RESULTS

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Patients group:

This study comprised thirty patients with RA who were selected from the outpatient clinic and inpatient of the department of rheumatology and rehabilitation, Benha university hospitals.

Twenty-three patients (77%) were females and 7 patients (23%) were males. Their age ranged from 21 to 73 years (44.3 ± 12.2 years).

Control group:

This study comprised twenty controls, 15 (75%) of them were females and 5 (25%) were males.

Their age ranged from 21 to 70 years (44.5 ± 12.7 years). Patients and controls were matched regarding age ($t = 0.95$, $P > 0.05$) and sex ($X^2=0.89$, $P > 0.05$) table (1), (2).

Table (3): shows **clinical and laboratory variables** of the patients.

As regard RF, 23 patients (77%) were RF-positive while 7 patients (23%) were RF-negative.

Social variables:

- Social index score ranged from 10.5 to 36 (21.6 ± 7.5).
- Social support list 12-Interaction score ranged from 16 to 47 (27.5 ± 8.7).

As regard the social level, 12 patients (40%) had a low social level, 14 patients (47%) had an intermediate social level and 4 patients (13%) had a high social level.

Psychological variables:

- Beck Depression Inventory score of the patients ranged from 4 to 15 (10.4 ± 3) while that of the controls ranged from 2 to 13 (6.7 ± 3) with a highly statistically significant difference between both groups, where $t = 4.4$ and $P < 0.001$, table (4).
- **Table (5)** shows distribution of studied groups according to BDI score.
- Level of anxiety was determined using STAI form (A) and form (B), regarding STAI form (A) score of the patients ranged from 30 to 68 (52.2 ± 10.6) while that of the controls ranged from 22 to 73 (38.3 ± 13.8) with a highly statistically significant difference between both groups, where $t = 4$ and $P < 0.001$, table (4).

On the other hand STAI form (B) score of the patients ranged from 35 to 70 (53.2 ± 11.5) while that of the controls ranged from 20 to 68 (38 ± 13.6) with a highly statistically

significant difference between both groups, where t = 4.3 and P < 0.001, table (4).

Sleep Quality Index score:

As regard the score of SQI of the patients ranged from 6 to 15 (10.8 ± 3.1) while that of the controls ranged from 2 to 12 (5.2 ± 2.6) with a highly statistically significant difference between both groups, where t=6.7 and P < 0.001, table (4).

Multi-assessment fatigue scale scores:

The mean severity score of the MAF scale of the patients was (6.9 ± 1.4) while that of the controls was (3.7 ± 1.6).

The mean degree score of the MAF scale of the patients was (6.6 ± 1.4) while that of the controls was (4.2 ± 1.6).

The mean distress score of the MAF scale of the patients was (7.3±1.5) while that of the controls was (5.0 ± 1.5).

The mean impact score of the MAF scale of the patients was (7.6±1.1) while that of the controls was (5.0 ± 1.6).

The mean timing score of the MAF scale of the patients was (6.7±1.5) while that of the controls was (5.1 ± 1.5).

The mean total score of the MAF scale of the patients was (34.9±1.5) while that of the controls was (23.1 ± 7.3).

There were highly statistically differences between both groups regarding the mean of the five dimensions and the total scores of the MAF scale, where $P < 0.001$ table (6), figure (1).

Table (7): shows comparison between the scores in the five dimensions of the MAF scale of patients of both sexes.

There is a non significant statistically difference between both sexes of patients regarding the scores of the five dimensions of the MAF scale, where $P > 0.05$.

Table (8): shows comparison between patients of both sexes regarding the impact score of the MAF scale.

There are highly statistically significant differences between males and females regarding the impact scores of the MAF scale on work and shopping, where $P < 0.001$.

Table (9): shows comparison between married and unmarried patients regarding the total score of the MAF scale.

There is a non statistically significant difference in the total score of the MAF scale regarding marital status, where $t = 0.1$ and $P>0.05$.

Table (10): shows comparison between different social levels of patients regarding the total score of the MAF scale.

There is a non statistically significant difference between different social levels of patients regarding the total score of the MAF, where $F = 1.14$ and $P > 0.05$.

Table (11): shows comparison between sero-positive and sero-negative patients regarding the total score of the MAF scale.

There is a non statistically significant difference in the total score of the MAF score regarding RF, where $t = 1.3$ and $P > 0.05$.

Table (12), figure (2,3,4, 5, 6, 7, 8, 9, 10): show correlation coefficient between the total score of the MAF scale and different disease related variables.

There are highly statistically significant positive correlations between SQI score, BDI score, STAI form (A) and form (B) scores, functional disability score, pain score, morning stiffness duration, articular index score and the total score of the MAF scale ($P < 0.001$). There are highly statistically significant negative correlations between grip strength score, haemoglobin level and the total score of the MAF scale, $P < 0.001$.

Non significant correlations between age, sex, marital status, disease duration, SSL12-I score, social index score, RF, and the total score of the MAF score ($P > 0.05$).

Table (13): shows bivariate correlation coefficient between different studied variables in patients.

As regard SQI and BDI scores there are highly statistically significant positive correlations with morning stiffness duration, articular index score and ESR ($P<0.001$). On the other hand there are highly negative correlations with grip strength and haemoglobin level ($P < 0.001$).

Regarding STAI form (A) score there is a highly significant positive correlation with articular index score ($P < 0.001$). Highly significant negative correlations with grip strength score and haemogbloin level ($P<0.001$). Significant positive correlations with morning stiffenss duration and ESR ($P < 0.05$).

There is a highly significant positive correlation between STAI form (B) score and articular index score ($P< 0.001$). A highly significant negative correlation with haemoglobin level ($P < 0.001$). A significant positive correlation with morning stiffness duration ($P < 0.05$). A significant negative correlation with grip strength score ($P < 0.05$). A non significant correlation with ESR ($P > 0.05$).

Regarding SSL12-I score there is a negative significant correlation with grip strength ($P < 0.05$). A non significant correlation with morning stiffness duration, articular index score, ESR and haemobloin level ($P>0.05$).

Table (1): Comparison between patients and controls regarding age.

	Patients (30) $\bar{X} \pm SD$	Controls (20) $\bar{X} \pm SD$	t
Age	44.3 ± 12.2	44.5 ± 12.7	0.9

P > 0.05 Non significant

Table (2): Comparison between patients and controls regarding sex.

	Patients (30)		Controls (20)		X^2 test
	No.	%	No.	%	
Sex					
Female	23	77	15	75	
Male	7	23	5	25	0.9

P > 0.05 Non significant

Table (3): Clinical and laboratory variables of the patients.

Variable	Range	$\bar{X} \pm SD$
Disease duration	3-30 years	11.7 ± 7.3 years
Pain score	0.8 – 2.8	1.8 ± 0.6
Functional disability score	0.9 – 2.4	1.7 ± 0.5
Morning stiffness duration	15-120 min	57.7 ± 35.3
Articular index score	8-25	18.2 ± 5.4
Mean grip strength score	28-69 mmHg	46.5 ± 11.7
ESR (1^{st} hour)	15-199 mm	56 ± 23.2 mm
Haemoglobin level	7.3-12 gm/dl	9.7 ± 1.5 gm/dl

Table (4): Comparison between patients and controls regarding the total score of the MAF scale, SQI score, score of BDI and scores of STAI (A) and (B).

	Patients (30) $\bar{X} \pm SD$	Controls (20) $\bar{X} \pm SD$	t
SQI score	10.8 ± 3.1	5.2 ± 2.6	6.7
BDI score	10.4 ± 3.0	6.65 ± 3.0	4.4
STAI (A) score	52.2 ± 10.6	38.3 ± 13.8	4.0
STAI (B) score	53.2 ± 11.5	37.9 ± 13.6	4.3

$P < 0.001$ Highly significant

Table (5): Distribution of studied groups according to Beck Depression Inventory.

	No depression		Depression					
			Mild		Moderate		Severe	
	No.	%	No.	%	No.	%	No.	%
Patients (30)	-	-	6	20%	19	63%	5	17%
Controls (20)	2	10%	12	60%	6	3%	-	-

Table (6): Comparison between patients and controls regarding the scores of five dimensions of the MAF scale.

	Patients (30) $\bar{X} \pm SD$	Controls (20) $\bar{X} \pm SD$	t
Severity score	6.9 ± 1.4	3.7 ± 1.6	7.5
Degree score	6.6 ± 1.4	4.2 ± 1.6	5.6
Distress score	7.3 ± 1.5	5.0 ± 1.5	5.5
Impact score	7.6 ± 1.2	5.1 ± 1.6	6.3
Timing score	6.7 ± 1.5	5.1 ± 1.5	4.0
Total MAF score	34.9 ± 1.5	23.1 ± 7.3	6.4

$P < 0.001$ Highly significant

Table (7): Comparison between the scores in five dimensions of the MAF scale of patients of both sexes.

Sex	Severity score $\bar{X} \pm SD$	Degree score $\bar{X} \pm SD$	Distress score $\bar{X} \pm SD$	Impact score $\bar{X} \pm SD$	Timing score $\bar{X} \pm SD$
Female	6.8 ± 1.3	6.6 ± 1.4	7.2 ± 1.5	7.5 ± 1.2	6.6 ± 1.4
Male	7.1 ± 1.7	6.4 ± 1.3	7.9 ± 1.5	8.0 ± 1.4	7.0 ± 1.7
t	0.5	0.3	0.8	0.8	0.4

$P > 0.05$ Non significant

Table (8): Comparison between patients of both sexes regarding the impact score of the MAF scale.

Activity	Sex	$\bar{X} \pm SD$	t	P
House hold chores	Female	7.5 ± 1.2		> 0.05
	Male	7.3 ± 2.2	0.4	NS
Cook	Female	6.1 ± 1.3		> 0.05
	Male	6.4 ± 1.8	0.5	NS
Bathe or wash	Female	7.4 ± 1.4		> 0.05
	Male	8.3 ± 1.1	1.6	NS
Dress	Female	7.3 ± 1.2		> 0.05
	Male	8.1 ± 1.5	1.5	NS
Work	Female	6.8 ± 1.4		< 0.001
	Male	9.6 ± 1.1	5.4	HS
Visit or socialize friends or family	Female	7.1 ± 1.8		> 0.05
	Male	8.3 ± 1.5	1.7	NS
Engagement in recreational activities	Female	7.3 ± 1.4		>0.05
	Male	8.3 ± 1.5	1.5	NS
Shopping and do errands	Female	8.9 ± 1.3		<0.001
	Male	7.0 ± 1.4	3.4	HS
Walk	Female	6.3 ± 1.7		>0.05
	Male	7.3 ± 1.5	1.4	NS
Exercise other than walk	Female	9.2 ± 1.1		>0.05
	Male	9.6 ± 1.1	0.8	NS
Total impact score	Female	7.5 ± 1.2		>0.05
	Male	8.0 ± 1.4	0.8	NS

NS Non significant

HS Highly significant

Table (9): Comparison between married and unmarried patients regarding the total score of the MAF scale.

Marital status	No.	Total score of the MAF scale $\bar{X} \pm SD$	t
Married	19	34.8 ± 6.2	0.1
Unmarried	11	35.0 ± 5.1	

P > 0.05 Non significant

Table (10): Comparison between different social levels of patients regarding the total score of the MAF scale.

Social level	No.	Total score of the MAF scale $\bar{X} \pm SD$	F-test
Low	12	37.3 ± 5.6	1.1
Intermediate	14	33.0 ± 4.0	
High	4	32.9 ± 9.3	

P > 0.05 Non significant

Table (11): Comparison between sero +ve and sero –ve patients regarding the total score of the MAF scale.

Total score of the MAF scale in sero +ve		**Total score of the MAF scale in sero –ve**		**t**
No.	**$\bar{X} \pm SD$**	**No.**	**$\bar{X} \pm SD$**	
23	35.6 ± 5.9	7	32.5 ± 4.7	1.3

P > 0.05 Non significant

Table (12): Correlation coefficient between the total score of the MAF scale and different disease related variables.

Total score of the MAF scale / Disease related variables	r	P
Age	0.1	> 0.05
Sex	0.2	>0.05
Marital status	0.02	> 0.05
Disease duration	0.04	> 0.05
SQI score	0.8	< 0.001
Pain score	0.8	< 0.001
Functional disability score	0.7	<0.001
Social index score	0.3	> 0.05
SSL12-I score	0.3	> 0.05
BDI score	0.8	< 0.001
STAI form (A) score	0.7	< 0.001
STAI form (B) score	0.7	< 0.001
Morning stiffness duration	0.8	< 0.001
Grip strength score	-0.8	<0.001
Articular index score	0.8	<0.001
ESR	0.7	< 0.001
RF	0.2	> 0.05
HB	-0.7	< 0.001

P > 0.05 Non significant

P < 0.001 Highly significant

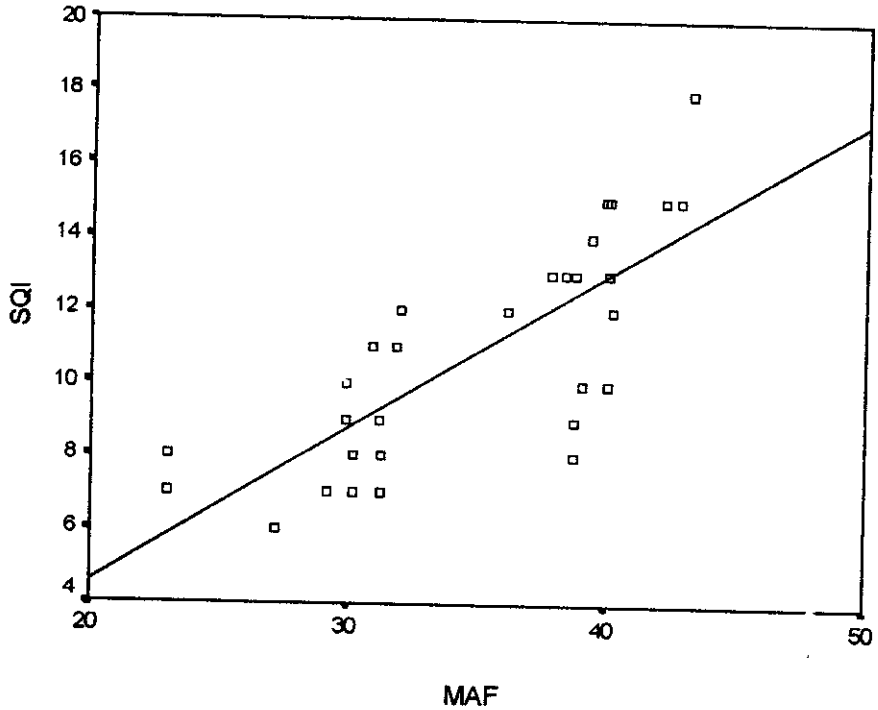

Fig. (2): Correlation between the score of MAF scale and score of SQI in patients (30).

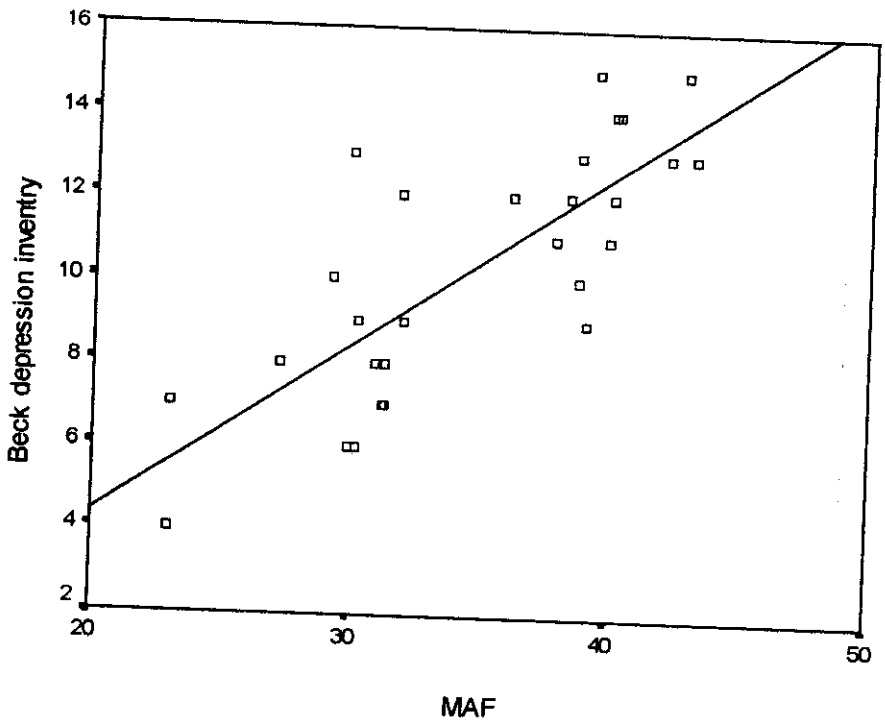

Fig. (3): Correlation between the score of MAF scale and BDI score in patients (30).

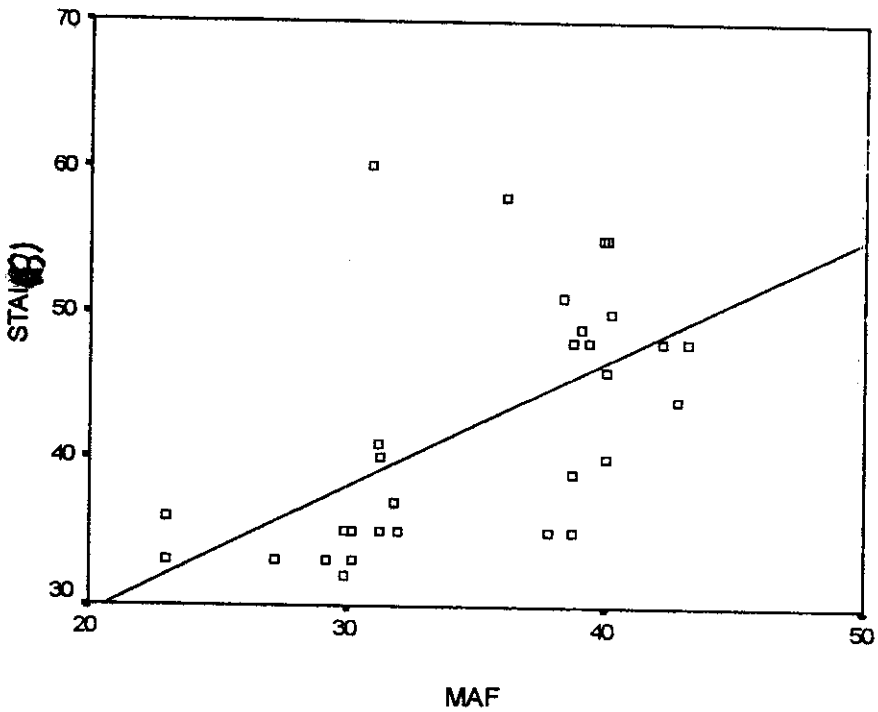

Fig. (5): Correlation between the score of MAF scale and STAI (B) in patients (30).

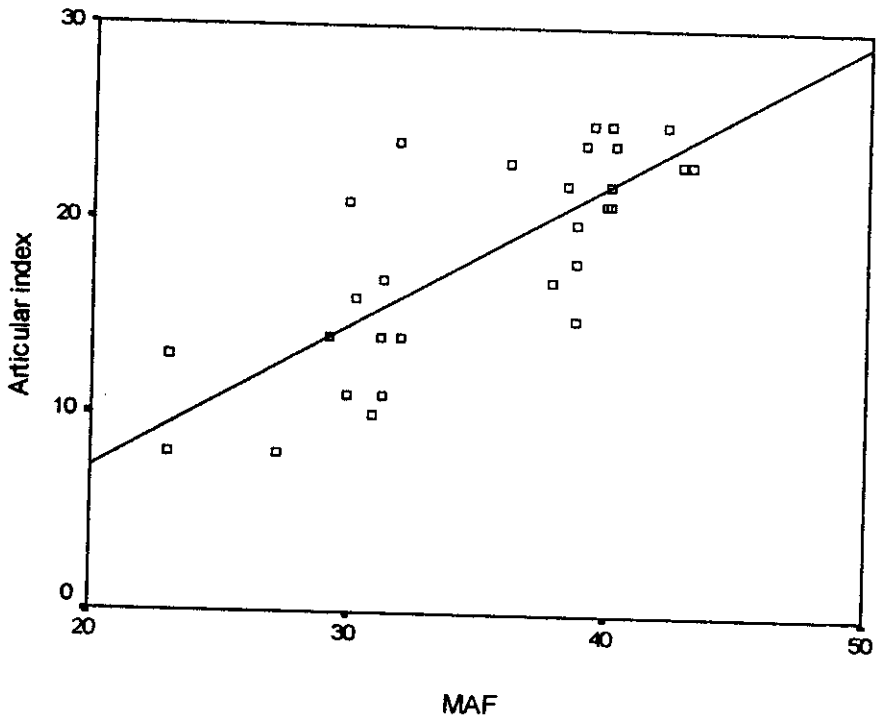

Fig. (6): Correlation between the score of MAF scale and articular index

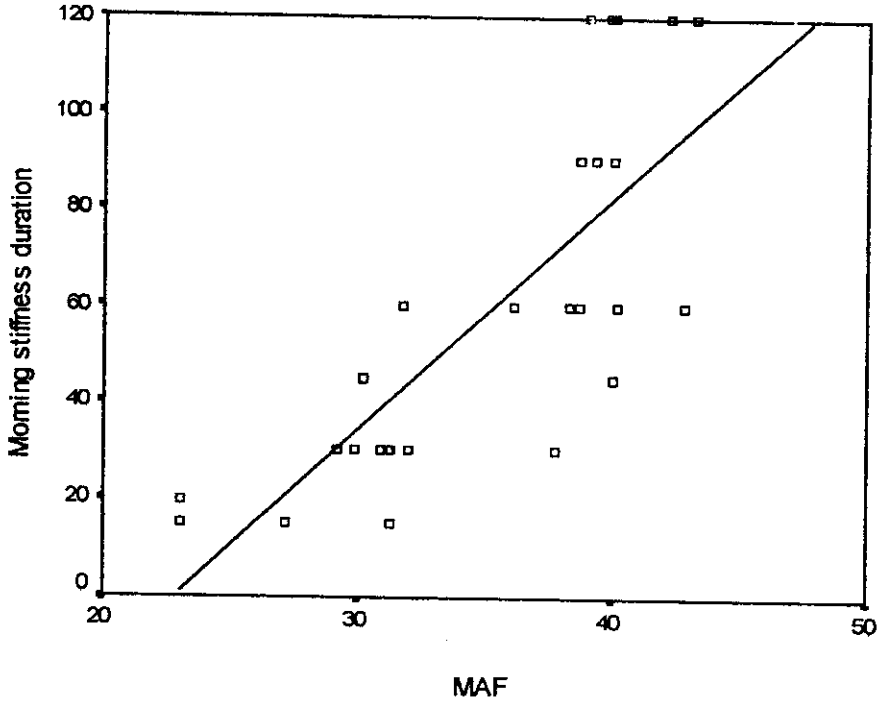

Fig. (7): Correlation between the score of MAF scale and morning stiffness duration

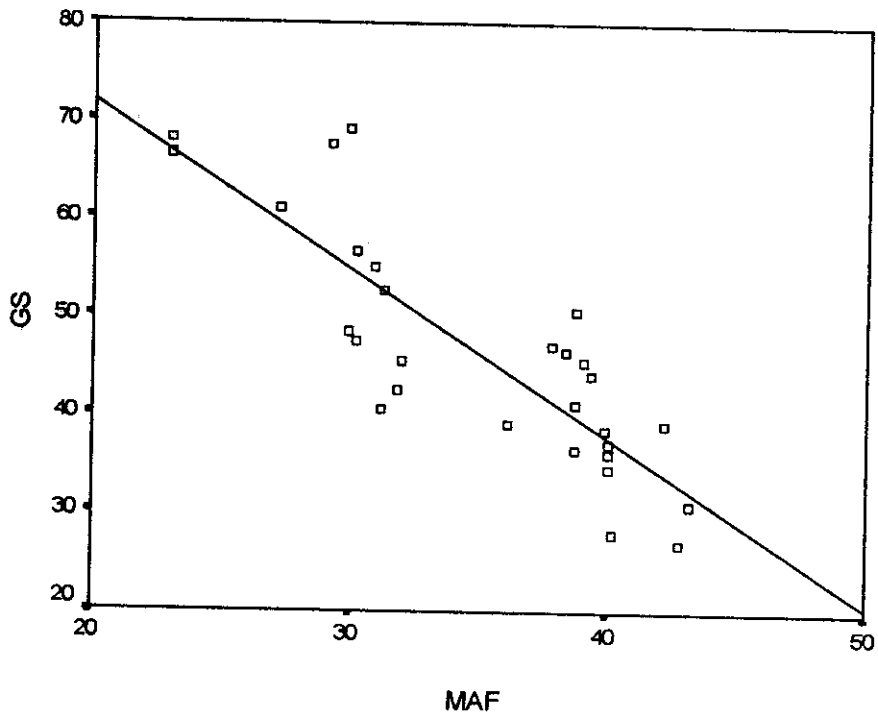

Fig. (8): Correlation between the score MAF scale and grip strength

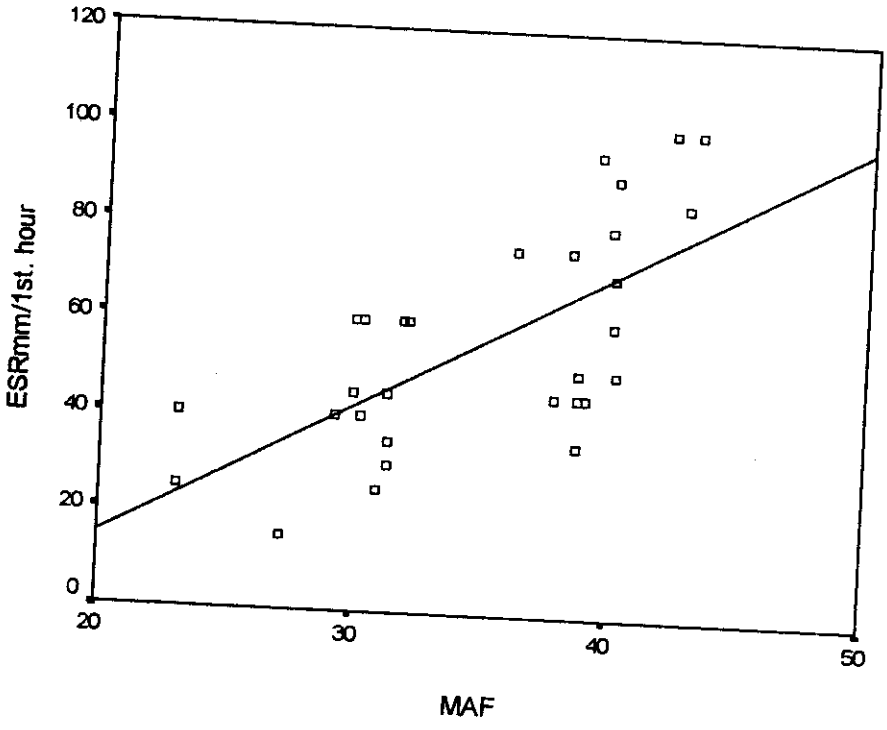

Fig. (9): Correlation between the score of MAF scale and ESR (mm/1st hour)

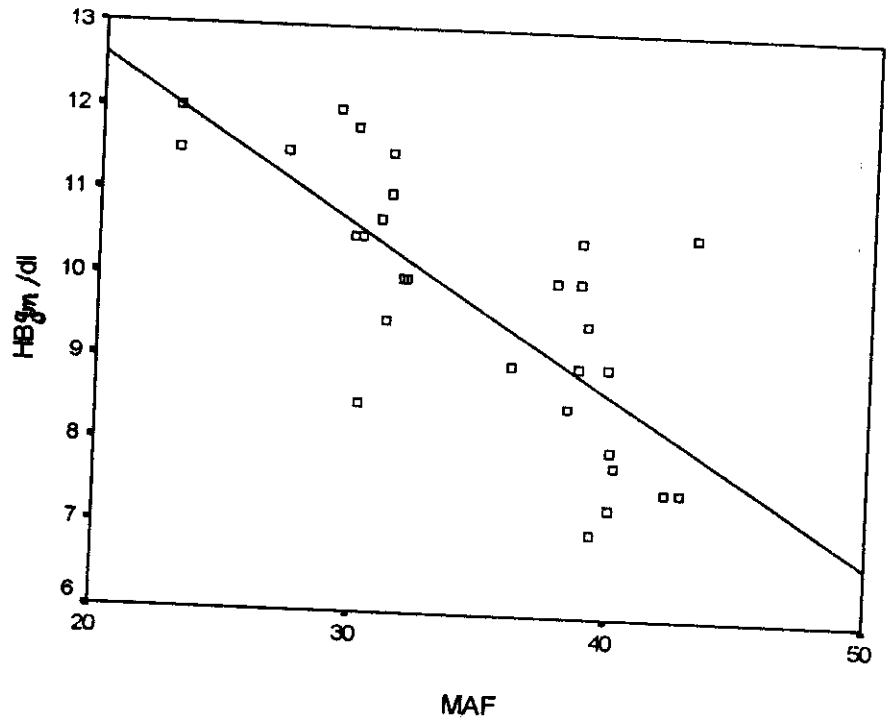

Fig. (10): Correlation between the score of MAF scale and haemoglobin (gm/dl) level in patients (30).

Table (13): Bivariate correlation coefficient between different studied variables in patients.

	Morning stiffness duration	Articular index score	Grip strength score	ESR	HB
SQI score	0.7**	0.7**	-0.7**	0.8*	-0.6*
BDI score	0.5**	0.8**	-0.7**	0.7*	-0.6**
STAI form (A)	0.4*	0.5**	-0.5*	0.4	-0.6*
STAI form (B)	0.4	0.5**	-0.5	0.1	- 0.6**
SSL12-I score	0.2	0.2	-0.4*	0.1	0.1

** Highly significant $P < 0.001$

* Significant $P < 0.05$