SCORE	No.of patients
1-3 years	0-1	0
	2-3	8
	4-8	18
	>=9	12

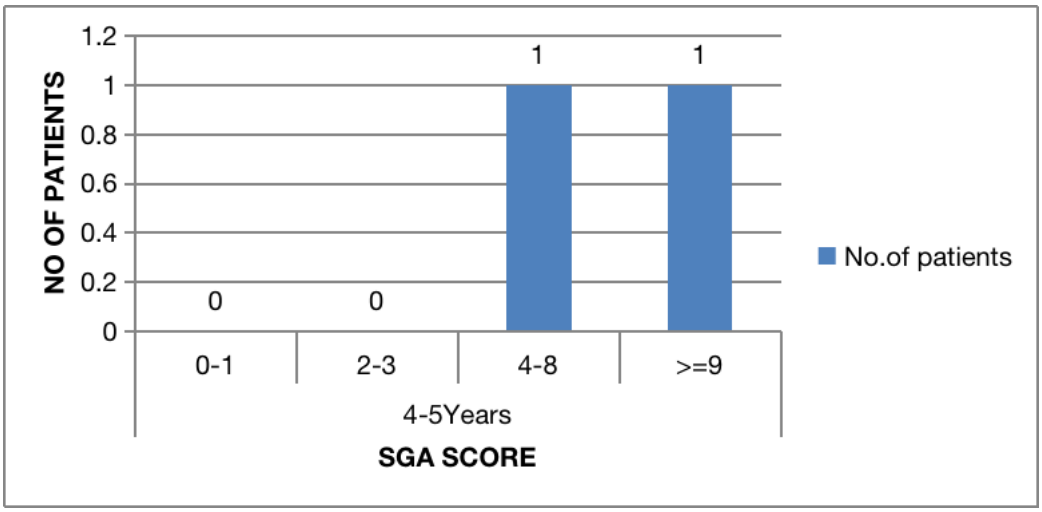
Dialysis Duration V/S Sga Scoring



Dialysis Duration V/S Sga Scoring

DIALYSIS DURATION	GROUPING BASED ON SGA SCORE	No.of patients
4-5Years	0-1	0

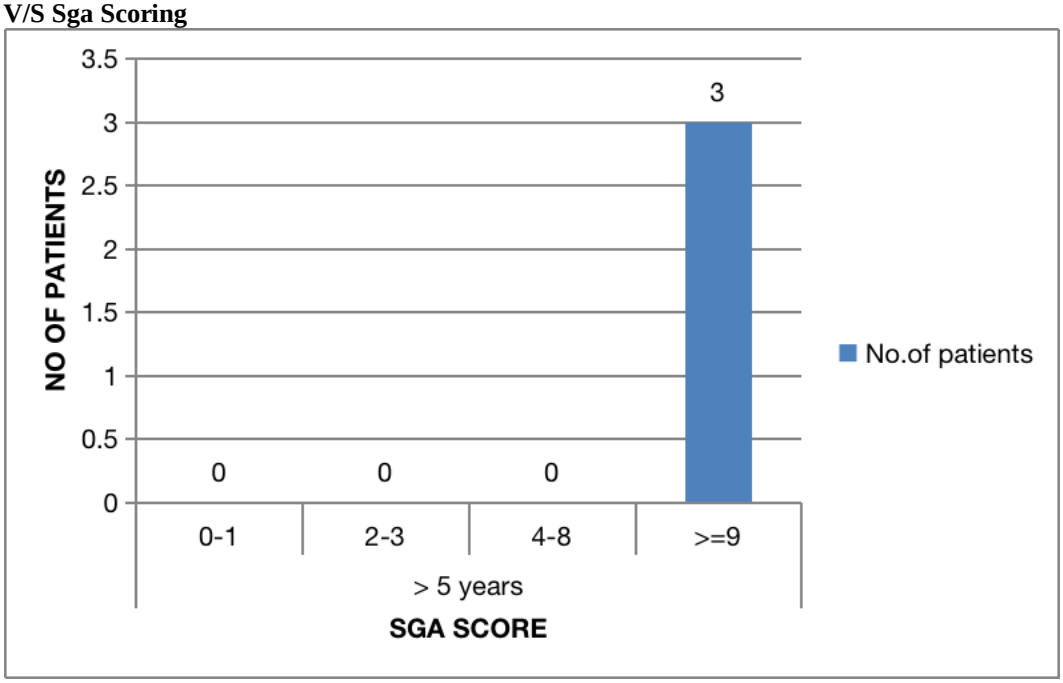
	2-3	0
	4-8	1
	>=9	1



Dialysis V/S Sga Scoring

DIALYSIS DURATION	GROUPING BASED ON SGA SCORE	No.of patients
> 5 years	0-1	0
	2-3	0
	4-8	0
	>=9	3

Dialysis V/S Sga Scoring

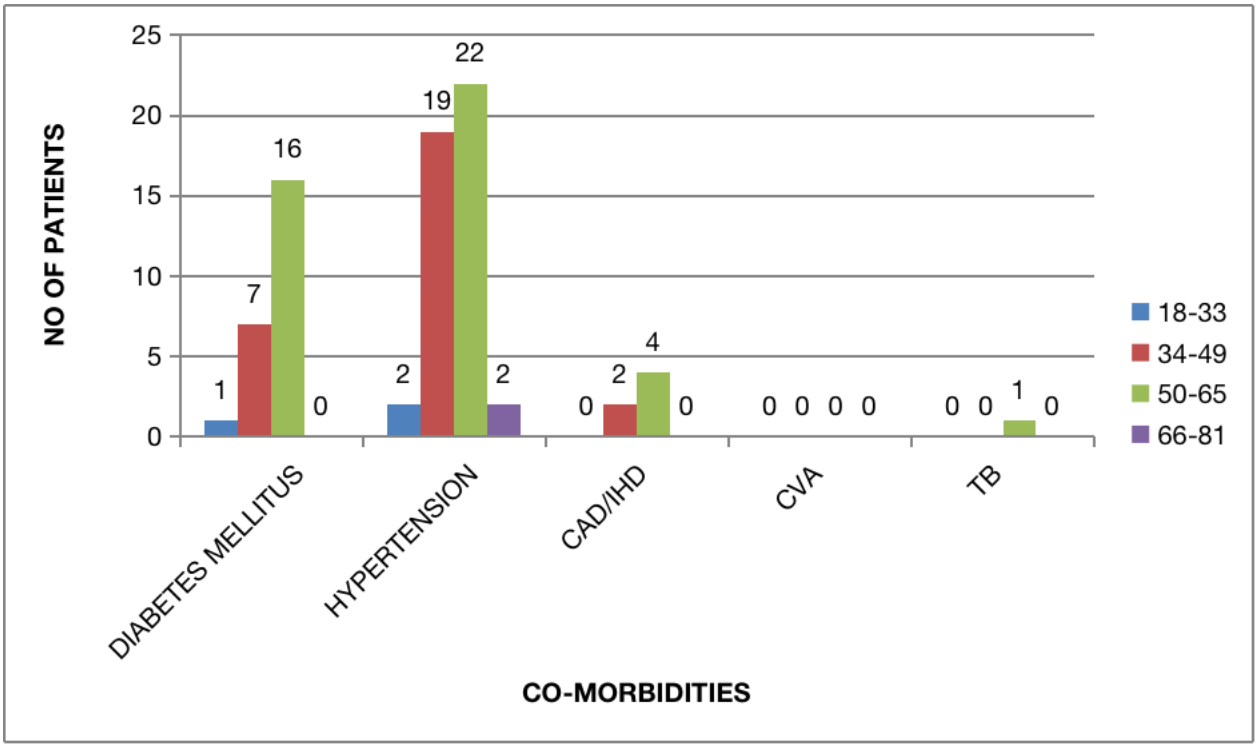


Comorbidities Distribution

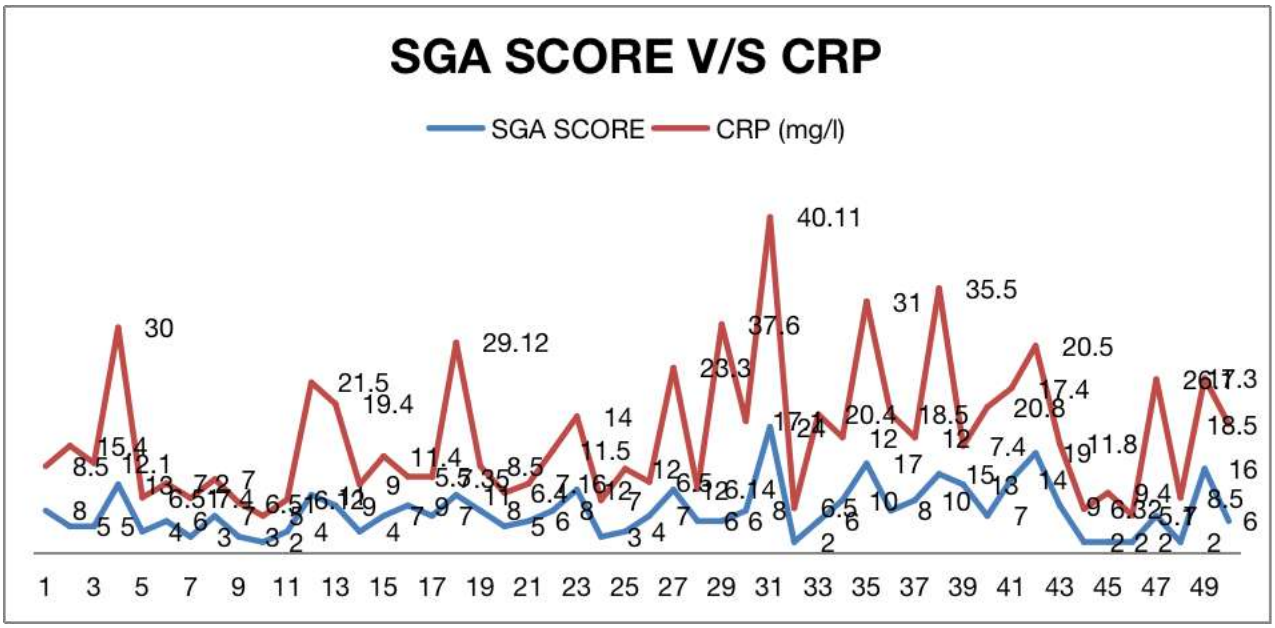
AGE GROUP	DIABETES MELLITUS	HYPERTENSION	CAD/IHD	CVA	TB
18-33	1	2	0	0	0

34-49	7	19	2	0	0
50-65	16	22	4	0	1
66-81	0	2	0	0	0

Comorbiditiesdistribution



SGA Score V/S CRP



Patients were aged 49.5±31.5, and the minimum dialysis vintage was 6 months. Most patients (56%) did not earn an income (either unemployed or a housewife), and approximately 44% had a monthly income of < 2000. Most patients were married and are living with their families. A total of 94% of patients had been receiving dialysis for < 4 years,

while the remaining 6% had been receiving HD for ≥4 years. Almost all patients (94%) received three sessions of HD per week, and 52.3% of these sessions persisted for < 2 h, while 47.7% persisted for ≥2 h.

Regarding the patient's BMI, 60% were within the normal range, 20% were overweight, 6% were obese and 14% were underweight. Most patients, approximately (> 90%) had at least one comorbid disease (chronic comorbidities like diabetes or hypertension) in addition to ESRD.

To assess MN, measurements such as BMI, nutritional assessment scale such as SGA,biochemical parameters such as serum albumin and C-reactive protein were considered. According to the previously mentioned measurements, 48% of patients were moderately malnourished, 18% were mildly malnourished and the remaining 34% were suffering from severe MN.

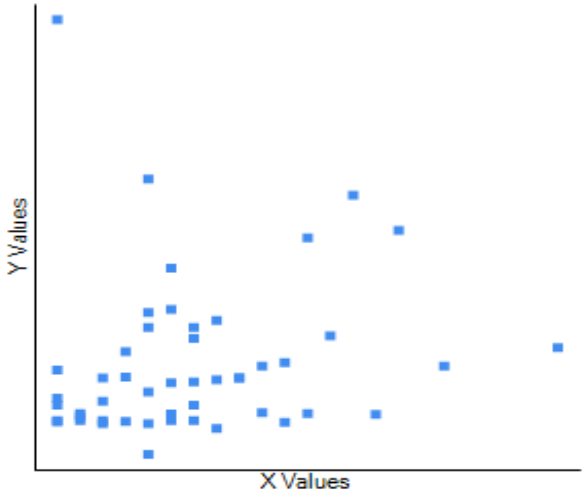


Fig: 5.13 Correlation coefficients graph btw SGA score and CRP values

X Values = SGA score values

Y Values= CRP values

R value = 0.6616

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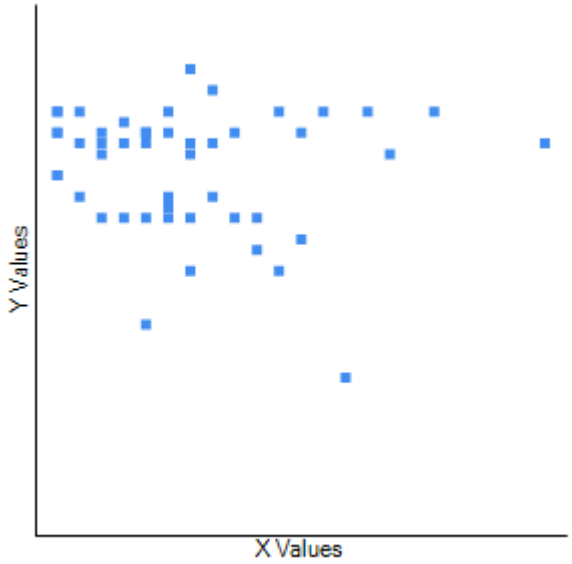

Fig: 5.14 Correlation coefficients graph btw SGA score and serum Albumin

X Values = SGA score values

Y values = serum albumin levels

r= -0.1025

No significant association was found between a patient's BMI and their nutritional status .Significantly higher number of patients aged ≥50 years were malnourished compared to those aged ≤50 years (P = 0.010). MN was significantly higher among those who had received HD for ≥3 years (P = 0.008). HDP with increase in the number of comorbidities and the number of chronic medications taken had a significantly higher levels of SGA (P < 0.001 .There is a moderate positive correlation between SGA score and crp vales which means there is a tendency for high sga scores goes with high CRP values (p<0.0001 the result is significant at p < 0.05).Similarly regression analysis is

done for sga score and serum albumin,findings showed that a negative correlation was there between sga score values and serum albumin values (p value is 0.480905.,the result is not significant at $p<0.05$).

Discussion:-

Our results indicated that most (65%) patients were moderately malnourished.In the current study, MN was significantly affected by the patient's age, whether they lived alone or with family, their dialysis duration, total no. of comorbidities and no. of medicines they've been taking.To some extent our study or results are in agreement with the previously published studies. For instance,in our study it is mentioned that MN was higher among the age group >60 years.Similarly other studies like Alharbi and Enrione conducted a study to investigate the prevalence of MN among Haemodialysis patients at Jeddah Kidney Centre, Jeddah,Saudi Arabia and they found that patients aged >55 years were tend to be malnourished. The most obvious finding from our analysis was that patients who were on Haemodialysis for more than 4 years were more likely to develop MN**Error! Reference source not found.**. Freitas et al. found a strong correlation existed between longer haemodialysis duration and poor nutritional status. In addition, as HD is a high catabolic process it promotes some loss of essential nutrients, such as amino acids, vitamins, proteins and glucose**Error! Reference source not found.**.

Patients taking more chronic medications were also more susceptible to MN, which may be due to the fact that increasing numbers of medications result from increased numbers ofcomorbidities**Error! Reference source not found.**.Another factor that is more significant in predicting the malnourishment status in our study was found to be Comorbid disease states. Similar to our study, Jahromi et al. showed that, using Dialysis Malnutrition Score, poor protein and energy intake, comorbidities and inflammation were the predictors of MN in descending order of importance**Error! Reference source not found.**[11].A Prospective study was conducted by Moraiset al to find out the association between the nutritional status and nutritional intake in food in HDP and the have found that Comorbidities of patients had a significant correlation with SGA scale**Error! Reference source not found.**which is similar to our findings in the study.

Some variables we included in the study like patient gender,BMI,Education, Disease sessions per week,marital status,transplantation history were not significantly associated with malnourishment status in Haemodialysis patients.However, Ekramzade et al. reported that malnourished patients had low BMI than well-nourished patients**Error! Reference source not found.**. A detailed assessment of the nutritional status in HDP and showed that MN was correlated with monthly personal income, which was in opposition to the data reported here. In contrast to this study, the cross-sectional study by Omari et al. also reported that MN was more prevalent among illiterates than those with literates.**Error! Reference source not found.**

Conclusion:-

The SGA score results indicated that MN was prevalent among patients undergoing HD .Fewer than one -third of Haemodialysis had a normal nutritional status according to SGA.BMI,body fat mass,and handgrip strenth were reduced . These results demonstrate some correlation exist between the nutritional status and patient characteristics(clinical and sociodemographic features) Serum C-reactive protein (CRP) concentrations have been found to be significantly elevated in haemodialysis patients and reflects chronic inflammation and as an acute-phase reactant,is a sensitive and independent marker of malnutrion .Therefore these findings should increase the awareness of healthcare providers for interventions to enhance the nutritional status for HDP, specially among elderly, those who have multiple comorbid diseases and taking multiple chronic medications, who are on long dialysis period or live alone. Consequently, care providers should consider screening for risk factors of MN and performing early nutritional evaluation and assessment at possible times would help in finding any dietary interventions at early stage to avoid further deprivation of patient's health.Further interventional studies should be conducted in various centres with large sample size to obtain results so that they can be proved with greater certainity.

Conflicts Of Interest:

There are no conflicts of interest.

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