

Appendix 1: Frequency distribution of L1 bone density by CT scan method

Bone density	Number	Percent
less than 110 (osteoporosis)	37	11.5%
between 110 and 135 (osteopenia)	89	27.6%
more than 135 (normal)	196	60.9%
Total	322	100%
Standard deviation \pm mean	55.30 ± 165.57	
Maximum-minimum	435 -55	

Appendix 2: Relationship between the frequency of kidney failure stage in patients with osteoporosis and osteopenia based on T-Score of spine, femur and forearm and density **L1**

Renal failure stage	Normal		osteopenia		Osteoporosis		Total		Chi-square test
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Step 1	7	58.3%	4	33.3%	1	8.3%	12	100%	P=.270
Step 2	105	48.2%	81	37.2%	32	14.7%	218	100%	
Step 3	37	42%	37	42%	14	15.9%	88	100%	
Step 4	0	0%	0	0%	1	100%	1	100%	
Step 5	0	0%	1	50%	1	50%	2	100%	
Total	149	46.4%	123	38.3%	49	15.3%	321	100%	
	Relationship between the frequency of kidney failure stage in patients with osteoporosis and osteopenia based on femur T-Score								P=.635
Step 1	7	58.3%	5	41.7%	0	0%	12	100%	
Step 2	99	45.6%	105	48.4%	13	6%	217	100%	
Step 3	35	39.8%	45	51.1%	8	9.1%	88	100%	
Step 4	0	0%	1	100%	0	0%	1	100%	
Step 5	0	0%	2	100%	0	0%	2	100%	
Total	141	44.1%	158	49.4%	21	6.6%	320	100%	
	The relationship between the frequency of kidney failure stage in patients with osteoporosis and osteopenia based on the T-Score of the forearm								P=.299
Step 1	0	0%	1	100%	0	0%	1	100%	
Step 2	21	32.8%	26	40.6%	17	26.6%	64	100%	

Step 3	4	18.2%	7	31.8%	11	50%	22	100%	
Step 4	0	0%	1	100%	0	0%	1	100%	
Step 5	0	0%	0	0%	1	100%	1	100%	
Total	25	28.1%	35	39.3%	29	32.6%	89	100%	
	The relationship between the frequency of kidney failure stage in patients with osteoporosis and osteopenia based on L1 density								P=.004
Step 1	9	75%	3	25%	0	0%	12	100%	
Step 2	139	63.5%	55	25.1%	25	11.4%	219	100%	
Step 3	48	54.5%	30	34.1%	10	11.4%	88	100%	
Step 4	0	0%	1	100%	0	0%	1	100%	
Step 5	0	0%	0	0%	2	100%	2	100%	
Total	196	60.9%	89	27.6%	37	11.5%	322	100%	

Appendix 3: Correlation table of kidney failure stage with T score of spine, femur and forearm and L1 density

Spine bone density Renal failure stage	Normal T score < -1		Osteopenia -2.5 < T score ≤ -1		Osteoporosis T score ≤ -2.5		Chi-square test
	Number	Percent	Number	Percent	Number	Percent	
Step 1	7	4.7%	4	3.3%	1	2%	P=0.270
Step 2	105	70.5%	81	65.8%	32	65.3%	
Step 3	37	24.8%	37	30.1%	14	28.6%	
Step 4 or 5	0	0%	1 *	0.8%	2**	4.1%	
Total	149	100%	123	100%	49	100%	
	Correlation table of kidney failure stage with femur T score						
Step 1	7	5%	5	3.2%	0	0%	P=0.635
Step 2	99	70.2%	105	66.5%	13	61.9%	
Step 3	35	24.8%	45	28.5%	8	38.1%	
Step 4 or 5*	0	0%	3*	1.8%	0	0%	
Total	141	100%	158	100%	21	100%	
	The relationship between kidney failure stage and forearm T score						
Step 1	0	0%	1	2.9%	0	0%	P=0.299
Step 2	21	84%	26	74.2%	17	58.7%	

Step 3	4	16%	7	20%	11	37.9%	P=0.027	
Step 4 or 5	0	0%	1*	2.9%	1**	3.4%		
Total	25	100%	35	100%	29	100%		
Relationship between kidney failure stage and L1 bone density								
Step 1	9	4.6%	3	3.4%	0	0%		
Step 2	139	70.9%	55	61.8%	25	67.6%		
Step 3	48	24.5%	30	33.7%	10	27%		
Step 4 or 5	0	0%	1*	1.1%	2**	5.4%		
Total	196	100%	89	100%	37	100%		

Appendix 4: Osteoporosis screening with L1 bone density compared to spine, femur and forearm bone density measurements

Spinal bone density L1 bone density	Osteopenia	No osteopenia	Total
Osteopenia	a =34	b =3	37
No osteopenia	c =15	d =269	284
Total	49	272	321
Validity of the test	94.4%		
Results of osteoporosis screening with L1 bone density by ct scan method compared to femur bone density measurement			
Osteopenia	a =10	b =27	37
No osteopenia	c =11	d =272	283
Total	21	299	320
Validity of the test	88.1%		
Osteoporosis screening with L1 bone density compared to forearm bone densitometry			
Osteopenia	a =4	b =3	7
No osteopenia	c =25	d =57	82
Total	29	60	89
Validity of the test	68.5 %		

Appendix 5: Results of osteopenia screening with L1 bone density compared to spine, femur and forearm bone density measurements

Spinal bone density L1 bone density	Osteopenia	No osteopenia	Total
Osteopenia	a =78	b =10	88
No osteopenia	c =44	d =188	232
Total	122	198	321
Validity of the test	82.9%		
Osteopenia screening with L1 bone density compared to femoral bone density measurement			
Osteopenia	a =65	b =24	89
No osteopenia	c =93	d =138	231
Total	158	162	320
Validity of the test	63.4%		
Osteopenia screening with L1 bone density compared to forearm bone densitometry			
Osteopenia	a =15	b =9	24
No osteopenia	c =20	d =45	65
Total	35	54	89
Validity of the test	67.4%		

Appendix 6. Logistic regression of factors related to osteoporosis/osteopenia

variables	variables	Regression coefficient	P value	OR
Age		0.009	0.527	1.015
MDRD(GFR)		0.011	0.471	0.471
Kidney failure stage		0.301	0.348	0.348
sex	Male	-0.420	0.269	0.657
	Female	-		
diabetes	Yes	-1.599	0.068	0.202
	No	-		
blood pressure	Yes	1.021	0.004	2.777
	No	-		