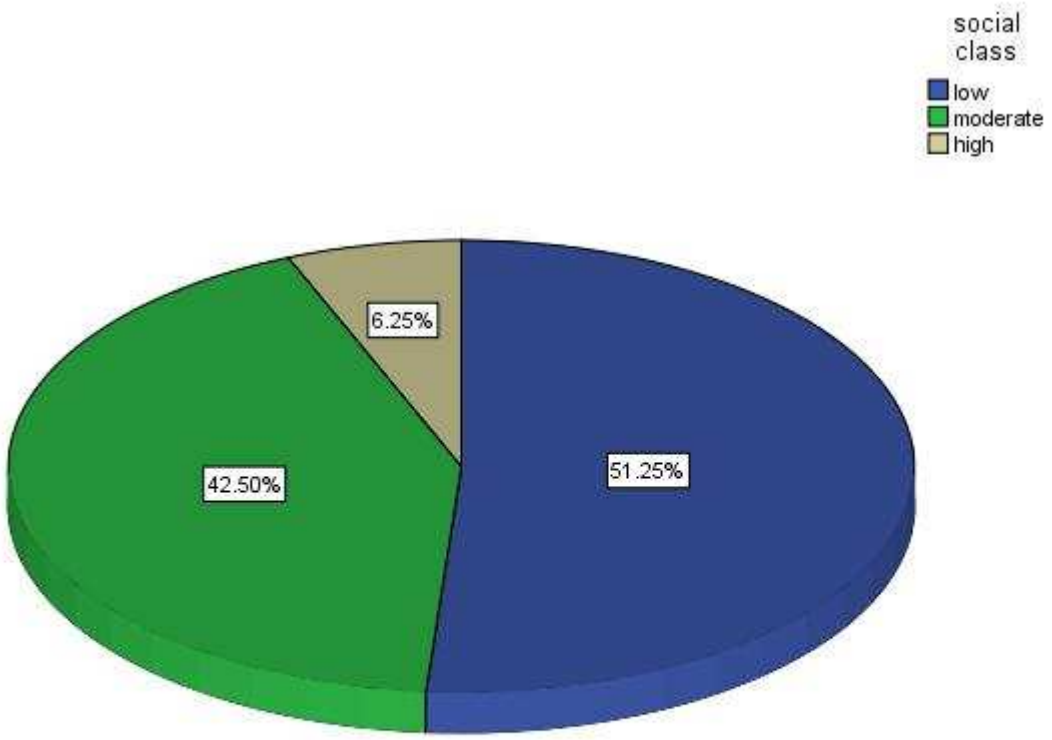
RESULTS

Table(1):Descriptive demographic data of all studied children

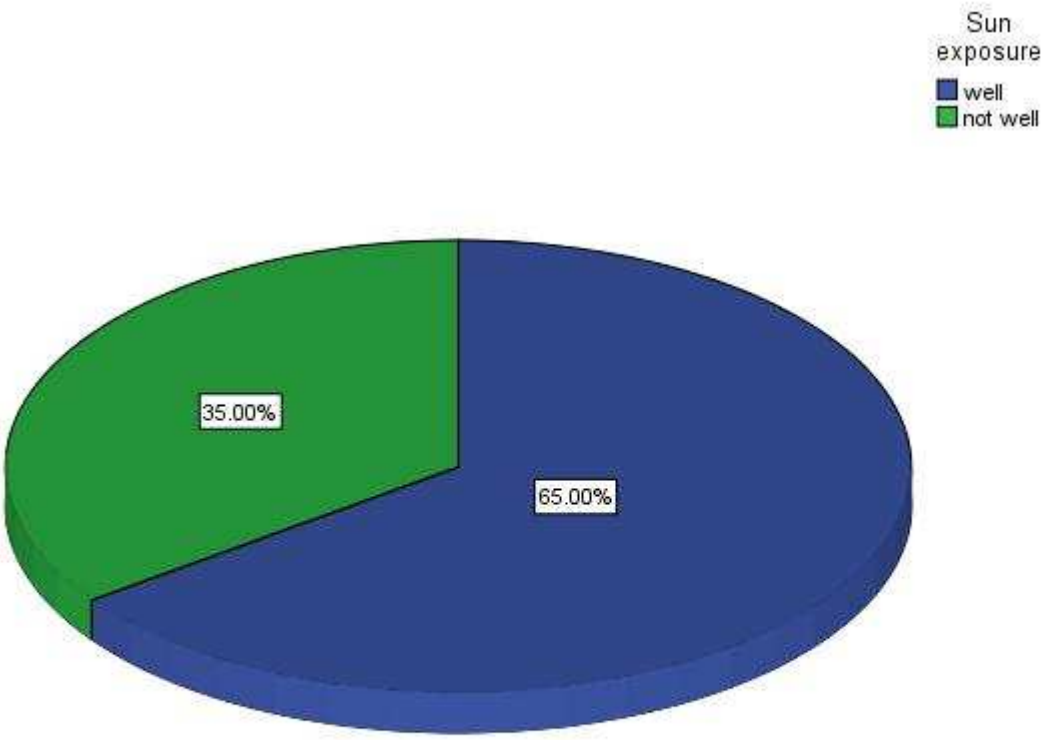
		Count	Percent.
Group	control	20	25.0%
	Asthmatic	60	75.0%
Age(years)	(x ± SD), Range	9±2	6-12
Sex	Male	52	65.0%
	Female	28	35.0%
Residence	Rural	35	43.8%
	Urban	45	56.3%
Order of birth	1	17	21.3%
	2	34	42.5%
	3	22	27.5%
	4	4	5.0%
	5	3	3.8%
Social class	low	41	51.3%
	moderate	34	42.5%
	high	5	6.3%
Paternal smoking	yes	40	50.0%
	No	40	50.0%



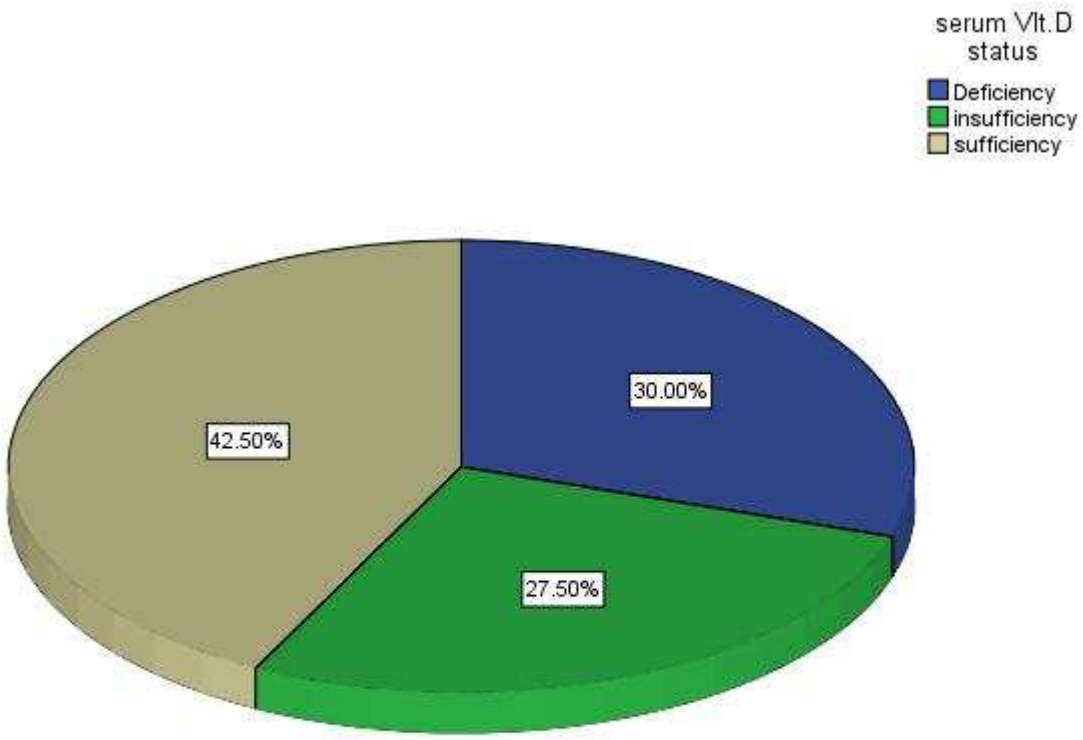
Figure(1):Social class distribution among all studied children

Table(2):Descriptive vitamin D related data for all studied children

		Count	Percent.
Dietary Vit.D supply	rich	41	51.3%
	poor	39	48.8%
Sun exposure	well	52	65.0%
	not well	28	35.0%
Serum VIt.D status	Deficiency	24	30.0%
	insufficiency	22	27.5%
	sufficiency	34	42.5%



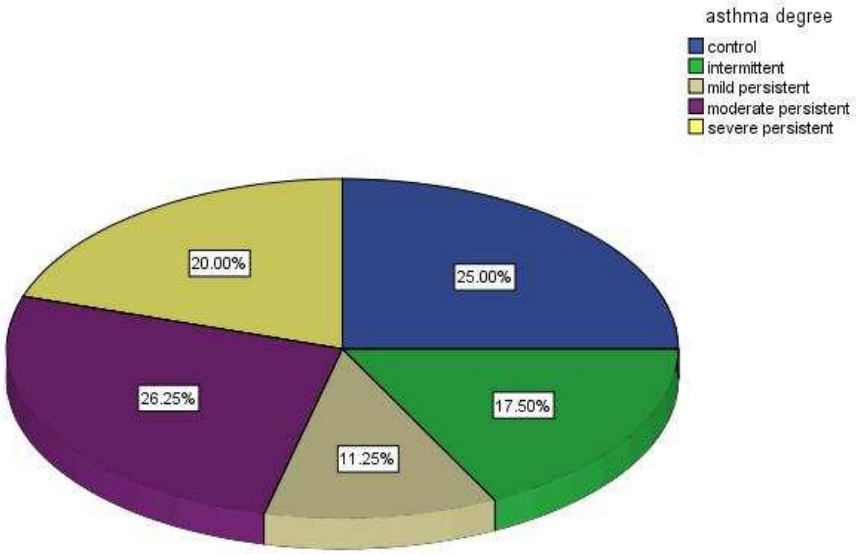
Figure(2):Different degrees of sun exposure among all studied children



Figure(3):Serum vitamin D level among all studied children

Table(3):Descriptive clinical data of all studied children

		Count	Percent.
History of another atopic manifestation	positive	18	22.5%
	negative	62	77.5%
Asthma degree	control	20	25.0%
	intermittent	14	17.5%
	mild persistent	9	11.3%
	moderate persistent	21	26.3%
	severe persistent	16	20.0%
Asthma duration	control	20	25.0%
	< 2 years	23	28.8%
	> 2 years	37	46.3%
ICS therapy	control	20	25.0%
	No	44	55.0%
	yes	16	20.0%
Infection	control	20	25.0%
	Asthma without infection	30	37.5%
	Asthma with infection	30	37.5%



Figure(4):Different degrees of asthma among all studied children

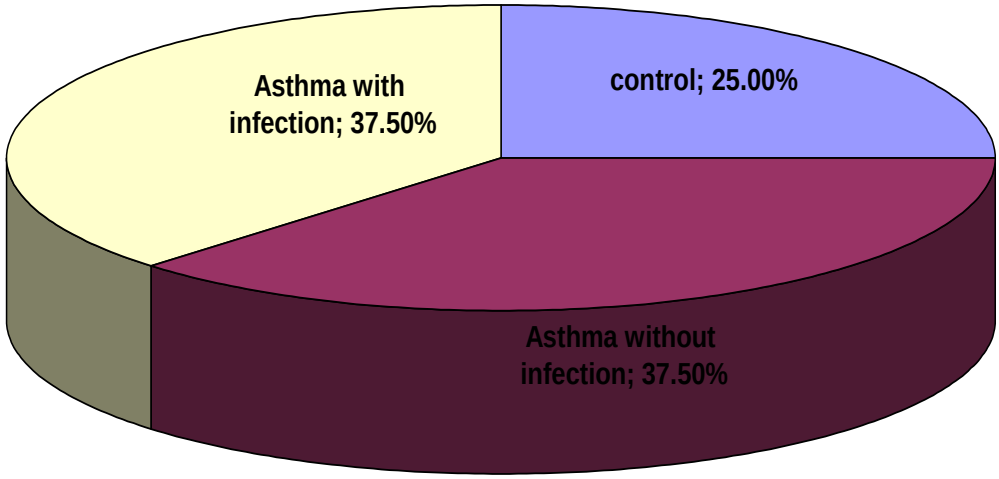
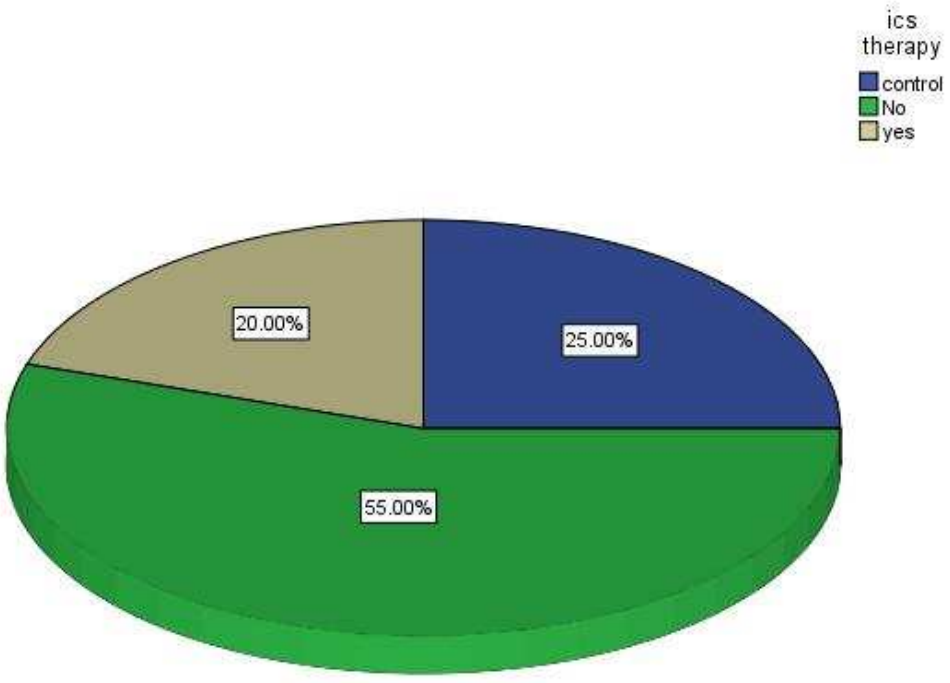


Figure (5):Percentage of infection among all studied children



Figure(6): percentage of patients treated by ICS Therapy

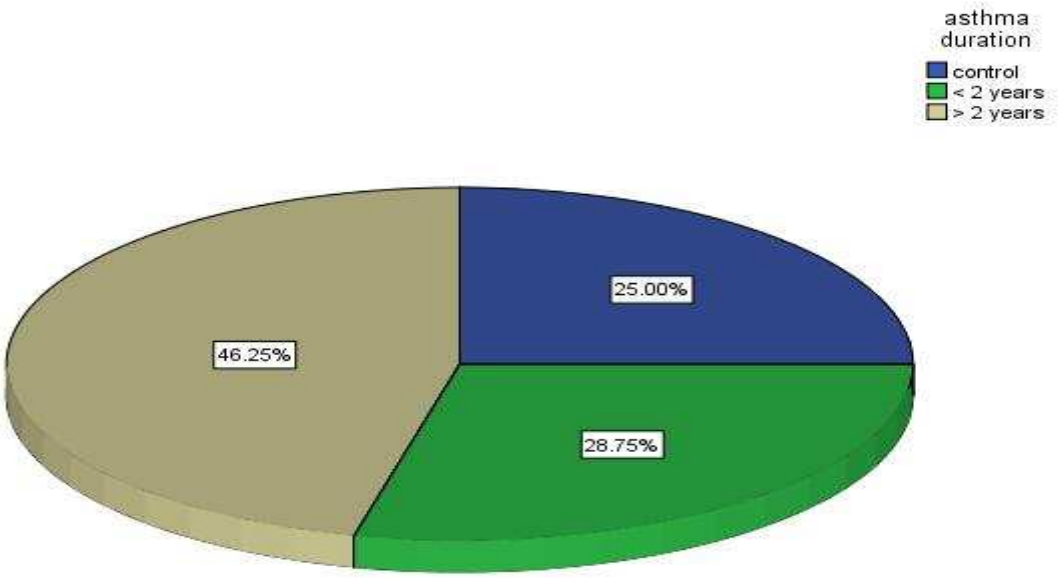


Figure (7): Asthma duration Among all studied children

Table(4):Descriptive laboratory data of all studied children

		x ± SD	Range
Hb level		10.5±1.1	7.8-12.3
Eosinophilic count		429±142	120-680
WBCs count		8610±4133	4000-17500
Vit.D level (nmol/L)		81±98	6-784
		Count	**Percent.**
Stool analysis	Normal	50	62.5%
	Parasitic infestation	21	26.3%
	Undigested food	9	11.3%

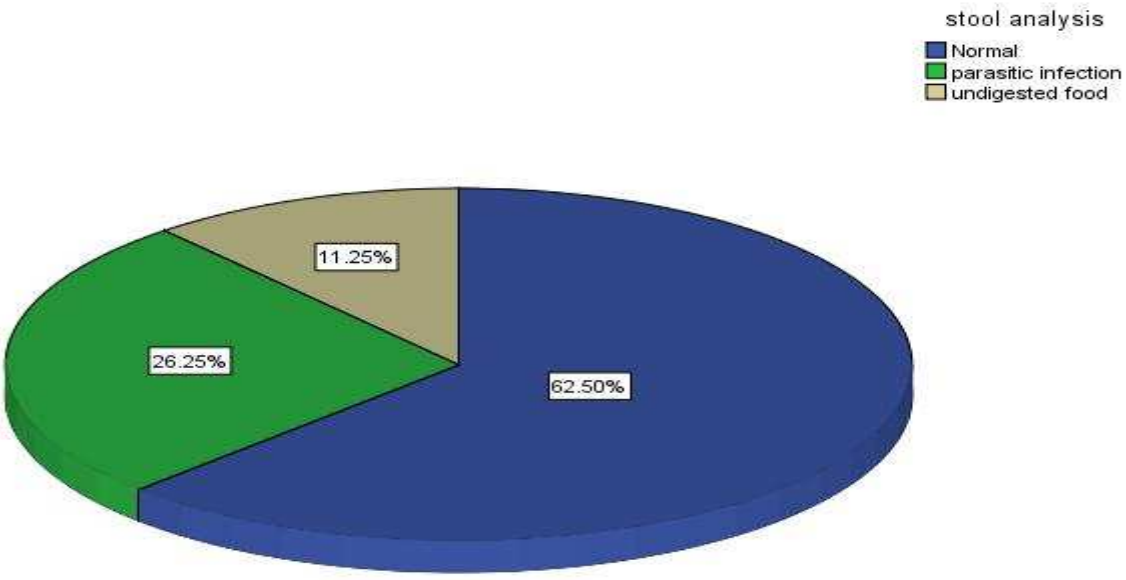


Figure (8):Results of stool analysis among all studied children.

Table(5):Comparison between control and asthmatic children regarding demographic data

		group				Test value	p-value
		control		Asthmatic			
		Count	Percent.	Count	Percent.		
Age(years)	(x ± SD)	9±2		9±2		-.382u	.702
Sex	Male	14	70.0%	38	63.3%	.293x	.588
	Female	6	30.0%	22	36.7%		
Residence	Rual	10	50.0%	25	41.7%	.423x	.515
	Urban	10	50.0%	35	58.3%		
Social class	low	5	25.0%	36	60.0%	18.93x	<.001**,
	moderate	10	50.0%	24	40.0%		
	high	5	25.0%	0	.0%		
Order of birth	1	3	15.0%	14	23.3%	6.127x	.190
	2	6	30.0%	28	46.7%		
	3	7	35.0%	15	25.0%		
	4	2	10.0%	2	3.3%		
	5	2	10.0%	1	1.7%		
Paternal smoking	yes	3	15.0%	37	61.7%	13.06x	<.001**,
	No	17	85.0%	23	38.3%		

****significant AT LEVEL OF .01**
X tested by chi-square
U tested by Mann-Whitney

Asthmatic children have significant higher percentage of low social class and paternal smoking than control group, no other significant difference regarding demographic data.

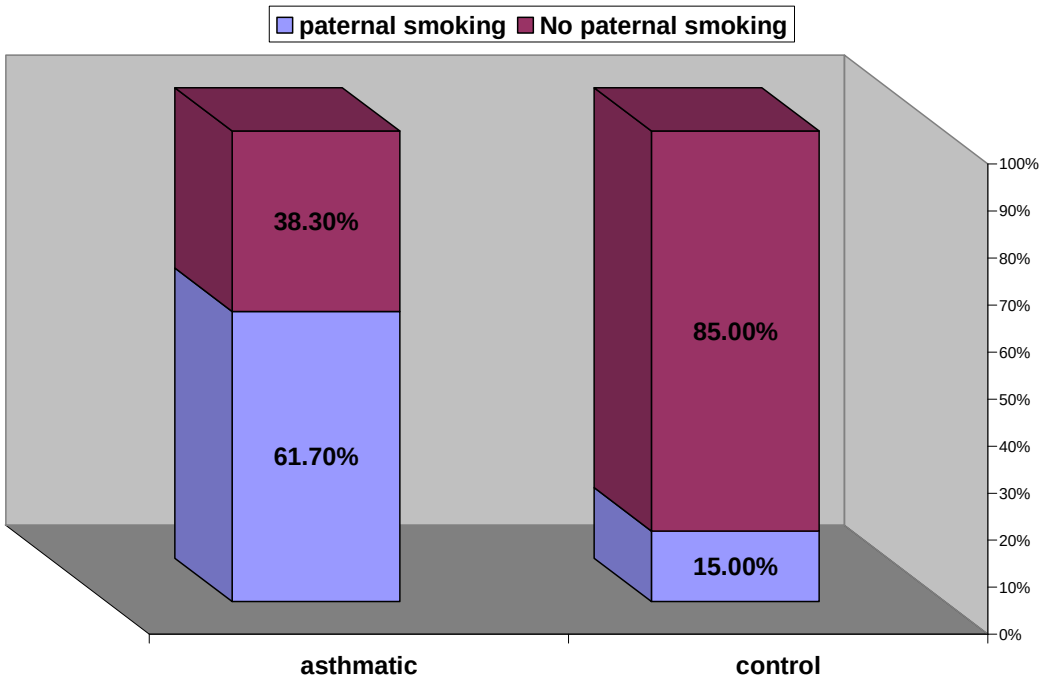


Figure (9):comparison between control and asthmatic children as regarding paternal smoking.

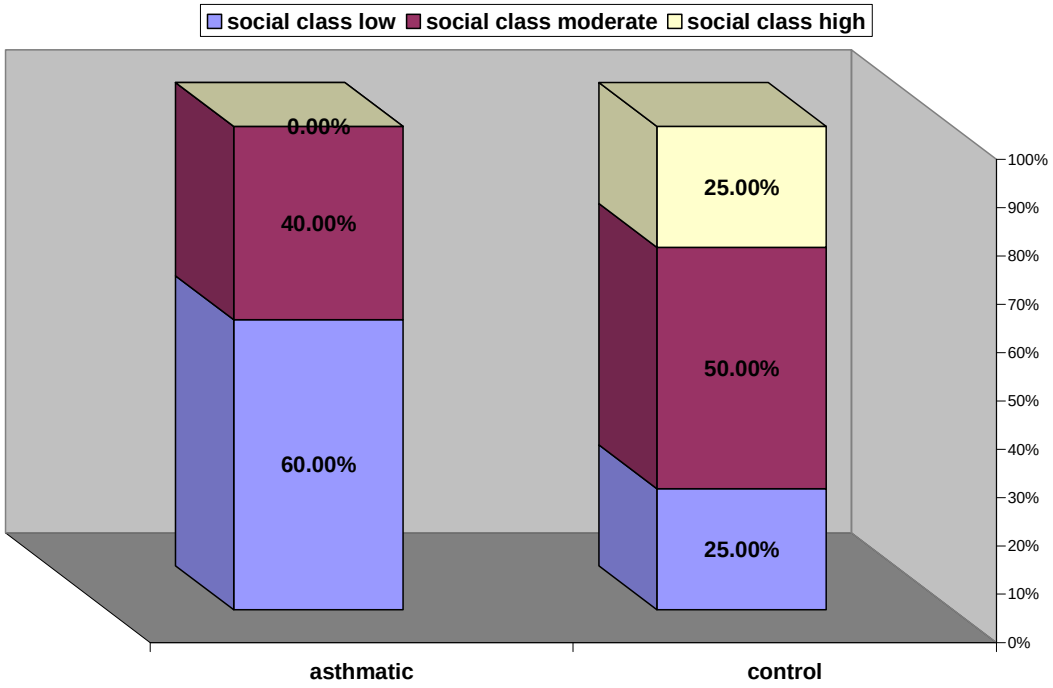


Figure (10):comparison between control and asthmatic groups as regarding social class

Table(6):Comparison between control and asthmatic children regarding Vit.D related data

		group				Test value	p-value
		control		Asthmatic			
		Count	Percent.	Count	Percent.		
Dietary Vit.D supply	rich	5	25.0%	36	60.0%	7.355x	.007**
	poor	15	75.0%	24	40.0%		
Sun exposure	well	15	75.0%	37	61.7%	1.172x	.279
	not well	5	25.0%	23	38.3%		
History of another atopic manifestations	positive	5	25.0%	13	21.7%	.096x	.757a
	negative	15	75.0%	47	78.3%		

****significant AT LEVEL OF .01**
X tested by chi-square

Asthmatic children have significant higher percentage of poor dietary Vit.D supply than control group, no other significant difference between control and asthmatic children regarding Vit.D related data

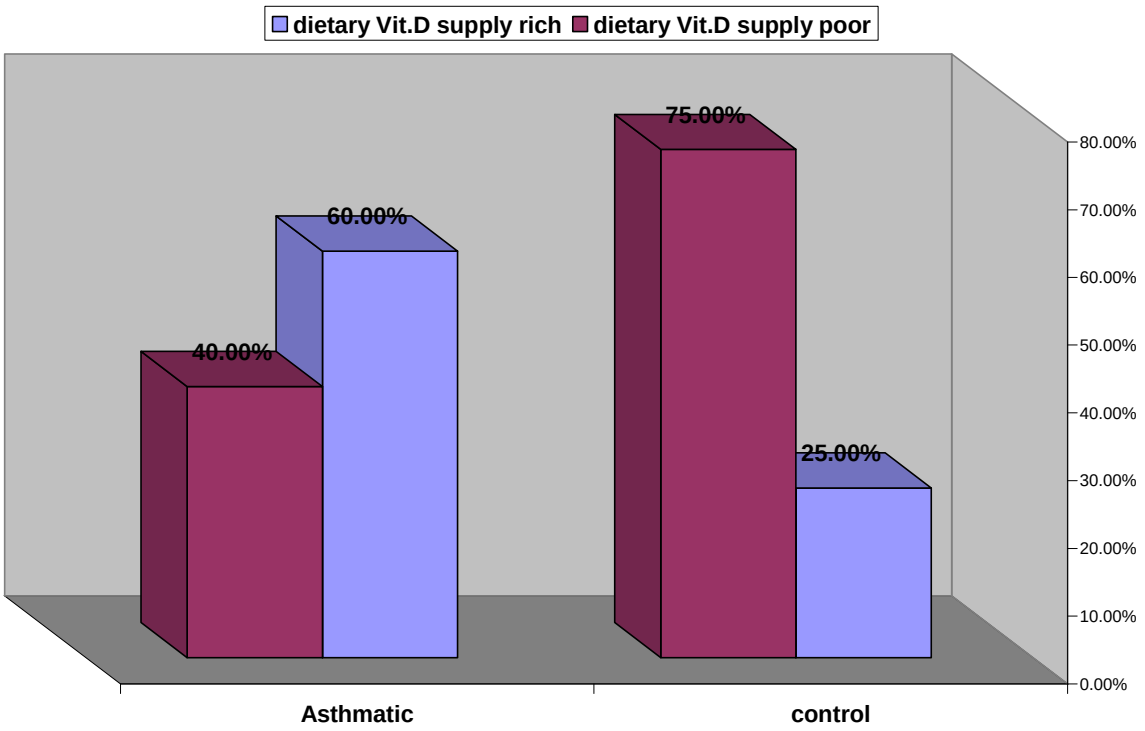


Figure (11):Comparison between control and asthmatic groups as regarding dietary vitamin D supply.

Table(7):Comparison between control and asthmatic children regarding laboratory data

		group				Test value	p-value
		control		Asthmatic			
		x	**SD**	**x**	**SD**		
Hb level		10.7	1.0	10.5	1.1	.560t	.577
Eosinophils		252	85	488	103	-9.310t	<.001**
WBCs count		5350	863	9697	4223	-3.822u	<.001**
		Count	**Percent.**	**Count**	**Percent.**		
Stool analysis	Normal	14	70.0%	36	60.0%	.674x	.714
	parasitic infestation	4	20.0%	17	28.3%		
	undigested food	2	10.0%	7	11.7%		

****significant AT LEVEL OF .01**
X tested by chi-square
U tested by Mann-Whitney
T tested by t-test

Asthmatic children have significant higher Esinophilic count and WBCs than control group, no other significant difference between control and asthmatic children regarding laboratory data.

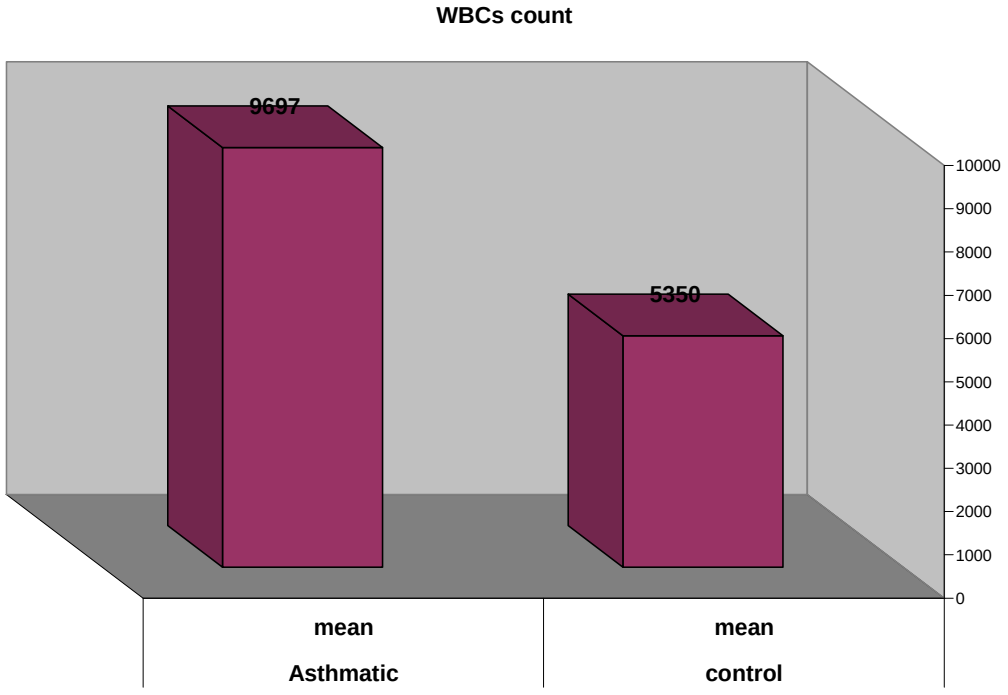
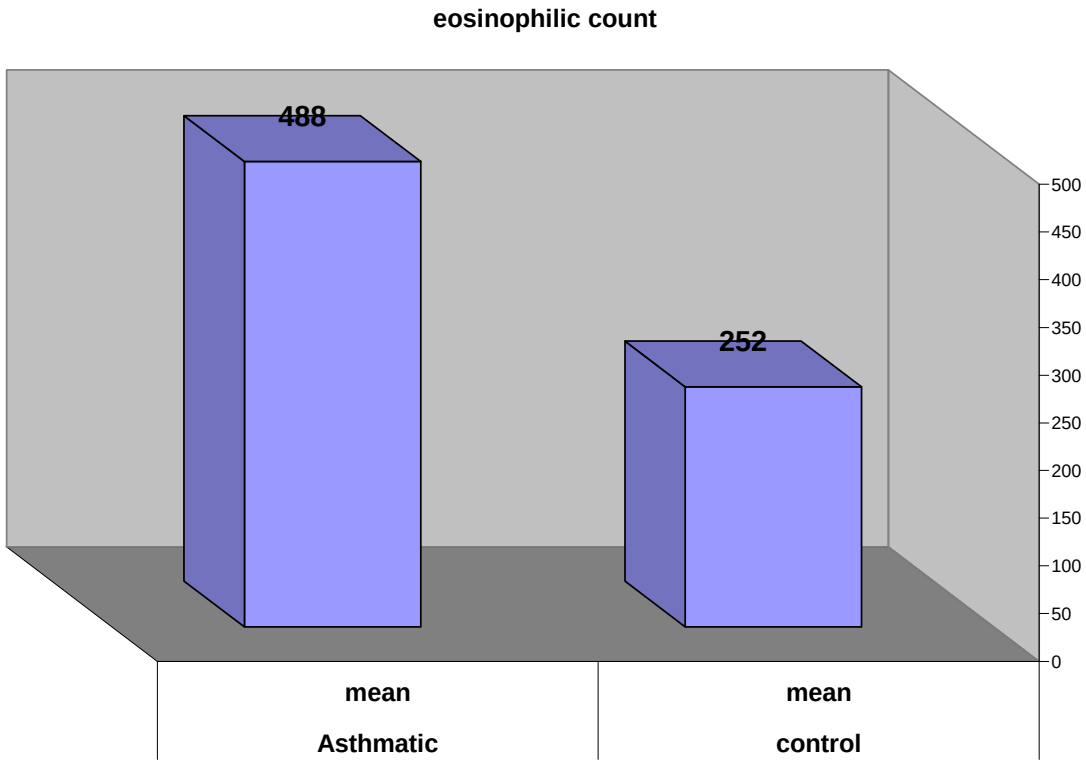


Figure (12): Comparison between Control and asthmatic groups as regarding mean WBC count.



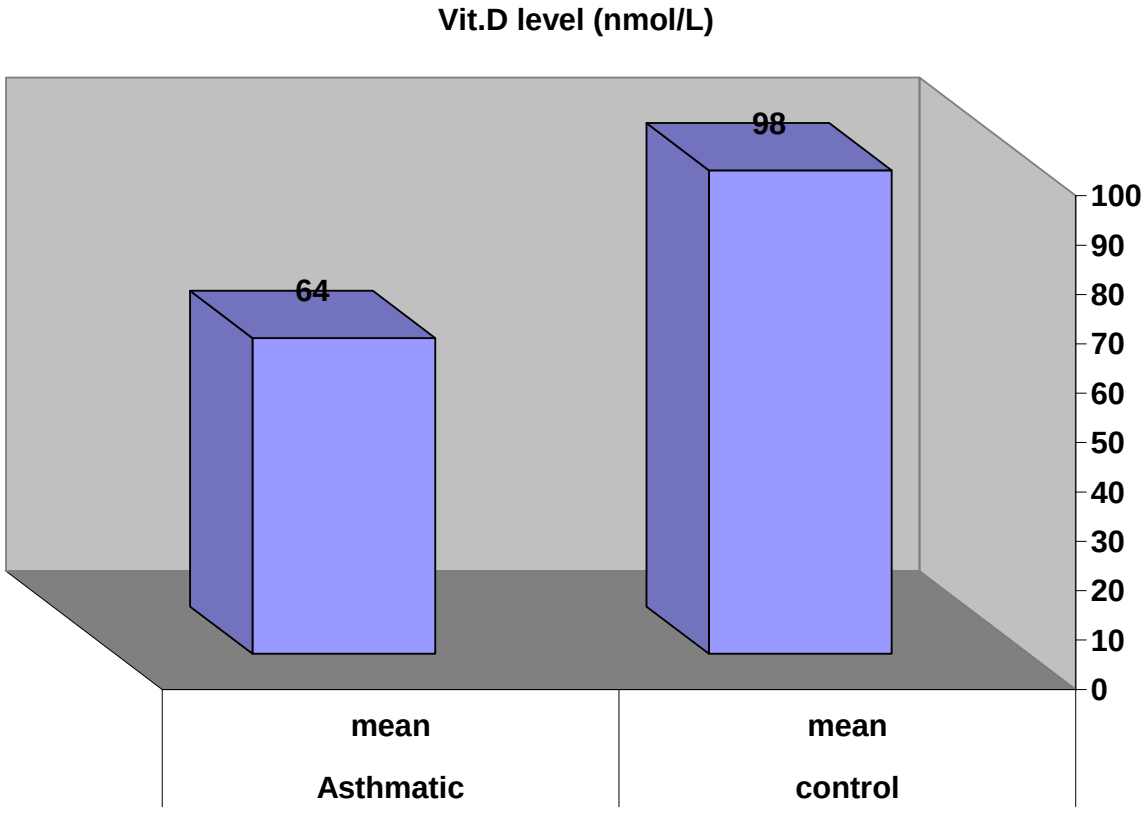
Figure(13):Comparison between Control and asthmatic groups as regarding mean eosinophilic count.

Table(8):Comparison between control and asthmatic children regarding Vit.D level

	group				z	p-value
	control		Asthmatic			
	X	SD	X	SD		
Vit.D level (nmol/L)	98	57	64	55	-2.284	.022*

***significant at level of .05**
U tested by Mann-Whitney

Asthmatic children have significant lower Vit.D level than control group



Figure(14): Comparison between Control and asthmatic groups as regarding mean vitamin D level.

Table(9):Comparison between control and asthmatic children regarding serum Vit.D status

		group				Test value	p-value
		control		Asthmatic			
		Count	Percent.	Count	Percent.		
serum Vit.D status	Deficiency	2	10.0%	22	36.7%	6.793x	.033*
	insufficiency	5	25.0%	17	28.3%		
	sufficiency	13	65.0%	21	35.0%		

***significant at level of .05**
X tested by chi-square

Asthmatic children have significant higher percentage of Vit.D deficiency and insufficiency than control group

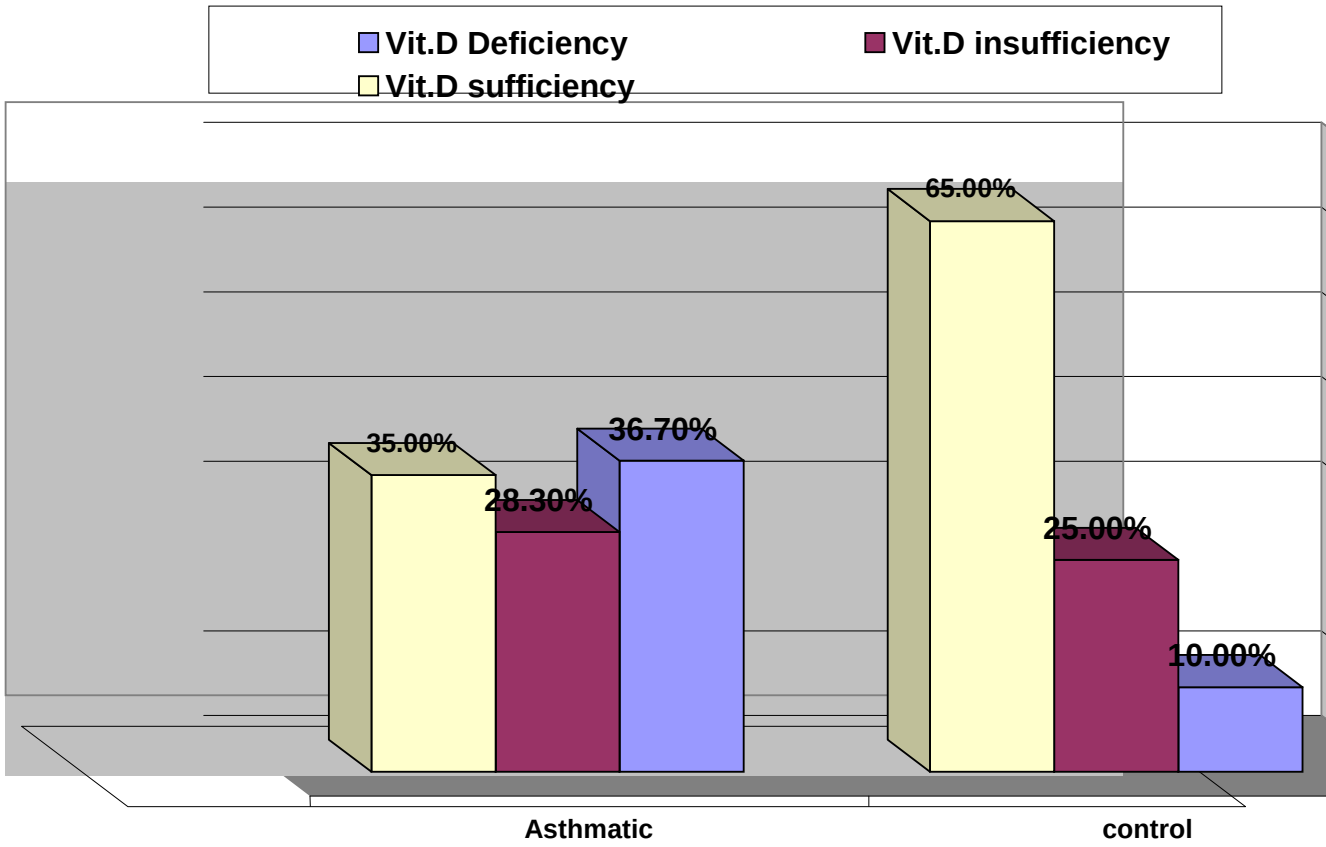


Figure (15):Comparison between Control and asthmatic groups as regarding serum vitamin D status.

Table(10):Comparison between asthmatic children with different Vit.D status regarding demographic data

		serum VIt.D status						Test value	p-value
		Deficiency		insufficiency		sufficiency			
		Count	Percent.	Count	Percent.	Count	Percent.		
Age(years)	(x ± SD)	9±2		9±2		9±2		.426u	.808
sex	Male	15	68.2%	12	70.6%	11	52.4%	1.693x	.429
	Female	7	31.8%	5	29.4%	10	47.6%		
residence	Rural	10	45.5%	6	35.3%	9	42.9%	.426x	.808
	Urban	12	54.5%	11	64.7%	12	57.1%		
order of birth	1	5	22.7%	4	23.5%	5	23.8%	6.996x	.537
	2	9	40.9%	10	58.8%	9	42.9%		
	3	7	31.8%	3	17.6%	5	23.8%		
	4	0	.0%	0	.0%	2	9.5%		
	5	1	4.5%	0	.0%	0	.0%		
social class	low	12	54.5%	11	64.7%	13	61.9%	.461x	.797
	moderate	10	45.5%	6	35.3%	8	38.1%		
	high	0	.0%	0	.0%	0	.0%		
paternal smoking	yes	14	63.6%	9	52.9%	14	66.7%	.806x	.688
	No	8	36.4%	8	47.1%	7	33.3%		

X tested by chi-square
U tested by Mann-Whitney

No significant difference between asthmatic children with different Vit.D status regarding demographic data

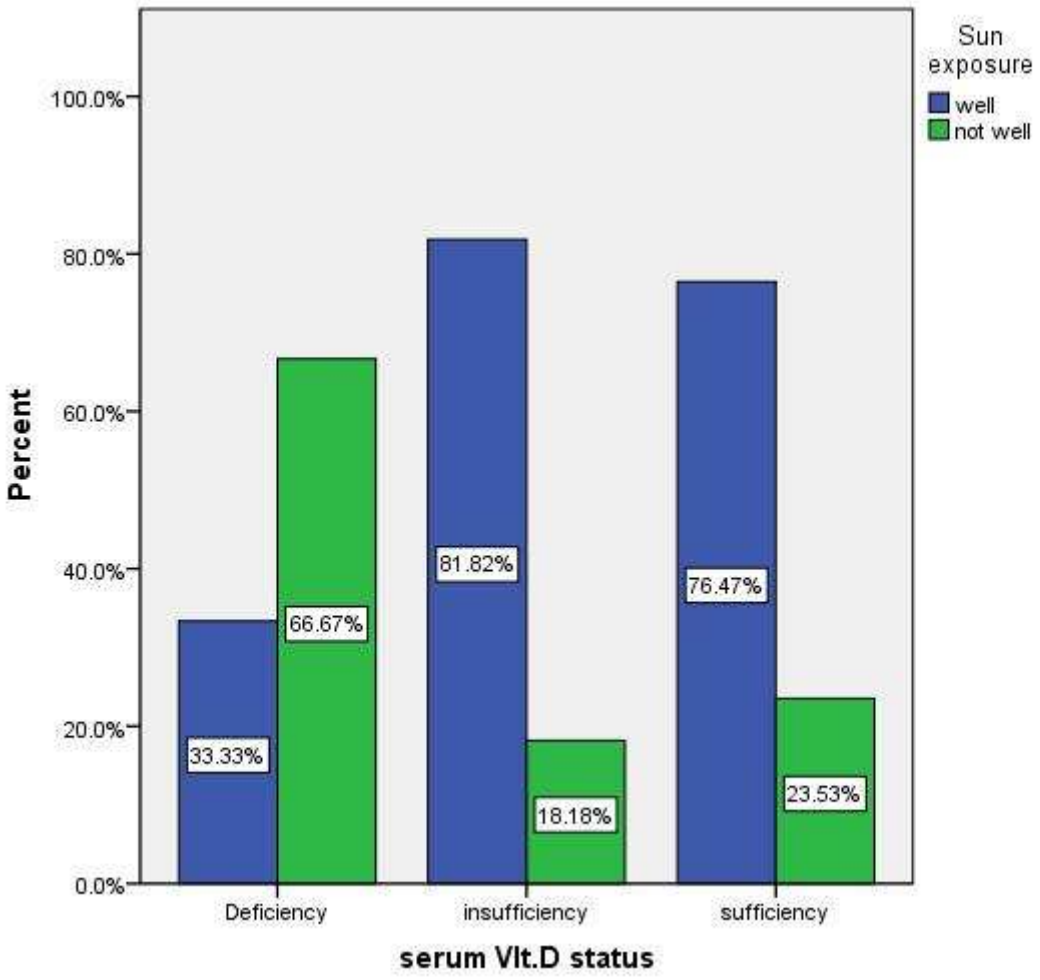
Table(11):Comparison between asthmatic children with different Vit.D status regarding dietary Vit.D supply and sun exposure

		serum VIt.D status						Test value	p-value
		Deficiency		insufficiency		sufficiency			
		Count	Percent.	Count	Percent.	Count	Percent.		
dietary Vit.D supply	poor	18	81.8%	10	58.8%	8	38.1%	8.572x	.014*
	rich	4	18.2%	7	41.2%	13	61.9%		
Sun exposure	well	6	27.3%	14	82.4%	17	81.0%	17.391x	<.001**
	not well	16	72.7%	3	17.6%	4	19.0%		

***significant at level of .05**
****significant AT LEVEL OF .01**
X tested by chi-square

Asthmatic children with Vit.D deficiency have significant higher percentage of poor dietary Vit.D supply and not well sun exposure than other Vit.D statuses.

Figure (16): Serum vitamin D status as regarding sun exposure.



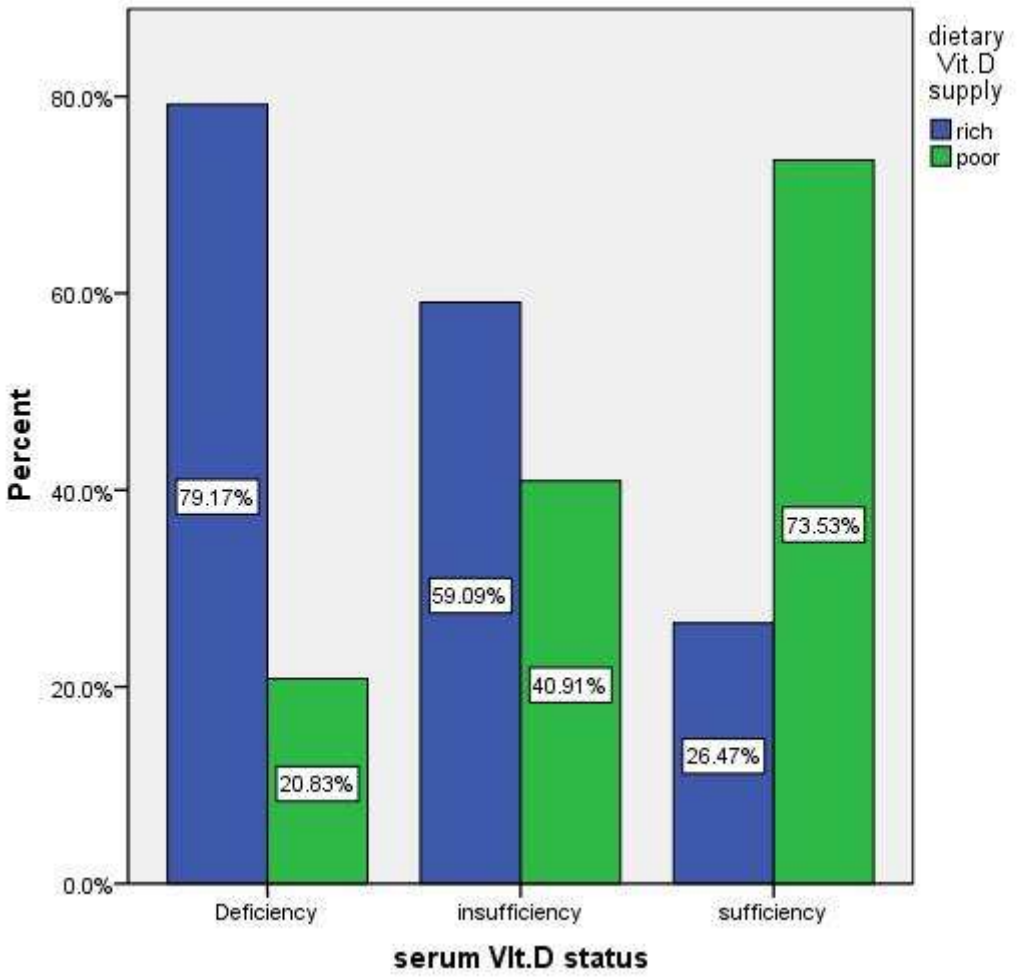


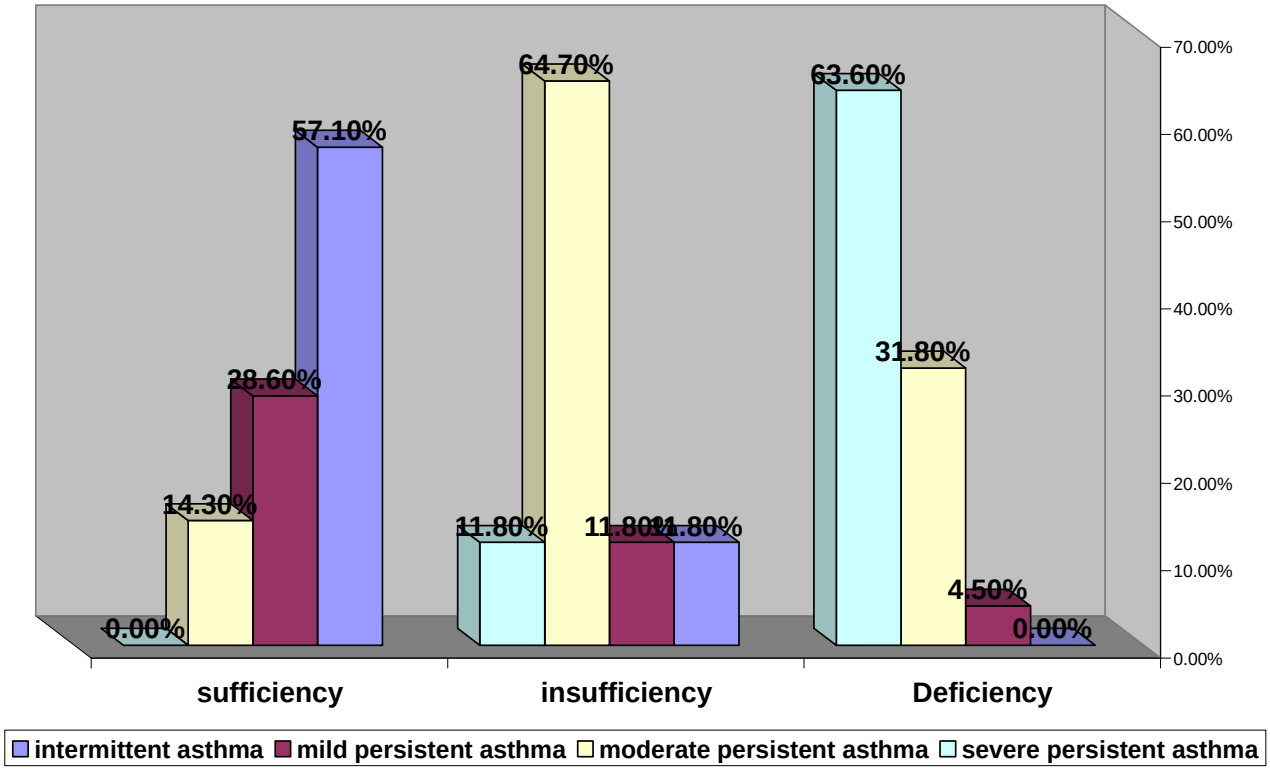
Figure (17):Serum vitamin D status as regarding dietary vitamin D supply.

Table(12):Comparison between asthmatic children with different Vit.D status regarding clinical data

		serum Vit.D status						Test value	p-value
		Deficiency		insufficiency		sufficiency			
		Count	Percent.	Count	Percent.	Count	Percent.		
History of another atopy	positive	6	27.3%	2	11.8%	5	23.8%	1.446 x	.485
	negative	16	72.7%	15	88.2%	16	76.2%		
Asthma degree	intermittent	0	.0%	2	11.8%	12	57.1%	45.91 x	<.001**
	mild persistent	1	4.5%	2	11.8%	6	28.6%		
	moderate persistent	7	31.8%	11	64.7%	3	14.3%		
	severe persistent	14	63.6%	2	11.8%	0	.0%		
Asthma duration	< 2 years	4	18.2%	8	47.1%	11	52.4%	6.08x	.048*
	> 2 years	18	81.8%	9	52.9%	10	47.6%		
ICS therapy	No	8	36.4%	15	88.2%	21	100.0%	24.3x	<.001**
	yes	14	63.6%	2	11.8%	0	.0%		
Infection	Asthma without infection	8	36.4%	6	35.3%	16	76.2%	8.869 x	.012*
	present	14	63.6%	11	64.7%	5	23.8%		

***significant at level of .05**
****significant AT LEVEL OF .01**
X tested by chi-square

Asthmatic children with Vit.D deficiency have significant higher percentage of moderate &severe persistent degree, those with asthma duration >2years, those with ICS therapy and those with infection than other Vit.D statuses



Figure(18):Serum vitamin D status as regarding asthma degree.

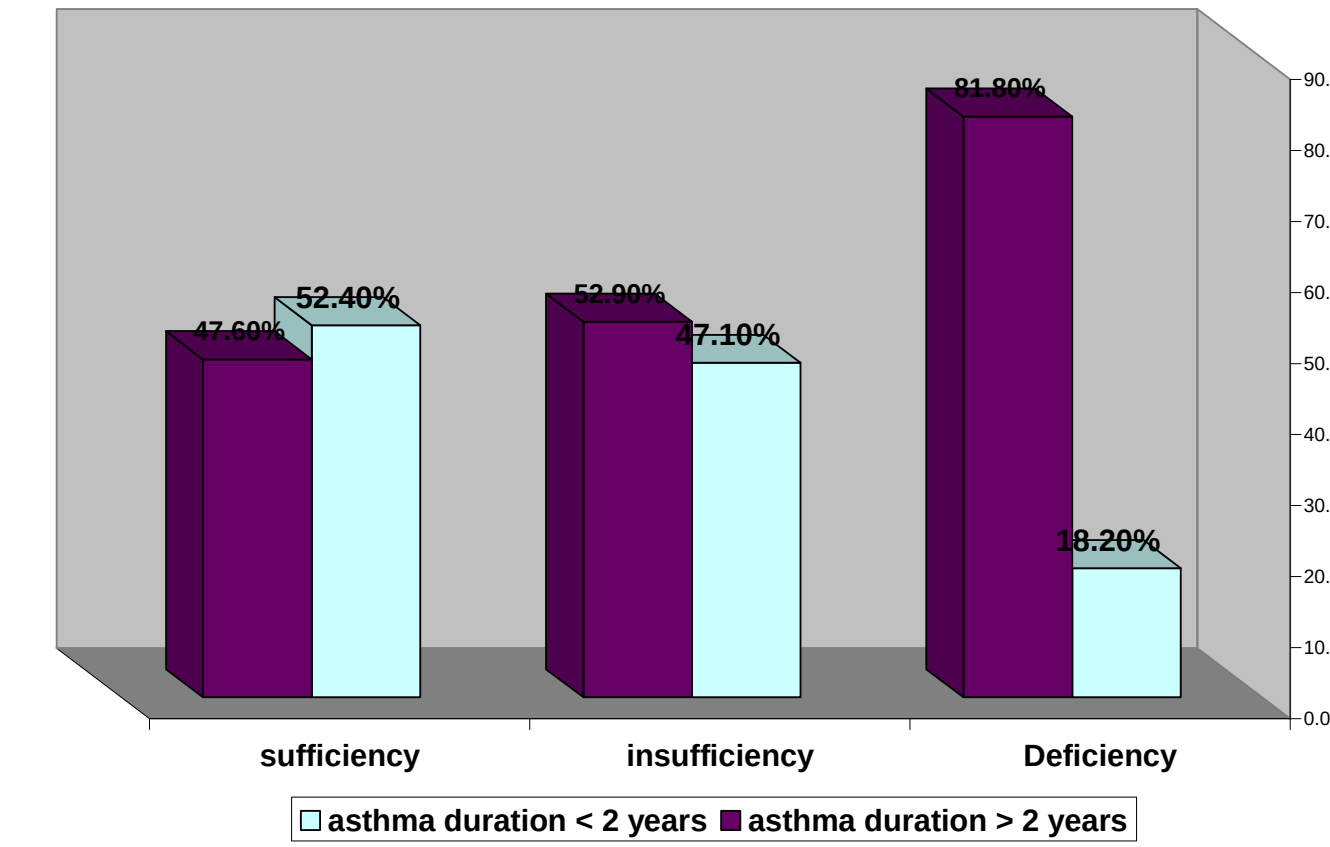


Figure (19): Serum vitamin D status as regarding asthma duration.

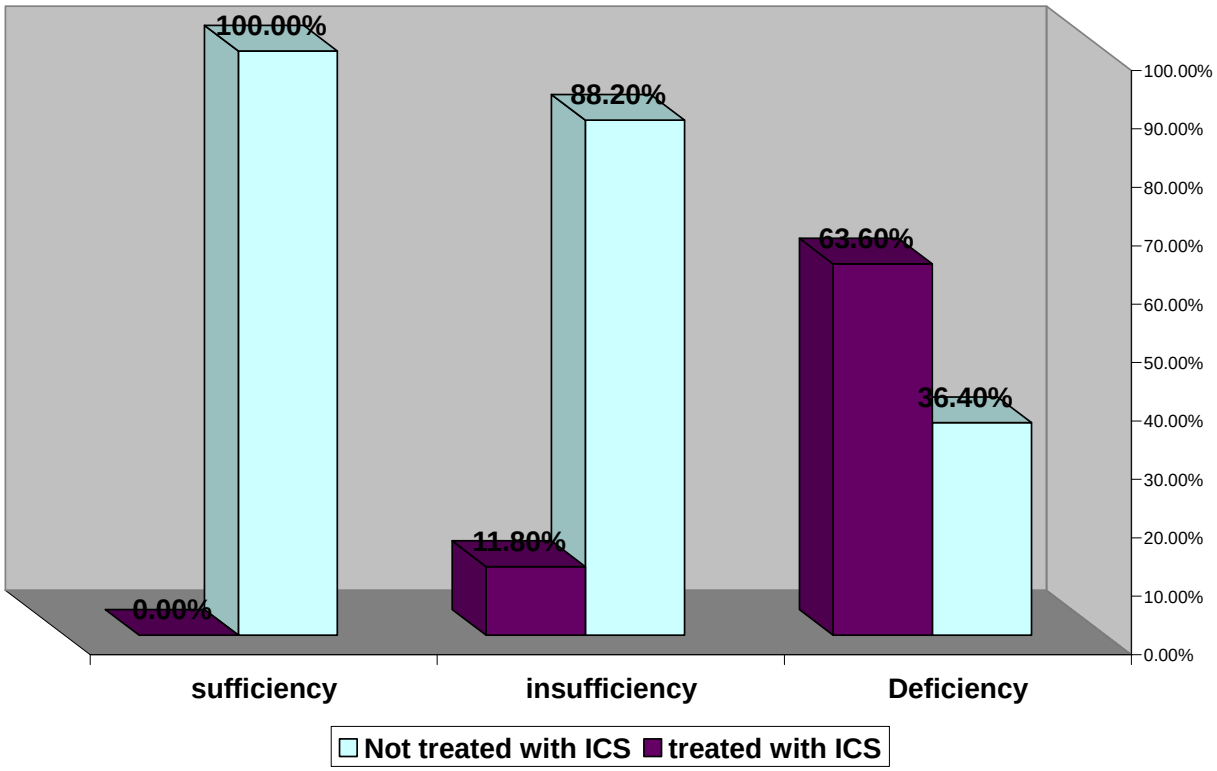


Figure (20):Serum vitamin as regarding ICS therapy

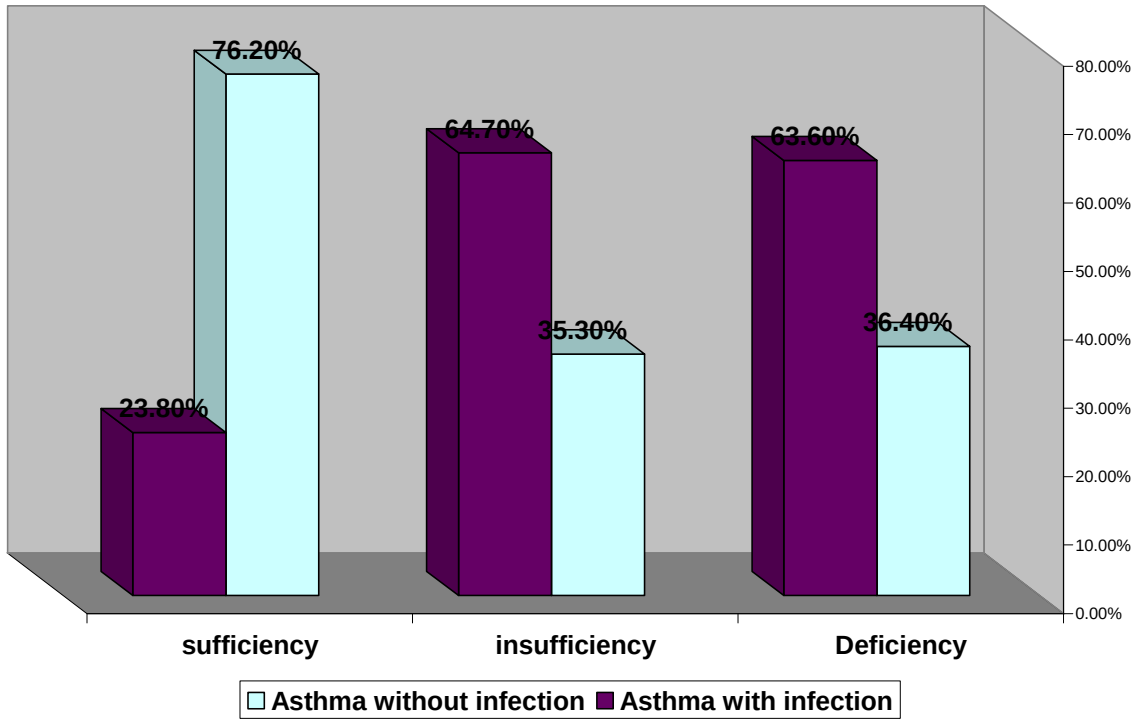


Figure (21):Serum vitamin D status as regarding infection.

Table(13):Comparison between control and asthmatic children regarding

laboratory data

		serum Vit.D status						Test value	p-value
		Deficiency		insufficiency		sufficiency			
		X	**SD**	**X**	**SD**	**X**	**SD**		
Hb level		10.5	1.0	10.5	1.3	10.5	1.2	.006t	.994
Eosinophilic count		571	74	509	67	385	50	45.95t	<.001**
WBCs count		10233	3993	9836	4243	6671	3396	3.025u	.220
		Count	**Percent.**	**Count**	**Percent.**	**Count**	**Percent.**		
Stool analysis	Normal	6	27.3%	10	58.8%	20	95.2%	24.927x	<.001**
	Parasitic infestation	10	45.5%	7	41.2%	0	.0%		
	undigested food	6	27.3%	0	.0%	1	4.8%		

****significant AT LEVEL OF .01**
X tested by chi-square
U tested by Mann-Whitney
T tested by t-test

Asthmatic children with Vit.D deficiency and/or insufficiency have higher Esinophilic count and higher percentage of parasitic infection and undigested food in stool analysis than other Vit.D statuses

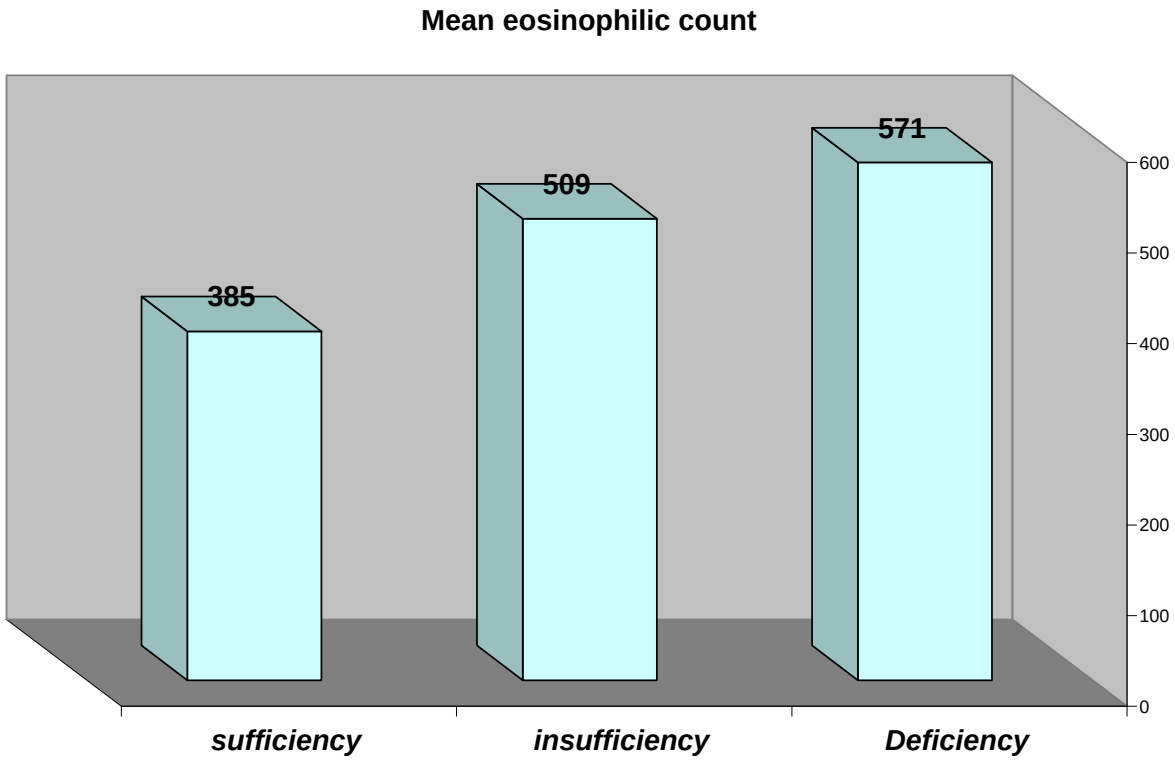


Figure (22):Serum vitamin D status as regarding mean eosinophilic count.

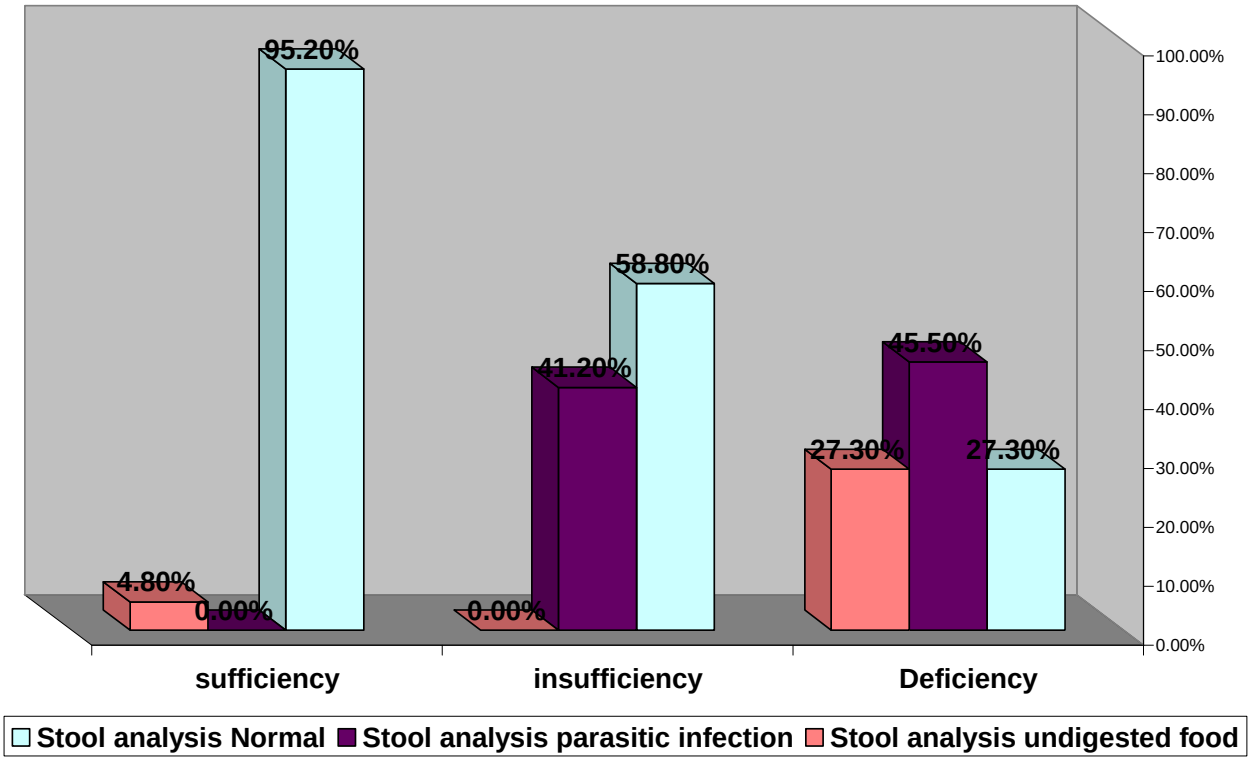


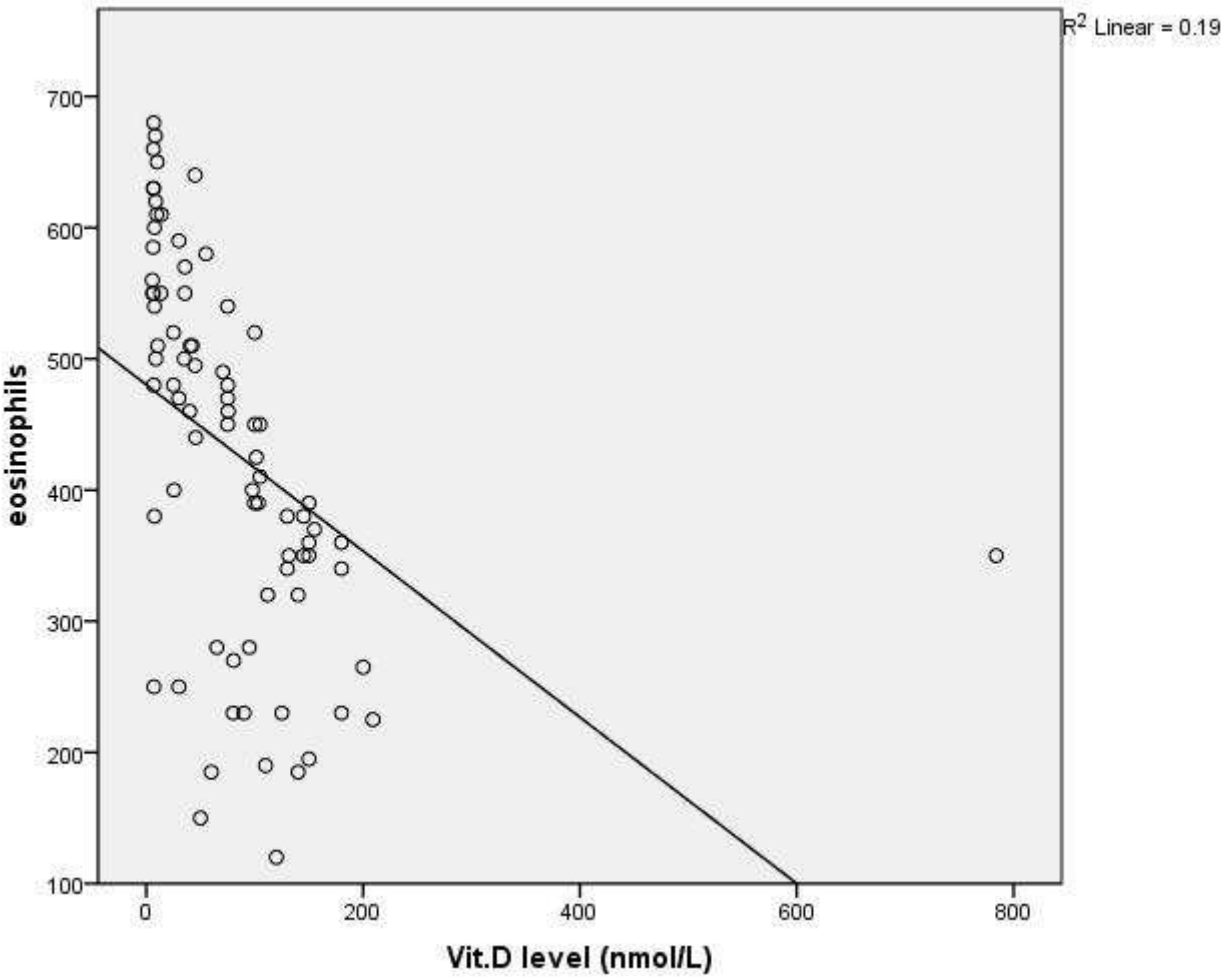
Figure (23): Serum vitamin D status as regarding stool analysis.

Table(14):Correlations between Vit.D level and other laboratory parameter

Correlations		
	Vit.D level (nmol/L)	
	Pearson Correlation	Sig. (2-tailed)
Age (years)	-.016	.905
Hb level	.055	.676
Eosinophilic count	-.566**	<.001**
WBCs count	-.041	.759

****significant AT LEVEL OF .01**

There is significant negative correlation between Vit.D level and eosinophils count. No other significant correlation between Vit.D level and other laboratory parameter.


R2 Linear = 0.19
eosinophils
700
600
500
400
300
200
100
0
200
400
600
800
Vit.D level (nmol/L)

Table(15):Correlations between Vit.D staus and other clinical data

Correlations		
	serum VIt.D status	
	Pearson Correlation	Sig. (2-tailed)
Sex	.138	.295
Residence	.023	.860
Order of birth	.020	.881
Social class	.064	.625
Dietary Vit.D supply	.378**	.003**
Sun exposure	.470**	<.001**
Paternal smoking	.025	.850
History of another atopic manifestations	.037	.776
Asthma degree	.770**	<.001**
Asthma duration	.299*	.020*
ICS therapy	.612**	<.001**
Infection	.335**	.009**
Positive stool analysis	.552**	<.001**

***significant at level of .05**
****significant AT LEVEL OF .01**

Significant correlations are present between Vit.D staus and sun exposure, Dietary Vit.D supply, asthma degree, asthma duration, ICS therapy, presence of infection and positive stool analysis .

Table(16):Comparison between asthmatic patients with infection and those without infection regarding demographic data

		infection				Test value	p-value
		Asthma without infection		Asthma with infection			
		Count	Percent.	Count	Percent.		
Age(years)	(x ± SD)	9±2		9±2		-.988u	.323
Sex	Male	18	60.0%	20	66.7%	.287x	.592
	Female	12	40.0%	10	33.3%		
Residence	Rural	10	33.3%	15	50.0%	1.714x	.190
	Urban	20	66.7%	15	50.0%		
Order of birth	1	4	13.3%	10	33.3%	5.781x	.216
	2	15	50.0%	13	43.3%		
	3	8	26.7%	7	23.3%		
	4	2	6.7%	0	.0%		
	5	1	3.3%	0	.0%		
Social class	low	21	70.0%	15	50.0%	2.500x	.114
	moderate	9	30.0%	15	50.0%		
	high	0	.0%	0	.0%		
Paternal smoking	yes	17	56.7%	20	66.7%	.635x	.426
	No	13	43.3%	10	33.3%		

X tested by chi-square
U tested by Mann-Whitney

NO significant difference between asthmatic patients with infection and those without infection regarding demographic data

Table(17):Comparison between asthmatic patients with infection and those without infection regarding Vit.D related data

		infection				Test value	p-value
		Asthma without infection		Asthma with infection			
		Count	Percent.	Count	Percent.		
dietary Vit.D supply	rich	18	60.0%	18	60.0%	.000x	1
	poor	12	40.0%	12	40.0%		
Sun exposure	well	20	66.7%	17	56.7%	.635x	.426
	not well	10	33.3%	13	43.3%		
serum Vit.D status	Deficiency	8	26.7%	14	46.7%	8.869x	.012*
	insufficiency	6	20.0%	11	36.7%		
	sufficiency	16	53.3%	5	16.7%		

***significant at level of .05**
X tested by chi-square

Asthmatic patients with infection have significant higher percentage of Vit.D deficiency than those without infection, no other significant difference between asthmatic patients with infection and those without infection regarding Vit.D related data.

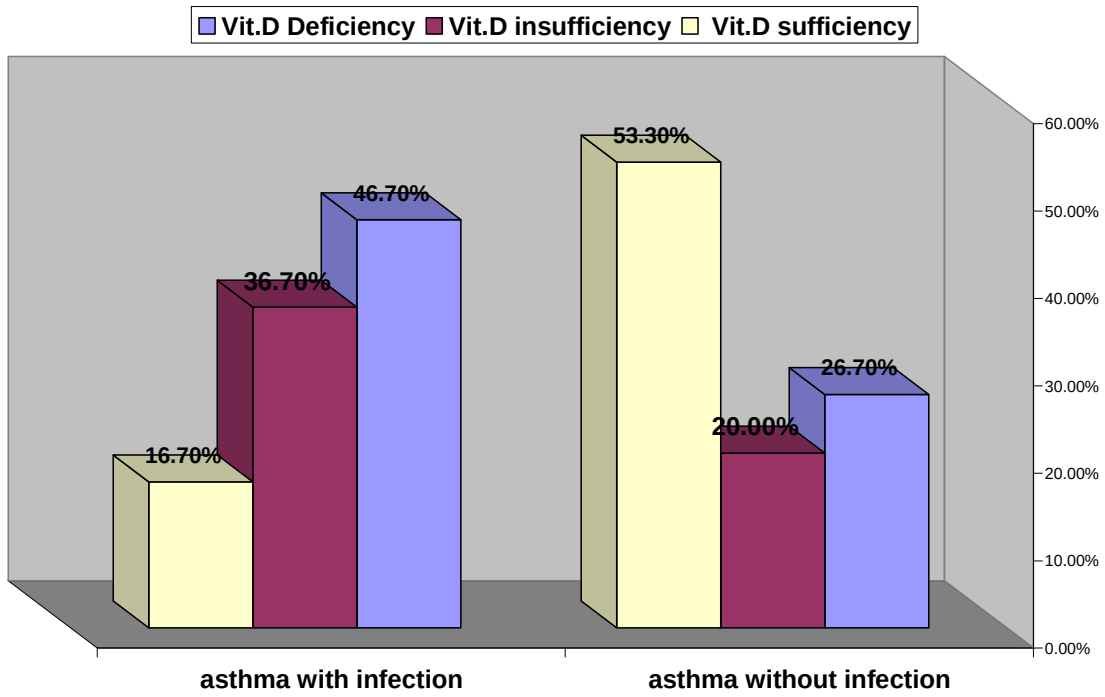


Figure (24): Respiratory infection as regarding serum vitamin D status.

Table(18):Comparison between asthmatic patients with infection and those without infection regarding clinical data

		infection				Test value	p-value
		Asthma with infection		Asthma with infection			
		Count	Percent.	Count	Percent.		
History of another atopic manifestations	positive	8	26.7%	5	16.7%	.884x	.34
	negative	22	73.3%	25	83.3%		
Asthma degree	intermittent	10	33.3%	4	13.3%	17.90x	<.001**
	mild persistent	9	30.0%	0	.0%		
	moderate persistent	7	23.3%	14	46.7%		
	severe persistent	4	13.3%	12	40.0%		
Asthma duration	< 2 years	13	43.3%	10	33.3%	.635x	.426
	> 2 years	17	56.7%	20	66.7%		
ICS therapy	No	26	86.7%	18	60.0%	5.455x	.02*
	yes	4	13.3%	12	40.0%		

***significant at level of .05**
****significant AT LEVEL OF .01**
X tested by chi-square

Asthmatic patients with infection have significant higher percentage of patients with moderate & severe persistent asthma degree and those with ICS therapy than asthmatic patients without infection.

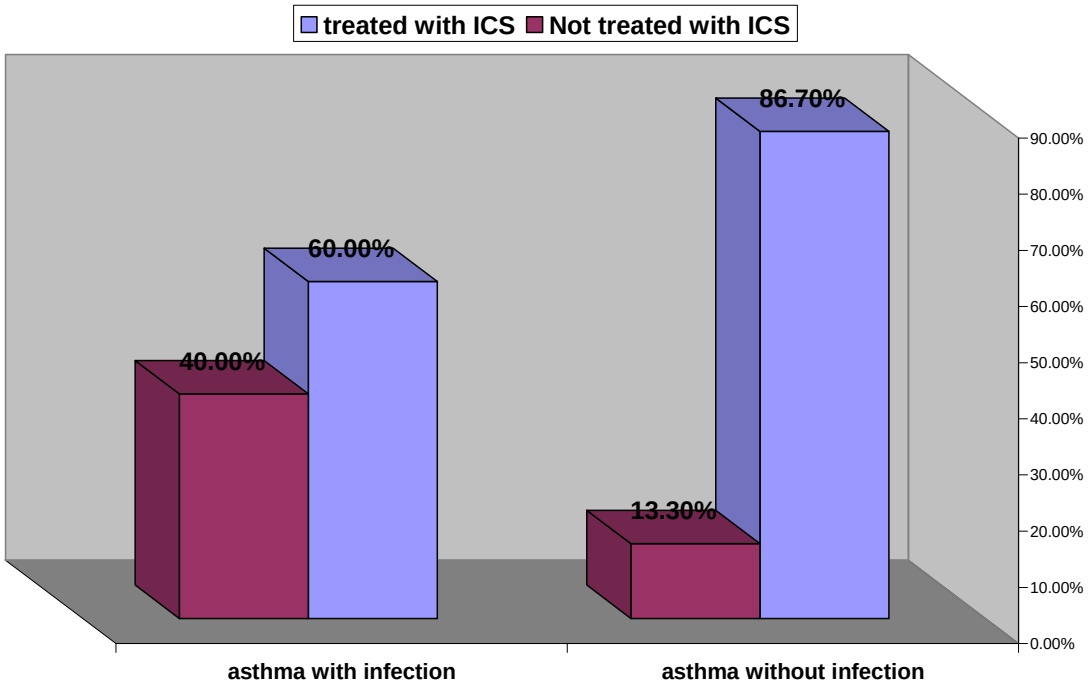


Figure (25):Respiratory infection as regarding ICS therapy.

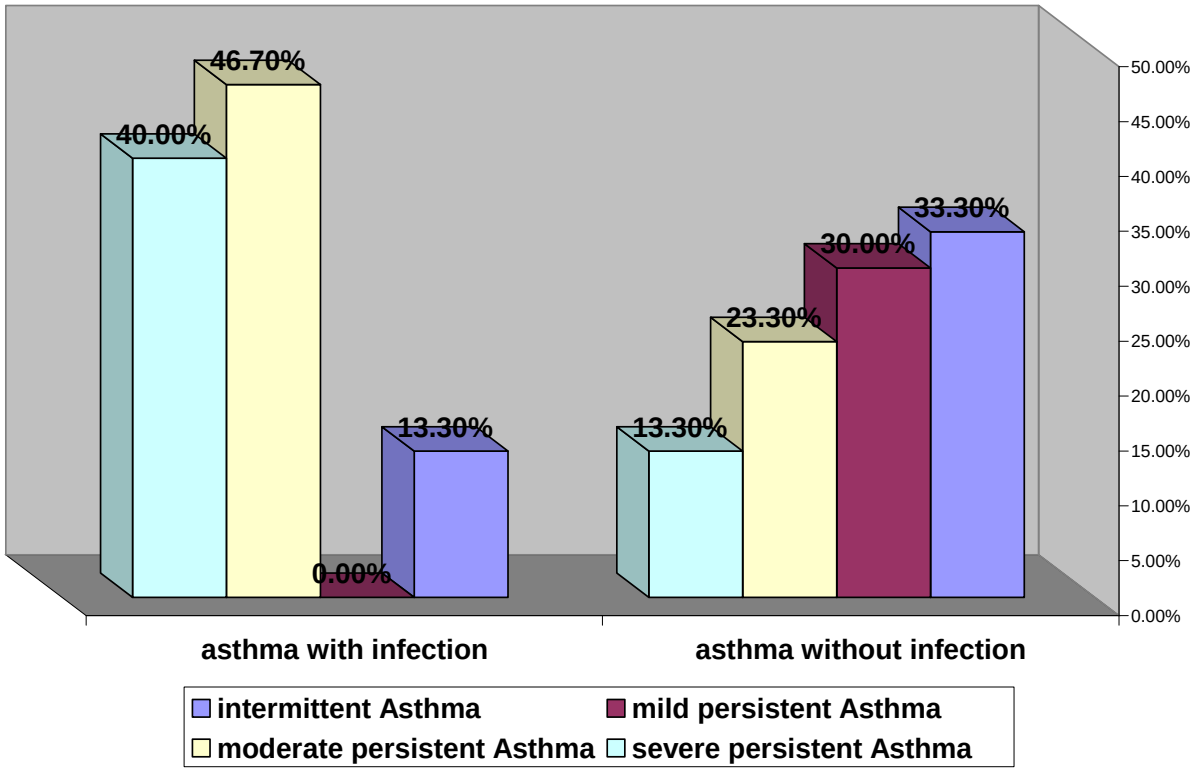


Figure (26): Respiratory infection as regarding asthma degree.

Table(19):Comparison between asthmatic patients with infection and those without infection regarding laboratory data

	infection				Test value	p-value
	Asthma without infection		Asthma with infection			
	X	SD	X	SD		
Hb level	10.6	1.2	10.5	1.1	.343t	.733
Eosinophilic count	453	93	524	101	-2.805t	.007**
WBCs count	5723	1275	13670	1409	-6.659u	<.001**
Vit.D level (nmol/L)	83	59	66	142	-2.389u	.017*

***significant at level of .05**
****significant AT LEVEL OF .01**
U tested by Mann-Whitney
T tested by t-test

Asthmatic patients with infection have significant higher esinophilic count and WBCs count than asthmatic patients without infection, however those with infection have significant lower Vit.D level than asthmatic patients without infections.

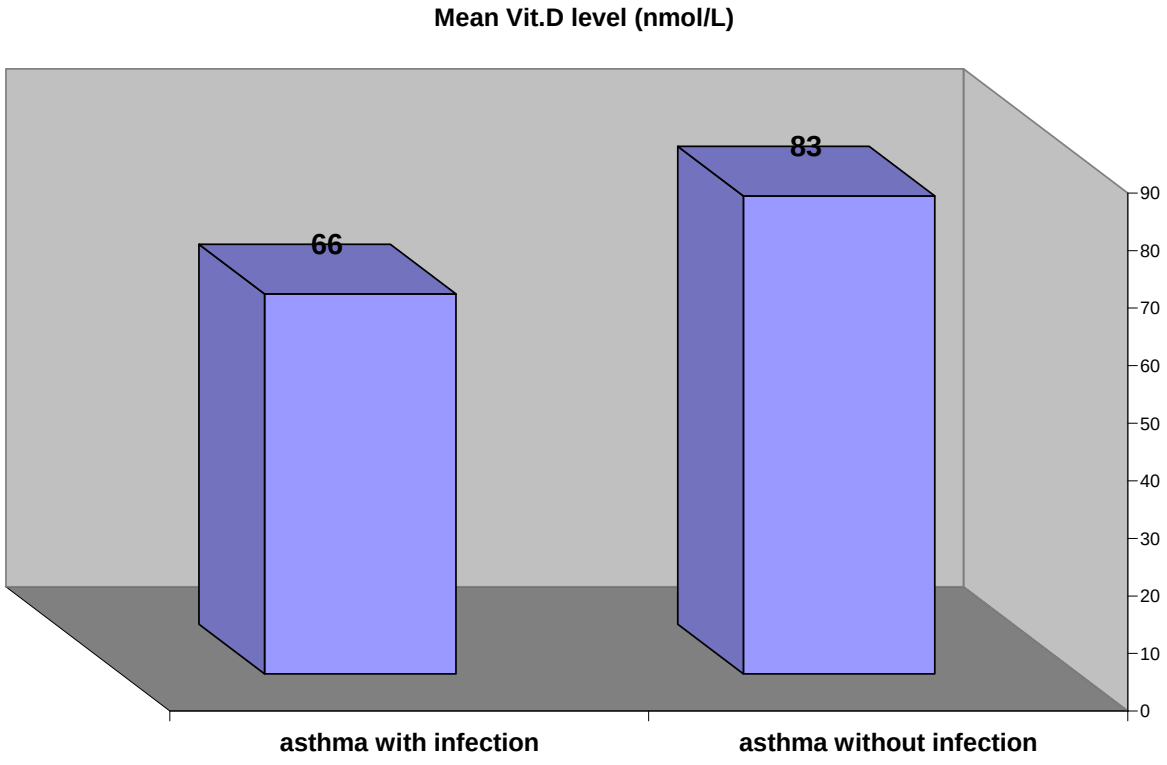


Figure (27): Respiratory infection as regarding mean vitamin D level.

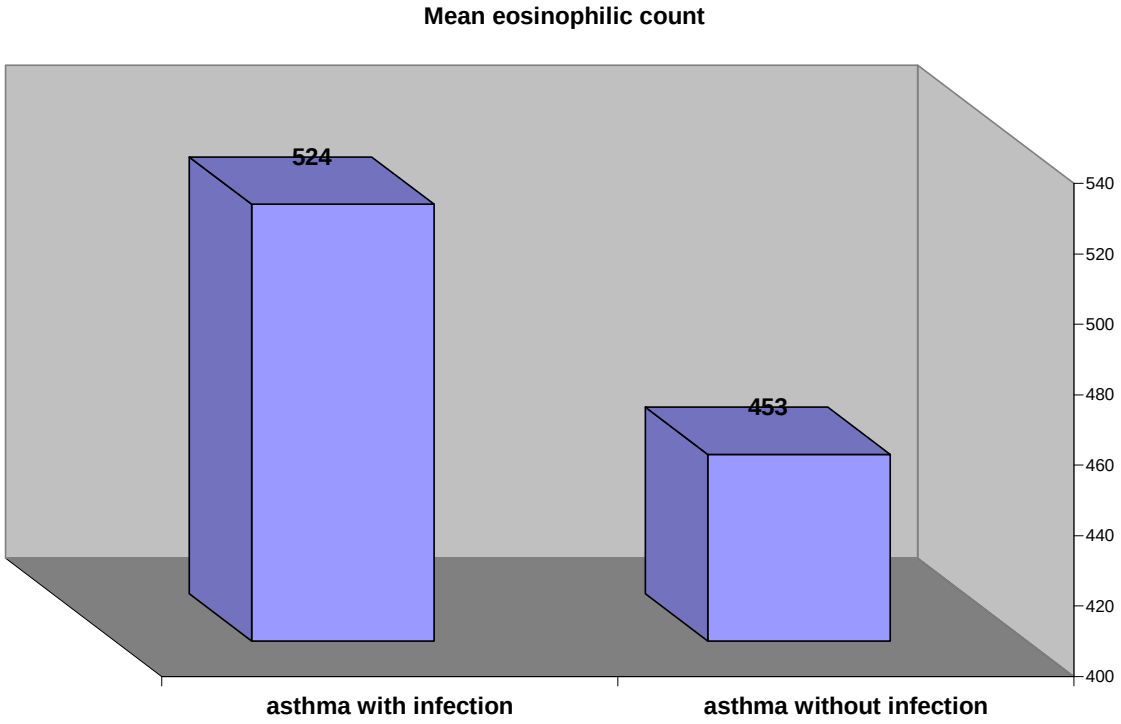


Figure (28): Respiratory infection as regarding mean eosinophilic count.

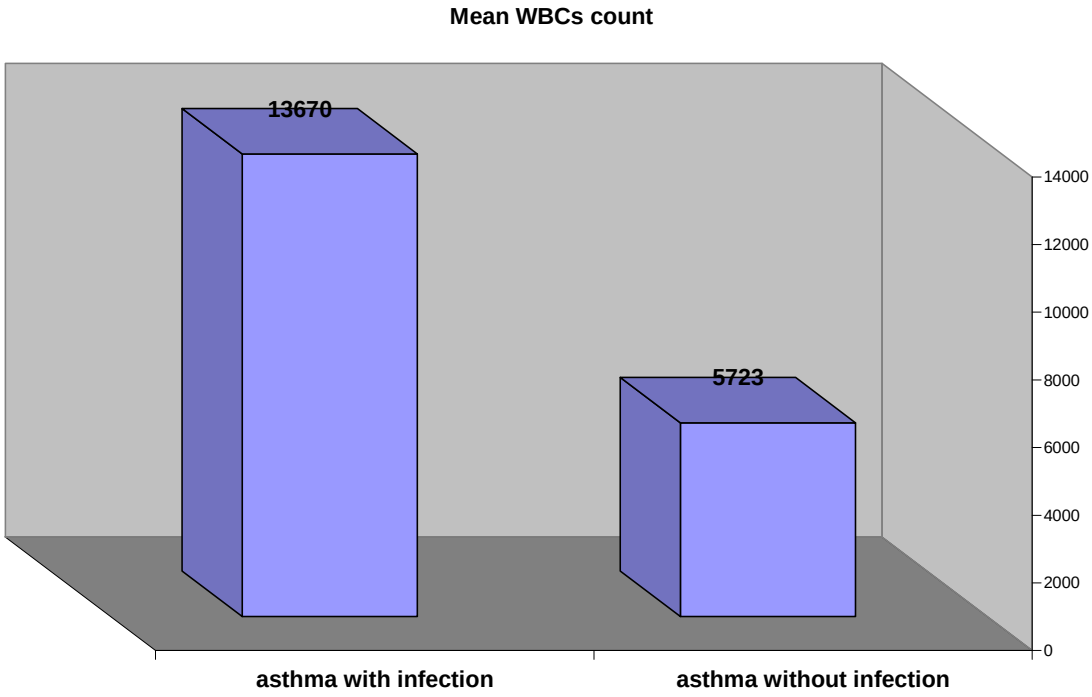


Figure (29):Respiratory infection as regarding mean WBC count.