ASSOCIATION BETWEEN VISFATIN AND CHRONIC KIDNEY DISEASE

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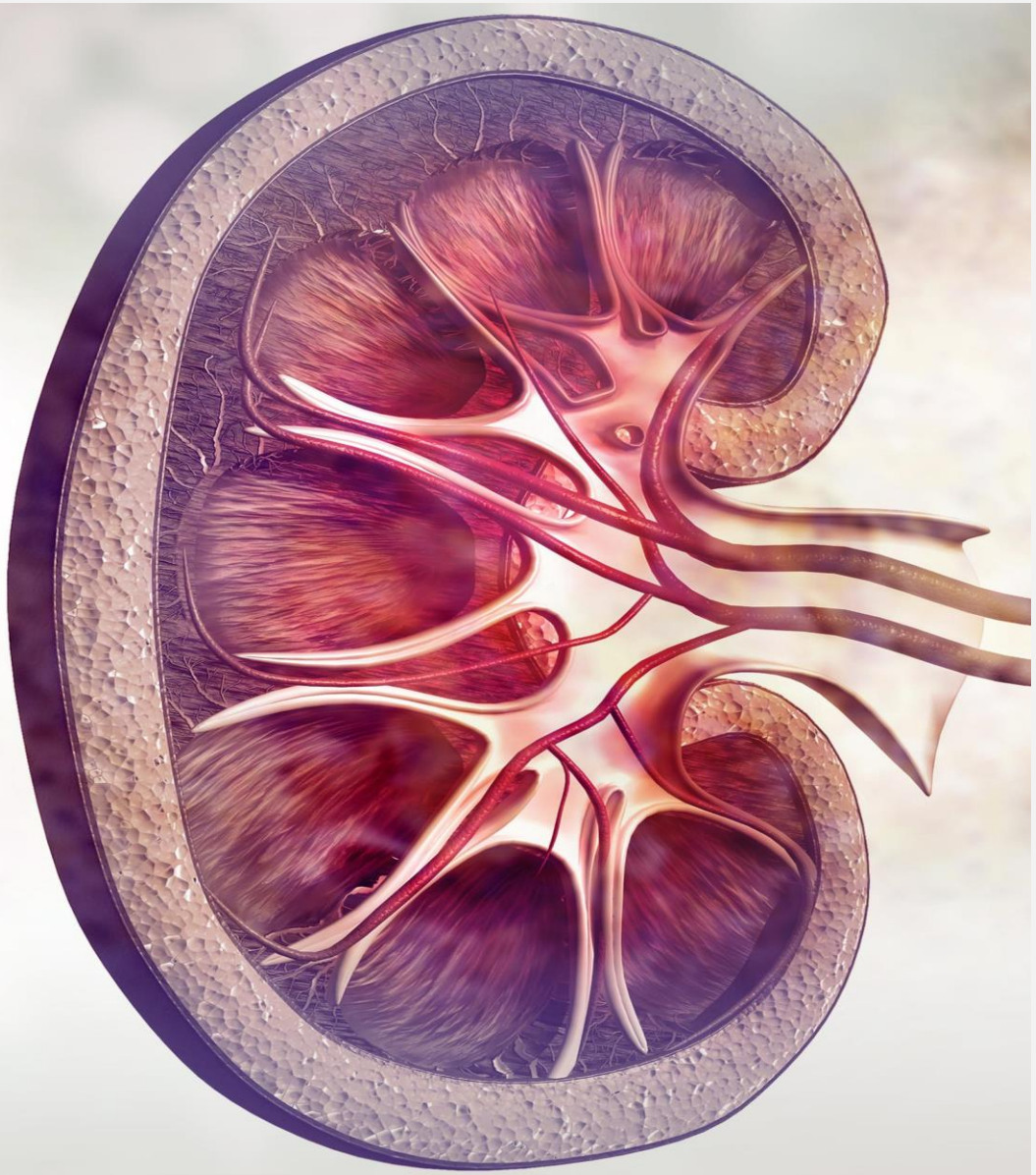
- Chronic kidney disease (CKD) is a serious public health problem that can lead to end-stage renal disease (ERSD), increased cardiovascular morbidity and mortality. (1)

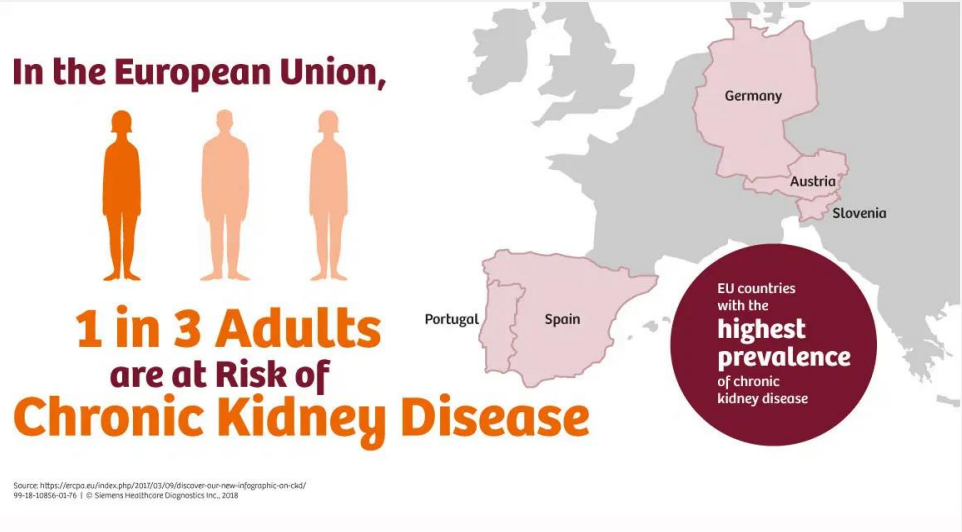
- Identifying the factors predisposing to the development of CKD is essential, as some of them can be modified, prevented or slow the progression. (2)

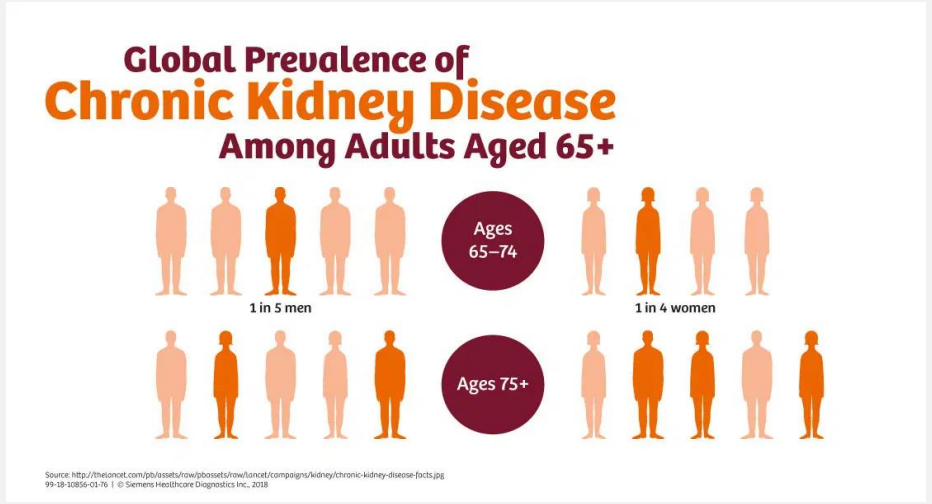


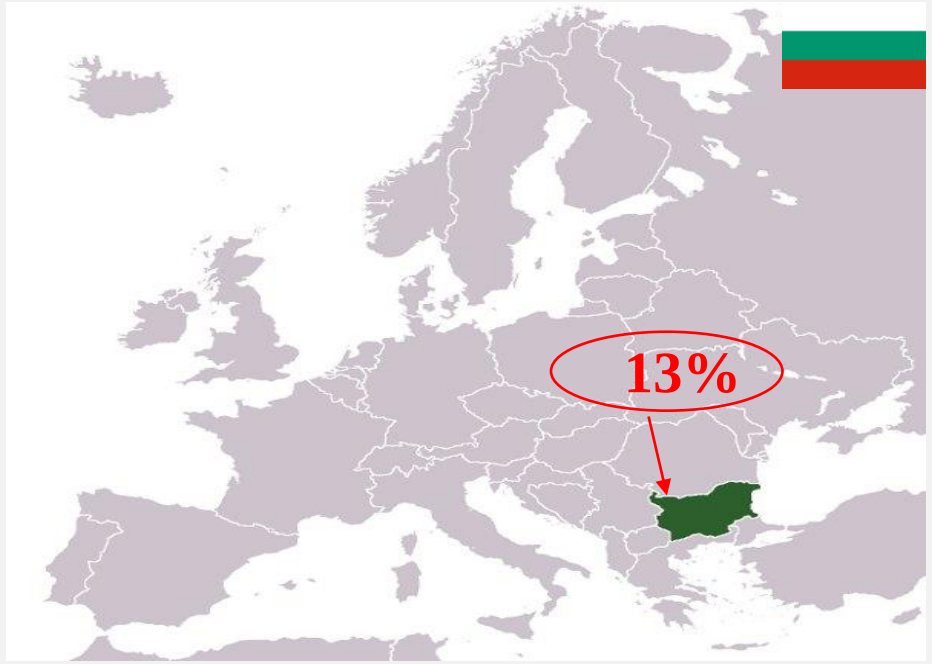
1. Schoolwerth AC, Engelgau MM, Hostetter TH, Rufo KH, Chianchiano D, McClellan WM, Warnock DG, Vinicor F. Chronic kidney disease: a public health problem that needs a public health action plan. Prev Chronic Dis. 2006 Apr;3(2):A57. Epub 2006 Mar 15. PMID: 16539798; PMCID: PMC1563984.
2. Kazancioğlu R. Risk factors for chronic kidney disease: an update. Kidney Int Suppl (2011). 2013 Dec;3(4):368-371. doi: 10.1038/kisup.2013.79. PMID: 25019021; PMCID: PMC4089662.

EPIDEMIOLOGY

- **over 10%** of the global population
- **over 800** million people





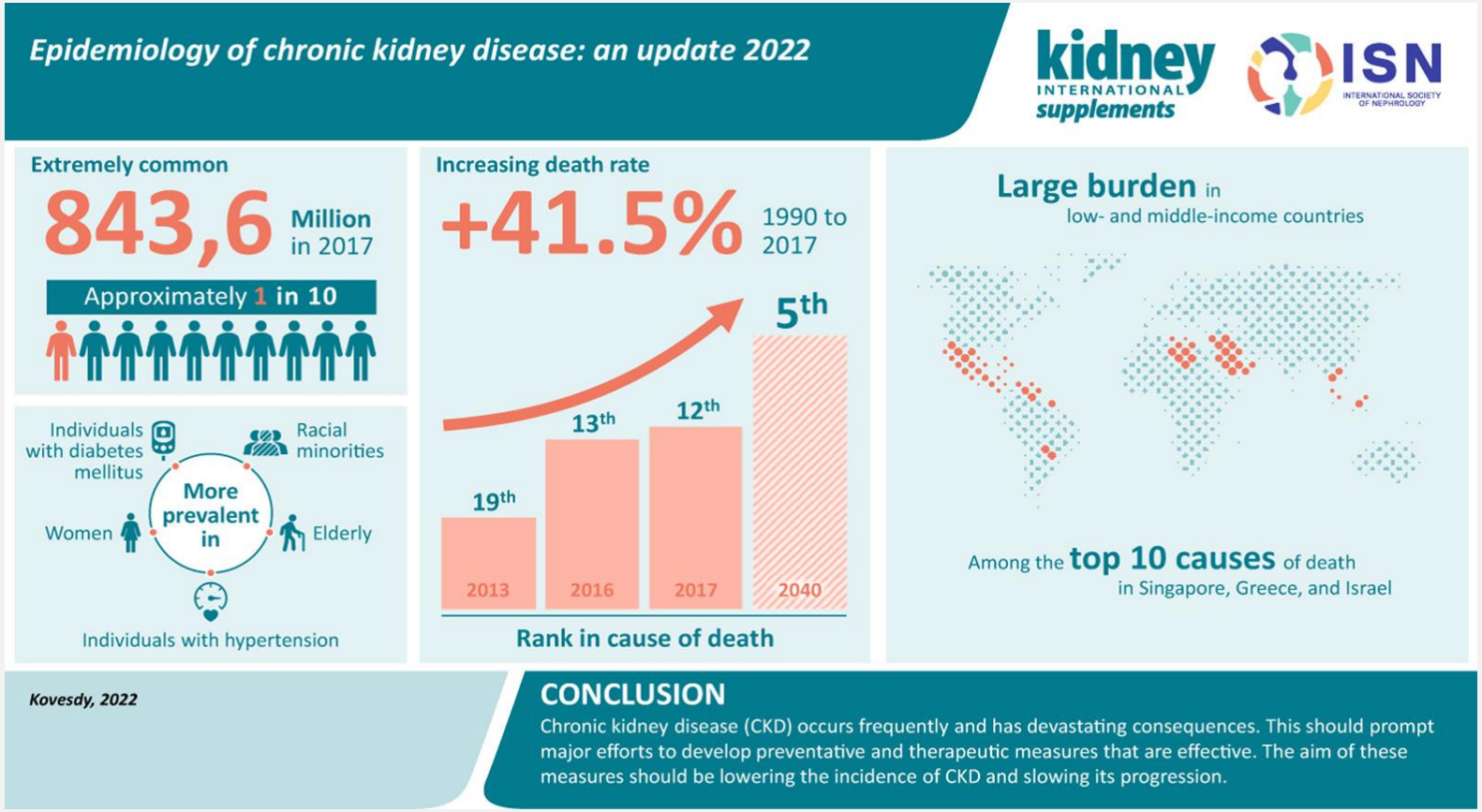


In the European Union, 10% of adults have some level of chronic kidney disease, and 1 in 3 adults are at risk.

Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. Kidney Int Suppl (2011). 2022 Apr;12(1):7-11. doi: 10.1016/j.kisu.2021.11.003. Epub 2022 Mar 18. PMID: 35529086; PMCID: PMC9073222.

A SILENT KILLER …

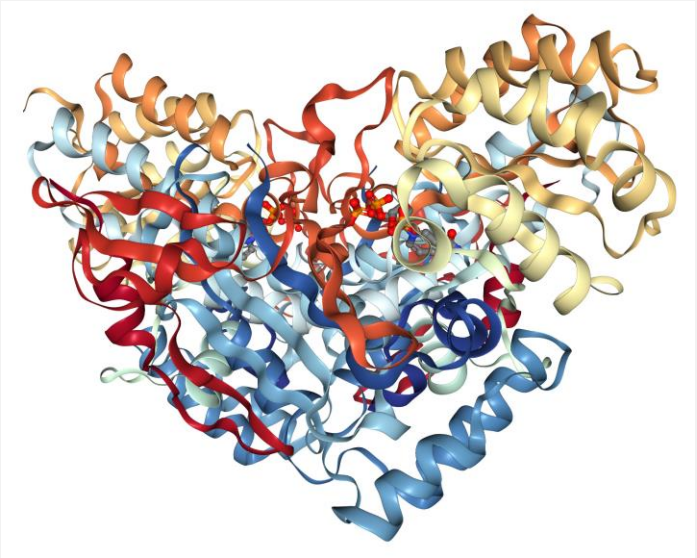
- 1990 - 36th place
- 2013 - 19th place
- 2016 - 13th place
- 2017 - 12th place
- ….
- **2040 - 5th place**



Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. Kidney Int Suppl (2011). 2022 Apr;12(1):7-11. doi: 10.1016/j.kisu.2021.11.003. Epub 2022 Mar 18. PMID: 35529086; PMCID: PMC9073222.

VISFATIN

- nicotinamide phosphoribosyltransferase (NAMPT);
- 52 kDa protein, predominantly secreted by the visceral adipose tissue.



NAMPT

From the published studies, elevated levels of serum visfatin can be considered as a marker of endothelial dysfunction and thus take part in predicting the incidence of cardiovascular disease in patients with CKD.

Sahar S. Bessa, Soha M. Hamdy, Raghda G. El-Sheikh, Serum visfatin as a non-traditional biomarker of endothelial dysfunction in chronic kidney disease: An Egyptian study, European Journal of Internal Medicine, Volume 21, Issue 6, 2010, Pages 530-535, ISSN 0953-6205, https://doi.org/10.1016/j.ejim.2010.09.011.

AIM

The aim of our study is to establish a correlation between a new non-invasive biomarker (Visfatin):

1) inflammatory process and its diagnostic value;

2) sEPOR levels in patients from predialysis group;

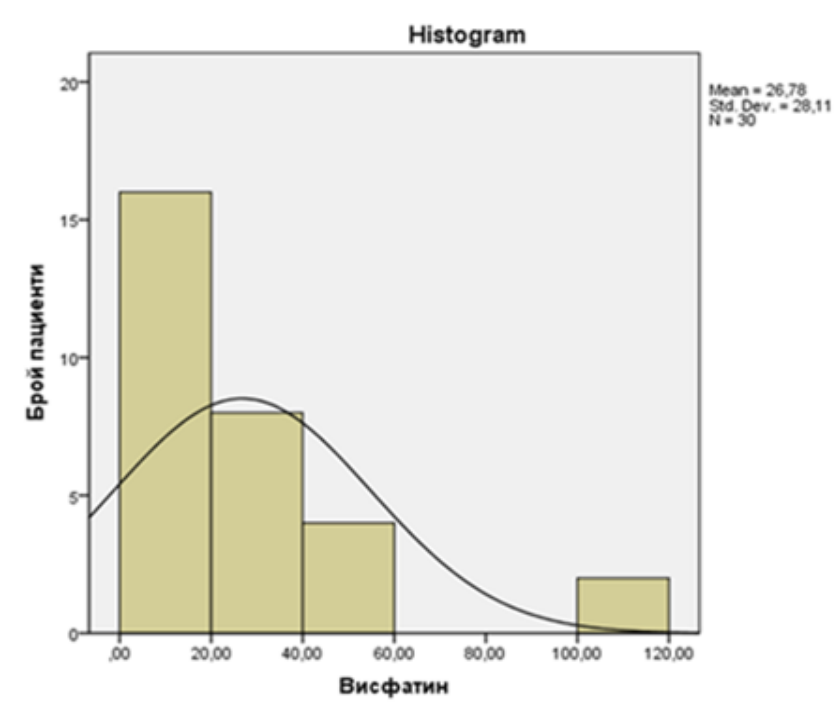
3) indicators characterized bone turnover in CKD;

4) changes in quality of life.

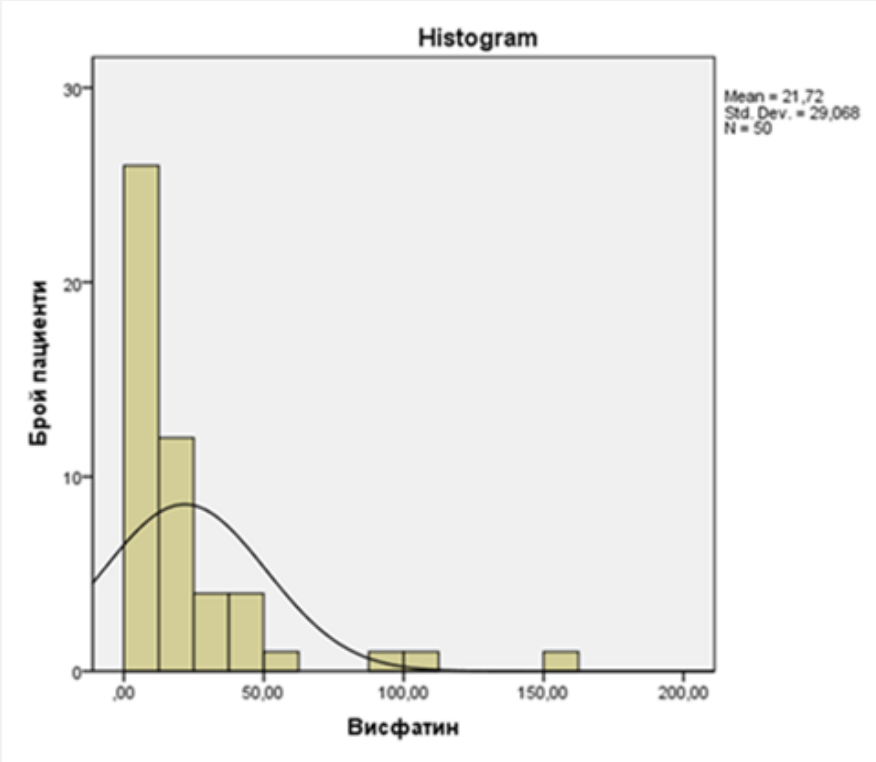
PATIENT CHARACTERISTICS

Indicator		Predialysis group (n=30)	Dialysis group (n=50)	P value
Age (year)	mean±SD (range)	64.33±13.66 (26-85)	62.32±13.51 (36-88)	>0.05
Gender	Male	50.00%	58.00%	>0.05
	Female	50.00%	42.00%	
Diagnose	Diabetic nephropathy	16.67%	20.00%	>0.05
	Hypertensive nephropathy	53.33%	46.00%	
	Chronic glomerulonephritis	20.00%	24.00%	
	Chronic tubulointerstitial nephritis	-	6.00%	
	Autosomal dominant polycystic kidney disease	-	4.00%	
	Chronic pyelonephritis	10.00%	-	
Urea	mean±SD (range)	19.12±6.53 (8.00-40.00)	25.44±9.94 (10.20-57.10)	0.003
Creatinine	mean±SD (range)	296.70±96.13 (148.0-565.0)	788.60±197.80 (460.0-1399.0)	<0.001
serum Iron	mean±SD (range)	10.52±4.66 (1.10-23.60)	9.88±5.46 (1.20-30.10)	>0.05

MEAN VISFATIN LEVELS AND PATIENT DISTRIBUTION



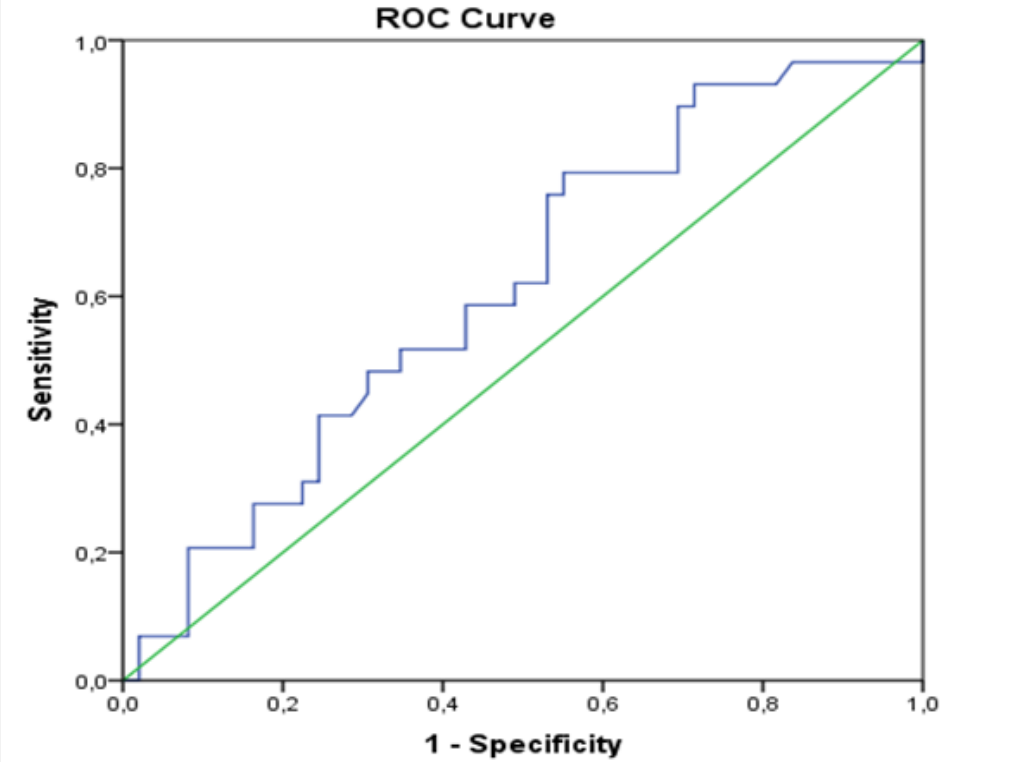
Predialysis group
Visfatin = 26.78



Dialysis group
Visfatin = 21.72

ROC CURVE ANALYSIS TO DETERMINE THE VISFATIN THRESHOLD VALUE

Due to the lack of unified reference limits of visfatin, the threshold value - **16.92 ng/ml** (AUC=0.612 (0.485-0.739); p<0.05) was found, at which there is a distinction between patients in the two groups with sensitivity 55.2% and specificity 57.1%.

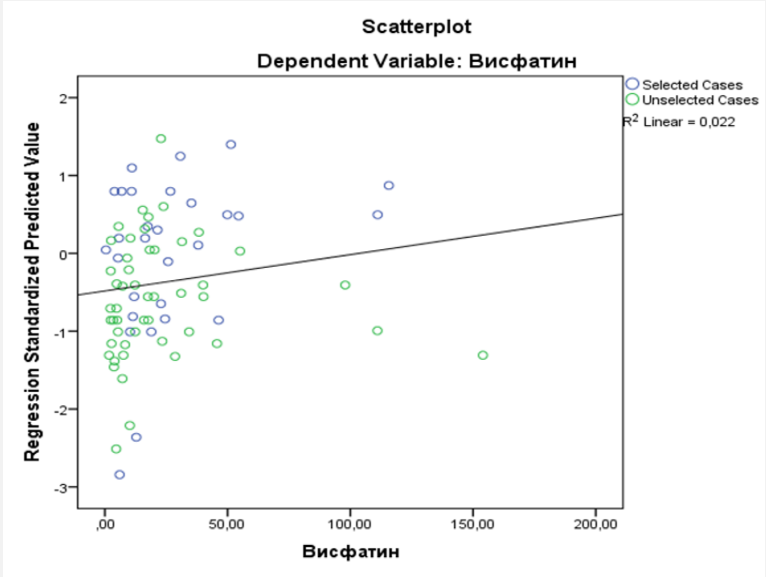


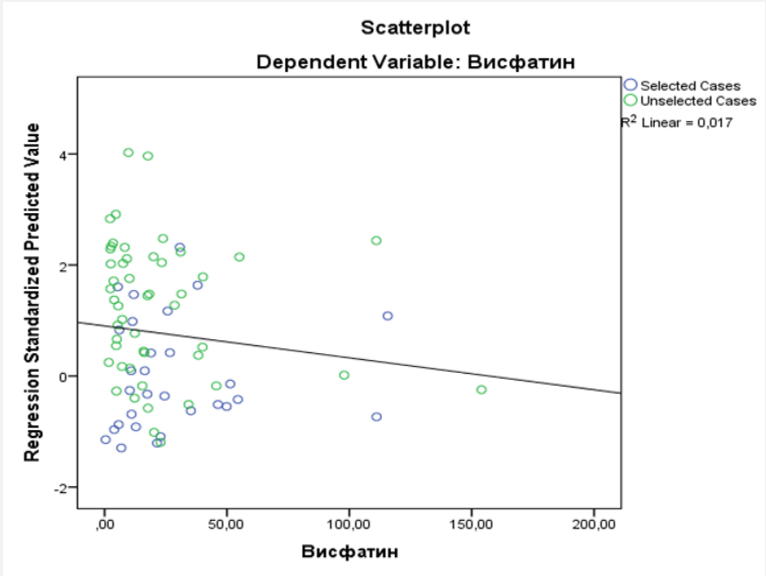
AIM №1
INFLAMMATORY PROCESS AND DIAGNOSTIC VALUE

- Vifatin above 16.92 ng/ml moderately correlated with earlier stages of CKD, while lower levels were associated with dialysis stage ($r=0.299$; $p<0.05$).
- There is a significant difference between men and women in the predialysis and dialysis groups ($p<0.01$). Significantly higher levels being observed in women in both groups.
- We found a significant difference between visfatin according to the lower reference of serum iron ($p=0.008$), where its levels were associated with higher visfatin.

Visfatin and albumin have a moderate positive relationship in patients from predialysis group (r= 0.305; p < 0.01).

CRP and visfatin inversely correlated in the group of dialysis patients (r= -0.398; p= 0.001).





Visfatin

AIM №1
INFLAMMATORY PROCESS AND DIAGNOSTIC VALUE

- **Low visfatin levels** are associated with diabetic nephropathy, high CRP, high uric acid and low eGFR.

Indicator	Correlation coefficient (r)	P value
Diabetic nephropathy	-0.328	0.036
CRP	-0.255	0.018
Uric acid	-0.323	0.039
eGFR	0.682	0.021

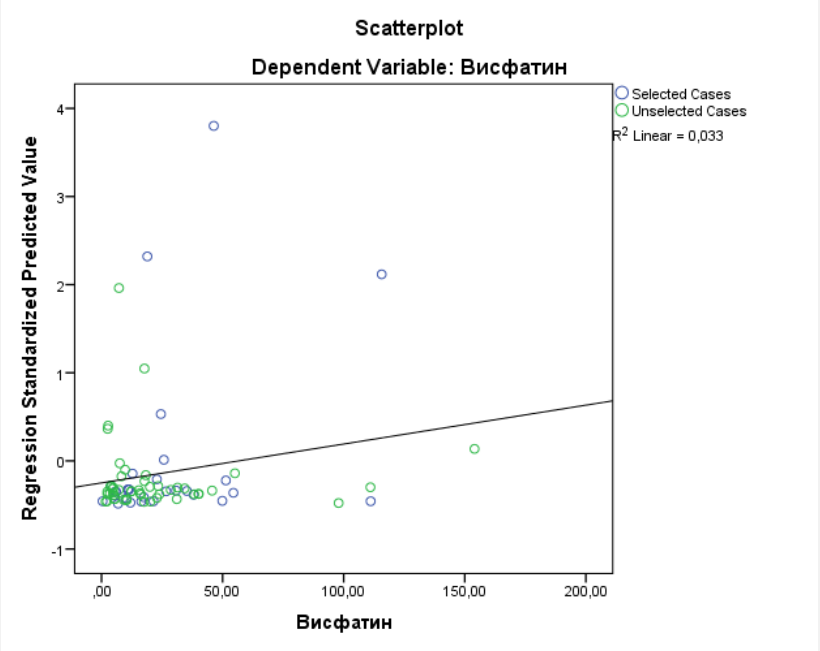
AIM №1
INFLAMMATORY PROCESS AND DIAGNOSTIC VALUE

- **High visfatin levels** are associated with advanced age, gender (women), high eGFR and low iFGF 23 values.

Indicator	Correlation coefficient (r)	P value
Age	0.274	0.010
Female	0.236	0.016
eGFR	0.568	0.022
iFGF 23	-0.435	0.021

AIM №2
SEPOR IN PATIENTS FROM PREDIALYSIS GROUP

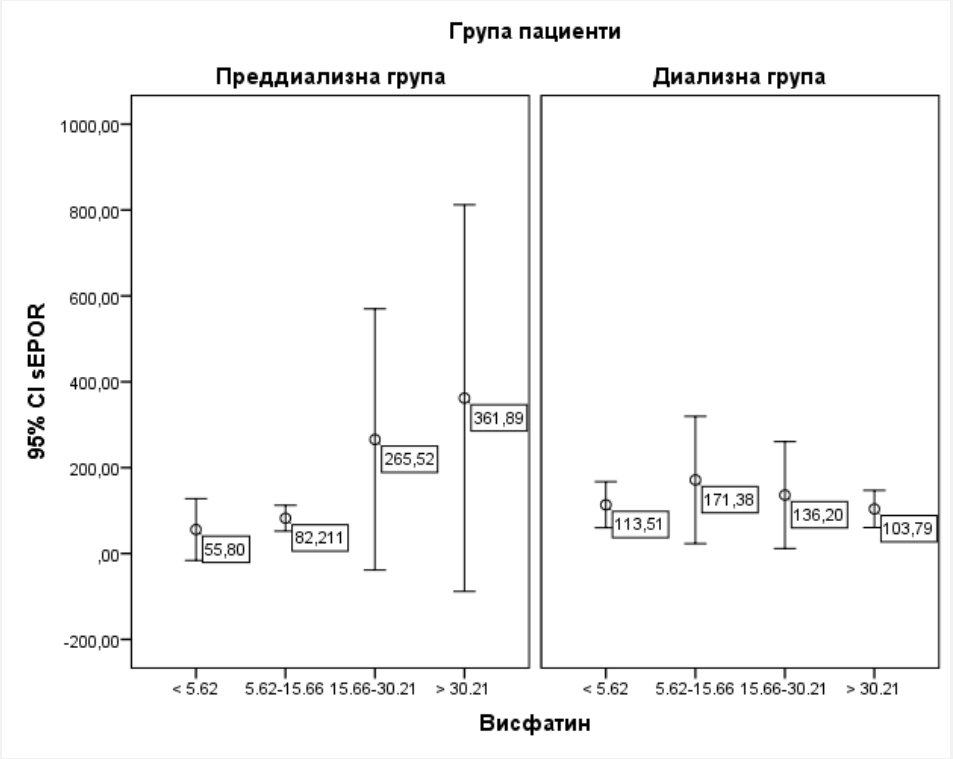
The analysis of the relationship between sEPOR and visfatin showed that there is a moderate positive correlation between them (r=0.336; p=0.035), which indicates that high levels of sEPOR are also associated with high visfatin in patients from predialysis group.



Visfatin

We found that there is a difference in mean sEPOR values according to visfatin. In predialysis group it is proven positive association, while in the dialysis group there is a peak of sEPOR at visfatin levels between 5.62 - 15.66 ng/ml (171.38), after which it start to decrease significantly.

These results prove the association of sEPOR with the occurrence of anemic syndrome in patients with advanced CKD.



Predialysis group Dialysis group

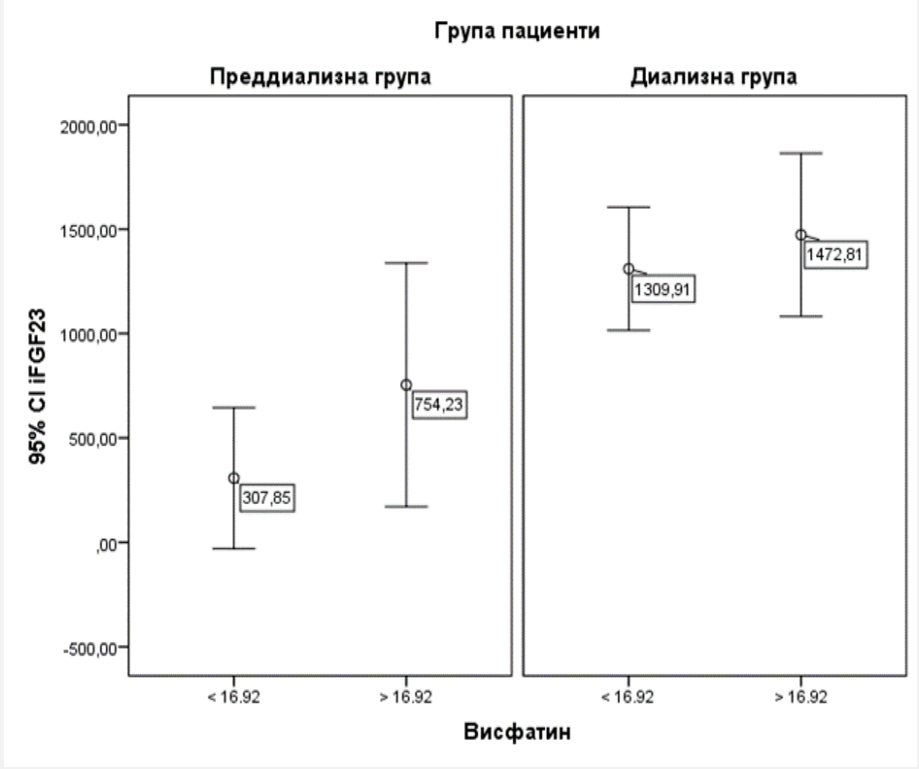
AIM №3
INDICATORS CHARACTERIZED BONE TURNOVER IN PATIENTS WITH CKD

- In our study, only one patient had low level of iPTH (10.90 pg/ml), which was characterized by an extremely low visfatin (2.54 ng/ml), while individuals with iPTH above the upper reference limit (90%) had significantly higher visfatin values (23.96 ng/ml).

- No correlation was found between iPTH and visfatin neither in predialysis nor in dialysis group, but it can be said that there is a significant difference in iPTH levels relative to visfatin threshold values ($p=0.045$), which showed the same trend in both groups.

AIM №3
INDICATORS CHARACTERIZED BONE TURNOVER IN PATIENTS WITH CKD

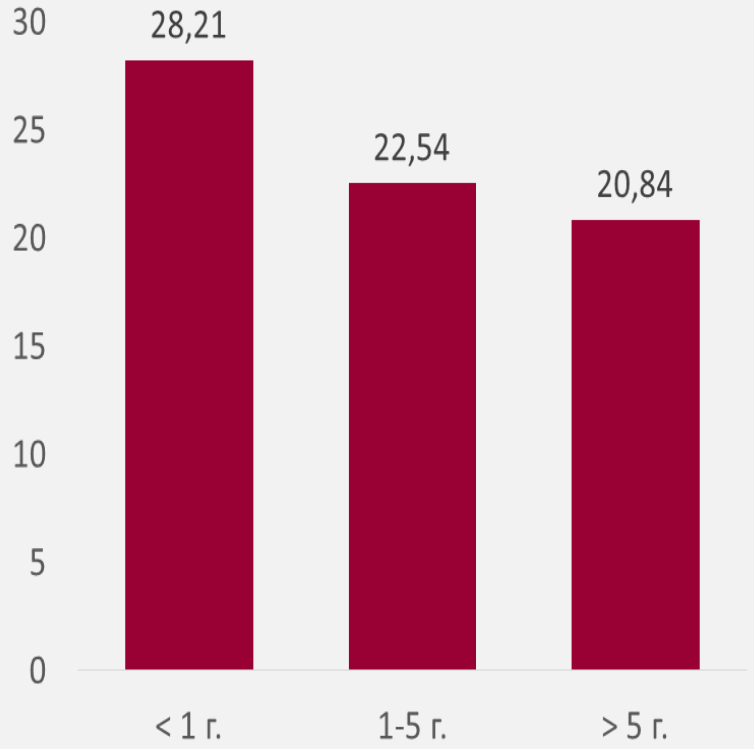
A significant difference was observed in mean iFGF 23 according to visfatin threshold levels in patients from predialysis group ($p<0.05$), while in the dialysis group iFGF 23 levels remained consistently high regardless of visfatin.



Predialysis group Dialysis group

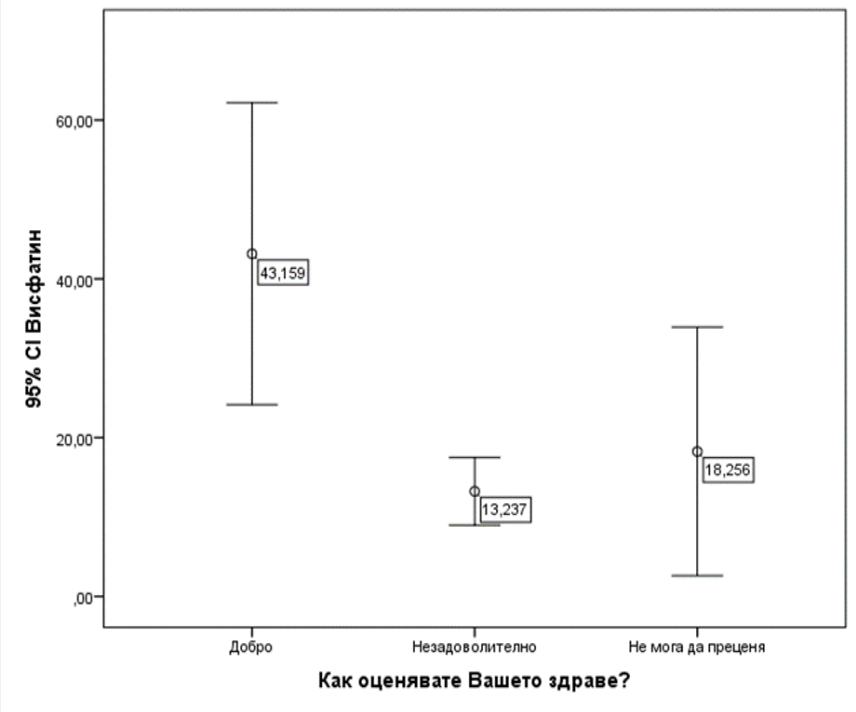
AIM №4
CHANGES IN QUALITY OF LIFE

The analysis of visfatin and the duration of hemodialysis treatment showed a significant difference ($p<0.05$), which confirms the results so far that the levels of this marker decrease with the duration of dialysis treatment and progression of CKD.



AIM №4
CHANGES IN QUALITY OF LIFE

- **Low levels of visfatin** correlate with the decreased assessment of the patient's health status (r= -0.399 p<0.05).



Q: How you rate your health ?

AIM №4
CHANGES IN QUALITY OF LIFE

- Analysis of the association of pain with visfatin showed that patients who experienced pain had significantly lower visfatin (p=0.013), which further supports the data from the other studies that visfatin decrease with the progression of CKD.

- In 30%, the pain had an impact on their ability to work, which further reduced the quality of life. The levels of visfatin in these patients were low (p=0.009).

AIM №4
CHANGES INQUALITY OF LIFE

- Before start of hemodialysis treatment, 32% of the patients were often sick. The analysis showed that visfatin in these group had significantly lower levels compared to the patients who did not take any medicine ($p=0.027$).
- In terms of health status assessment, it was also found that frequent illness was associated with low visfatin levels ($p<0.01$).
- Frequent hospitalizations were reported by 16% of the patients and significantly lower levels of visfatin were observed in this group ($p=0.045$).

CONCLUSION

- The diagnostic value of visfatin as a non-invasive marker of inflammation in patients undergoing dialysis treatment has been established.
- Visfatin levels are significantly decreased in the presence of an inflammatory process in patients undergoing dialysis treatment.
- Visfatin levels negatively correlated with duration of dialysis treatment.
- Low visfatin levels are associated with poor quality of life and health.

THANK YOU FOR YOUR ATTENTION !