

# THE RELATIONSHIP BETWEEN CAREGIVERS' LEVEL OF EXPRESSED EMOTION AND FREQUENCY OF ADMISSION AMONG SCIZOPHRENIC PATIENTS

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## ABSTRACT

*The aim of the present study investigates the relationship between caregivers 'level of expressed emotion (EE) and frequency rate of admission among their schizophrenic patients. The research question: Is there a relationship between caregivers 'level of expressed emotion( EE) and frequency rate of admission among their schizophrenic patients. The rational of this research is increased the frequency rate of admission among their schizophrenic patients in the hospital. There are a lot of studies were done about the relation of schizophrenic patient recurrent of admission and caregiver highly expressed emotion among many countries. In Saudi Arabia is no study has done about the relation of high expressed emotion and frequency rate of admission among schizophrenic patients. The design is descriptive quantitative exploratory study. The sample: are 60 primary caregivers of schizophrenic patients who are living with patient most of the time in same place. Setting: outpatient clinic at Al- Amal psychiatric complex. The procedure of study explained to the participant and also the written form consent obtained. Sample selection: Inclusion criteria of caregiver are (1) their ages range between 18 and 60 years old (2) they live with the patient in same place in the last year (3) they are able to read & write. Tool used: The caregivers' level of expressed emotion will be assessed by Family Attitude Scale (FAS). It is a 30 negative and positive items scale. It divided into three subscale containing : 7 sentences about hostile, 14 about criticism and 9 for distancing. The result of study: There is only relationship between caregiver' total of expressed emotion according to (FAS) and duration of patient disorder.*

**Keyword:** - Expressed emotion, Caregiver, Frequency of admission, Schizophrenia

## 1. Introduction

Schizophrenic and bipolar disorders are taken the highest percentage of caregiving according to psychiatric disorders<sup>(2)</sup>. Mental health problems are more than 15% of burden disorders, from all diseases and mental illness are burden than cancer<sup>(1)</sup>.

Some psychiatric patients after hospitalization or following up of treatment they back to the hospital plenty of times without benefit from the last time treatment. The highest cases of readmission are schizophrenia, delusional, and schizotypal disorders comparing with other psychiatric disorders<sup>(14)</sup>. The factors that affect the relapse for being increased are non or poor adherence antipsychotic medication, stressors, depression, and substance abuse<sup>(16,17)</sup>.

It is significant relation between the degree of burden and caregivers age, gender, and level of education<sup>(10)</sup>.

The relation is significant difference with caregiver highly expressed emotion and highly patients relapse rates; specifically the increasing of patients rate of relapse and increasing the emotional over involvement and criticism comments<sup>(8)</sup>. The result shows that (EOI) Emotional Over involvement likely to be the strong risk factor of schizophrenic patient relapse<sup>(9)</sup>. The low expressed emotion family is more aware about schizophrenic symptoms than high expressed emotion family<sup>(22)</sup>.

The highest prevalence of violence among family found in through parents, on the other hand the lowest prevalence is in old brother and sister<sup>(12,13)</sup>. The results have shown the brothers and sisters are more responsible for social activation of the patients<sup>(11)</sup>. The studies have shown that the education of family about the disorder will reduce negative emotion of family. Such as critical and judgmental statement and increase positive emotion like support patient<sup>(2)</sup>. The present study investigates the relationship between caregivers 'level of expressed emotion (EE) and frequency rate of admission among schizophrenic patients.

### 1.1 Research Aim

**The present study aims:** to investigate the relationship between caregivers' level of expressed emotion (EE) and frequency rate of admission among schizophrenic patients.

**Specific objectives:**

- 1- Describe the level of expressed emotion of caregiver according to Family Attitude Scale (FAS).
- 2- Explore the relation between characteristics of caregiver and level of expressed emotion of caregiver by FAS scale.
- 3- Assess the relation between patient' characteristics and level of expressed emotion of caregiver by FAS scale.
- 4- Investigate the relation between caregiver's level of expressed emotion (FAS) and clinical history of patient.

**1.2 The research question:** is there a relationship between caregivers 'level of expressed emotion( EE) and frequency rate of admission among their schizophrenic patients.

### 1.3 Material and Methods:

**Research Design**

A descriptive quantitative exploratory design will be used to conduct this study.

**Setting**

It is at outpatient clinic at Al-Amal Complex for Mental Health, Dammam, Saudi Arabia.

**Subjects of the study**

A sample convenient selected 60 caregivers from outpatient department at Al-Amal Complex for Mental Health, Dammam, Saudi Arabia. The study purpose explained to the participants and informed them about form consent.

**Inclusion criteria of caregivers**

- (1) their ages are between 18 and 50 years old
- (2) they live with patient in same place in the last three months
- (3) they are able to read

**Exclusion criteria of caregivers**

Significant intellectual handicap, or diagnosis of psychiatric disease.

### Inclusion criteria of patient

- (1) out of hospital for at least 4 weeks and considered stabilized by his or her treating psychiatrist
- (2) diagnosis of schizophrenia according to the ICD-10 criteria or DSM-IV symptoms
- (3) they are first admission and recurrent of admission to hospital more than one time.
- (4) their age are from 18 to 50.

#### **Exclusion criteria of patient**

Suffered substance abuse or had major disabilities, organic brain disorder, dementia or delirium.

#### **Data collection tool:**

The caregivers' level of expressed emotion will be evaluated by Family Attitude Scale (FAS). Family Attitude scale has 30 negative and positive items. The negatives Items are scored (4) every day (3) most days (2) some days (1) very rarely (0) never and reverses the scoring to the positive items; The total score arrange between 0 to 120. Additionally the patients data will be taken from their caregivers and the patient file.

Family Attitude Scale (FAS) is excellent psychometric assessment of caregiver expressed emotion toward schizophrenic patient, because of associating FAS with Camberwell Family Interview (CFI). When it shows higher scores in hostility and criticism in CFI, it shows higher scores of negative comments in FAS<sup>(22)</sup>. The optimal cutoff point is  $> 51$  to determine level of expressed emotion and for prediction<sup>(23)</sup>. In Chinese version of FAS, it explores three analyzing factors of scale 7 sentences are hostile, 14 are about criticism and 9 for distancing<sup>(24)</sup>. It will be self-reported questionnaire with caregiver in outpatient department. The tool will be translated from English to Arabic language. The Family Attitude Scale is divided into three subscales only for describing the subscales as hostility, criticism, and distancing. It was taken from Chinese version of (FAS-C)<sup>(21)</sup>. It will not considered this subscale into relation of this study.

#### **Pilot study:**

The Family Attitude Scale is translated to Arabic language forward and backward; first it is translated by English translation specialist and me, then I sent it to my supervisor and sub-supervisor. After the pilot study group of 10 percipients, again I resend it to my supervisors and translator to review it, then they agreed of the translation.

#### **Statistical analysis:**

The data analysis was done by using SPSS version 22 software. Descriptive statistics were used for describing caregiver level of expressed emotion by using Family Attitude Scale (FAS) and patient and characteristics socio-demographic data also for examination clinical history of patient. Frequency and percent were done for qualitative variables and median and Inter Quartile Range for quantitative variable if the variable is abnormally distributed. For correlation test, it was used correlation coefficient (  $r$  ) and probability of chance (  $p$  ) for test of significant.

The test of significance was done for comparing variables, if the Chi-Square is not valid when the all cells  $\geq 25\%$  and expected count is more than 1 the Fisher's Exact Test and Continuity Correction will be used. The Fisher's Exact Test was used when the all cells  $> 25\%$  and Continuity Correction was used when all cells  $= 25\%$ . If the probability of chance is  $\leq 0.05$  the test will be statically significant. For high statically significant the  $p \leq 0.01$ . For noticing, the distribution of all caregivers answers of scoring percentages according to the Family Attitude Scale into three subscales, this is only for describing and explaining the most frequent percent of caregivers' answers; and it was not considered of the relation of variables of this study and the aim; only it was taken the (FAS) according to the author method, it is taken all 30 sentences and reversed the scores of the 10 positive sentences without determining the three subscales.

## **2. Result**

### **(2.1) Distribution of Caregiver socio-demographic data:**

The total caregivers are  $N=60$ . More than two thirds of caregivers were male (71.7%) and less encountered were female (28.3%). The most of participants' nationality were Saudi (98.3%) and only one was Yamani related to non-Saudi and In related with caregiver residence, the vast of majority were from Easter provenance (96.7%). The highest frequency of relatives were in siblings (brothers and sisters) (43.3%) then the second highest was in parents (23.3 %), then slightly lower offspring (son and daughter), and the lowest rate in other (sister in low, cousin, uncle). Out of 60 (38.3%) were secondary and had studied up to bachelor degree level, it was one sixth intermediate (16.7%), the least rates were primary and illiterate (5%). According to employment status (43.3%) caregivers were employed and slightly higher were unemployed (56.7%).

### **(2.2) Distribution of Patient socio-demographic data:**

Out of 60 patients, the male and female were more likely to equally rate; the female were (53.5%) and male were (46.7%), almost all of the patients were from Saudi (100%), Most of them from eastern providence 59(98.3%). On Marital status, the highest percent were single (60%), then sharp decrease were married (26.7%), the few of them were divorced (11.7%) and only one was widowed (1.7%). On literacy level of patients, about half of them were secondary (48.3%), more than one fourth were intermediate (28.3%) a few of them were illiterate, and the lowest rate were primary and bachelor degree . According to patients employment status a vast majority were unemployed (96.7%).

**Table 1: Distribution of the level of expressed emotion of caregivers according to (FAS) scale**

	Frequency (N)	Percent (%)
<b>Low expressed emotion</b>	n=51	85%
<b>High expressed emotion</b>	n=9	15%
<b>Total</b>	60	100%

**(2.3) The description of level of expressed emotion of caregiver according to Family Attitude Scale (FAS):**

Table 1 and is shown the frequency and rate of level of caregiver' expressed emotion. Results of descriptive statistics indicate that majority of caregivers were designated as low expressed emotion (EE) (n=51, 85%) as compared to minority of them were high expressed emotion (EE) (n=9, 15 %). Minimum is 1 in low expressed emotion and maximum of high is 90 of expressed emotion and according to Family Attitude Scale the minimum reach from 0 to the maximum reach to 120 and the cutoff point of high of expressed emotion > 51. This equation is the dependable method for assessing expressed emotion and related with other dependent variables in this study. The equation is taking the all 30 sentences and reversed the 10 positive sentences from them to explore the cutoff point of level of expressed emotion.

**Table 2: Distribution of all caregivers answers of scoring percentages according to the Family Attitude Scale into three subscales**

Expressed emotion subscales	Percent of all participants Scoring %				
	4	3	2	1	0
	Every day- most days - some days - very rarely- never				
<b>1- Hostility</b>					
(5) Shout at him	1.7	8.3	21.7	18.3	50
(6) Wish he was not here	8.3	1.7	16.7	5	68.3
(7) Driving me crazy	1.7	3.3	5	6.7	83.3
(8) Lost my temper with him	5	3.3	25	16.7	5
(14) Argue with him	11.7	5	40	5	11.7
(18) He is infuriating	15	5	28.3	16.7	35
(19) Saying nasty or sarcastic things to him	0	1.7	8.3	13.3	76.7
<b>2- Criticism</b>					
(2) Makes me feel drained	26.7	8.3	20	3.3	41.7
(3) Ignores my advice	23.3	16.7	38.3	6.7	15
(4) Really hard to take	30	11.7	13.3	10	35
(10) Sick of looking after him	13.3	11.7	20.0	3.3	51.7
(11) Causes me problems	1.7	1.7	21.7	3.3	71.7
(13) A real burden	13.3	0	8.3	5	73.3
(16) Can cope with him	75	10	6.7	5	3.3
(17) Living with him is too much for me	15	3.3	8.3	11.7	61.7
(22) Wish he to leave me alone	8.3	6.7	25	5	55
(23) Takes me for granted	15	1.7	16.7	11.7	55

(24) Can control himself	35	8.3	40	3.8	13.3
(26) Harder to live with	11.7	6.7	6.7	5	70
(27) Very frustrated with him	6.7	10	26.7	10	46.7
(29) Disappointed with him	10	3.3	21.7	8.3	56.7
3- Distancing					
(1) Good to have him around	68.3	5	21.7	1.7	3.3
(9) Easy to get along with	61.7	8.3	18.3	6.7	5
(12) Enjoy being with him	68.3	3.3	23.3	0	5
(15) Feel very close to him	66.7	1.7	18.3	6.7	6.7
(20) Appreciates what I do for him	65	0	20	0	15
(21) Becoming easier to live	70	1.7	18.3	0	3
(25) He is hard to get close	6.7	8.3	16.7	6.7	61.7
(28) He makes a lot of sense	65	3.3	10	8.3	13.3
(30) Tries to get along with me	48.3	16.7	16.7	6.7	11.7

**Table 3: The highest rate among caregivers answers into three subscale**

	Distancing	Criticism	Hostility
<b>The highest percentage among sentences</b>	(21) Becoming easier to live (1) Good to have him around (12) Enjoy being with him (15) Feel very close to him (28) He makes a lot of sense (20) Appreciates what I do for him (9) Easy to get along with	(16) Can cope with him (4) Really hard to take (3) Ignores my advice (2) Makes me feel drained	(14) Argue with him (18) He is infuriating (6) Wish he was not here

Table 2 is shown the describing of frequent percent of each score of caregivers' answers of all sentence of (FAS). The distribution was done into three subscale according to Chinese version of Family Attitude Scale. (FAS-C). For scoring, it was considered the (4) score is action happened every day, and this results was focused to the percent of all caregivers.

Table 3 is illustrated the highest percent according to (score 4) of the sentences and the distribution of subscale according to the highest frequent percent to the lowest percent. It shown that the distancing is highest percent among subscales. For example, sentence (21) "Becoming easier to live" 70% of caregivers has answered it. The sentence 1 and 12 has taken the same percent 68.3% then the other sentence like 15,28,20.9 the percent arrange from 66.7% to 61.7%. These sentences appear as positive sentences like coping with patient and want be around with him and that sentences might be agree with our study of level of expressed emotion, the low of expressed emotion is the highest percent of caregivers. According to negative actions of caregivers the criticism seems higher than hostility.

For instance, the sentence (16) "Can cope with him" it was answered of three forth of the caregivers that are done every day the percent was 75%. Also this sentence seems positive of coping. The sentence (4) "Really hard to take" this sentence is meaning negatively when caregiver suffering of to deal with patient and more than one fourth of caregiver answered by every day is done 30%. Also the sentence (3) Ignores my advice is taken only 15% in score (0) in never and take 38 % for some days and that seems that caregiver is suffering of patient ignore their advice. For comparing, the hostility is lower than criticism according to the percent of 4 score. For example, the sentences: (14) "Argue with him" (18) "He is infuriating" (6) "Wish he was not here" the percent of them are arranged from 15% to



8.3% on every day actions of caregivers. According to exhibition of all results, the hostility is lowest subscale that caregiver was using with communicate of schizophrenic patient.

**(2.4): The relation between independent variable and dependent variables**

**Table 4: The relation of caregiver' level of expressed emotion according to (FAS) and caregiver characteristics**

Caregiver Characteristics	Frequency( % ) N=60 (100 %)	Low expressed emotion N= 51 (85%)	High expressed emotion N=9 (15%)	Test of significance
<b>Caregiver gender</b>				
Male	43 ( 71.7 % )	38 ( 63.3 % )	5 ( 8.3 % )	Yates correction = 0.581 P = 0.4
Female	17 ( 28.3 % )	13 ( 21.7 % )	4 ( 6.7 % )	
<b>Patients' relatives</b>				
parents	14 ( 23.3 % )	12 ( 20 % )	2 ( 3.3%)	Yates correction = 0.441 P = 0.5
partner	10 ( 16.7 % )	7 ( 11.7 % )	3 ( 5%)	
sibling	26 ( 43.3%)	23 ( 38.3 % )	3 ( 5%)	
off spring	7 ( 11.7%)	7 (11.7 % )	0	
other	3 ( 5%)	2 ( 3.3 % )	1 ( 1.7%)	
<b>Caregiver marital status</b>				
Married	46 ( 76.7%)	40 (66.7%)	6 (10%)	X <sup>2</sup> = 6.792 P = 0.7
Single	10 (16.7%)	9 (15%)	1(1.7%)	
Divorce	1 ( 1.7%)	1(1.7)	0	
Widowed	3 ( 5%)	1(1.7)	2 (3.3%)	
<b>Caregiver education</b>				
Read and write	3 (5%)	3 ( 5%)	0	X <sup>2</sup> = 2.634 P = 0.6
Primary	4 (6.7%)	4( 6.7%)	0	
Intermediate	10(16.7)	8 (13.3%)	2 (3.3%)	
Secondary	23(38.3%)	18 ( 30 % )	5 (8.3%)	

Bachelor	20(33.3%)	18 (30%)	2 (3.3%)	
<b>Caregiver employing status</b>				
Employed	34 ( 56.7%)	28 ( 46.7%)	6 (10%)	Yates correction= 0.085  P = 0.7
Non-employed	26 (43.3%)	23 ( 38.3%)	3 (5%)	

Yates correction = continuous correction

P = probability of chance  $X^2$  = chi-Square

Table 4 is exhibited the caregiver characteristics with relation of low and high expressed emotion. First, the male caregivers is more than female as male has 71.7% and 28.3% for female. The male is more low expressed emotion than female in 63.3% from the total of low expressed emotion is 85%, for higher expressed emotion the male and female nearly equal of percent as male high expressed emotion 8.3% and female 6.7%, however the relation of caregiver gender and level of expressed emotion is not statically significant as Yates correction = 0.581 and  $p = 0.4$ . The most of participants' nationality were Saudi (98.3%) and only one was Yamani related to non-Saudi (1.7%). In related with caregiver residence, only two were from non-Eastern providence (3.3%) and a vast of majority were from Easter provenance (96.7%). The test of significant was not taken because the frequency of non-Saudi and non-eastern residence are very few.

The highest frequency of relatives were in siblings (brothers and sisters) caregiver (43.3%) then the second highest was in parents ( 23.3 %). Siblings are most of them were the highest in low expressed emotion (38.3 %). Yates correction = 0.441 and  $p = 0.5$  that is no relation of statically significant between patients' relatives and caregivers' level of expressed emotion.

On marital status the majority were married (76.7%), a few of them were single (16.7%), only 3 were widowed (5.0%) and only one were divorced (1.7%). The percent of low expressed emotion for married is 66.7% of caregiver no percent of high expressed emotion of divorce caregiver. The relation of caregiver marital status and level of expressed emotion is not statically significant as  $X^2 = 6.792$  and  $P = 0.7$ . Out of 60 (38.3%) were secondary and had studied up to bachelor degree level (33.3%), it was one sixth intermediate (16.7%) , the least rates were primary (6.7%) and illiterate (5%).

According to employment status (43.3%) caregivers were employed and slightly higher were unemployed (56.7%). The secondary as same as bachelor caregivers are equal in low expressed emotion as 30%. But the secondary caregiver is higher than of bachelor of high expressed emotion, the secondary is 8.3% and bachelor is 3.3%. it is not statically significant as  $X^2 = 2.634$  and  $P = 0.6$ .

The finally according to caregiver employing status the employee up to half of caregivers 56.7% is near percent of non-employed as 43.3%. In Yates correction = 0.085 and  $p = 0.7$ , it is not statically significant. The conclude result is no relation of caregiver characteristics and level of expressed emotion.

**Table 5: The relation of caregiver's level of expressed emotion according to ( FAS) and patient characteristics**

Patient Characteristics	Frequency( % ) N=60 (100%)	Low expressed emotion N=51 (85%)	High expressed emotion N=9 (15%)	Test of significance
<b>Patient gender</b>				
Male	28 ( 46.7%)	21 (35%)	7 (11.7%)	FETP = 0.07
Female	32 ( 53.3%)	30 (50%)	2 (3.3%)	
<b>Patient marital status</b>				
Married	16 (26.7%)	12 (20%)	4 (6.7%)	X <sup>2</sup> = 2.702 P = 0.4
Single	36 (60%)	31 ( 51.7%)	5 (8.3%)	
Divorce	7 (11.7%)	7 ( 11.7%)	0	
Widowed	1 (1.7%)	1 ( 1.7%)	0	
<b>Patient education</b>				
Read and write	8 (13.3%)	8 (13%)	0	X <sup>2</sup> = 4.509 P = 0.3
Primary	4 (6.7%)	4 (6.7%)	0	
Intermediate	17 (28.3%)	15 (25%)	2 (3.3%)	
Secondary	29 ( 48.3%)	22 (36.7%)	7 (11.7%)	
Bachelor	2 ( 3.3%)	2 (3.3%)	0	
<b>Patient employing status</b>				
Employed	2 (3.3%)	1 (1.7%)	1 (1.7%)	FETP = 0.3
Non-employed	58 (96.7%)	50 ( 83.3%)	8 ( 13.3%)	

FETP = Fisher's Exact Test    P = probability of chance    X<sup>2</sup> = Chi-Square

Table 5 is shown a total of 60 patients were included in this study in particular socio-demographic variables of the patients. Out of 60 patients, the male and female were more likely to equally rate; the female were (53.5%) and male were (46.7%), the male in low expressed emotion is lower than female as 21 ( 35%) that is mean the female is lower than male in high expressed emotion 2 ( 3.3%). The level of expressed emotion is not statically significant with patient gender as FETP = 0.07 is more than 0.05%.

Almost all of the patients were from Saudi (100%), Most of them from eastern providence 59 (98.3%), The test of significant was not taken because the frequency of non-Saudi and non-eastern residence are very few. On Marital status, the highest percent were single (60%), then sharp decrease were married (26.7%), the few of them were divorced (11.7%) and only one was widowed (1.7%). In high expressed emotion the single is higher than married



and divorce and widowed had not percent of high expressed emotion. It is not statically significant as  $X^2 = 2.702$  and  $P = 0.4$ .

On literacy level of patients, about half of them were secondary (48.3%), more than one fourth were intermediate (28.3%) a few of them were illiterate (13.3%), and the lowest rate were primary (6.7%), and only 2 got bachelor degree (3.3%), the level of expressed emotion is not statically significant with patient education as  $X^2 = 4.509$  and  $P = 0.3$ .

According to patients employment status a vast minority were employed (3.3%) and most of them were unemployed (96.7%). The secondary patient is higher than intermediate as 7 (11.7%) to 2 (3.3%), According to the employee vast of majority of patient are not employee 58 (96.7%) and most of the caregiver are lower level of expressed emotion, the test of significant is FETP = 0.3, it is not statically significant. The final result that there is no relationship between caregivers' level of expressed emotion and patient characteristics.

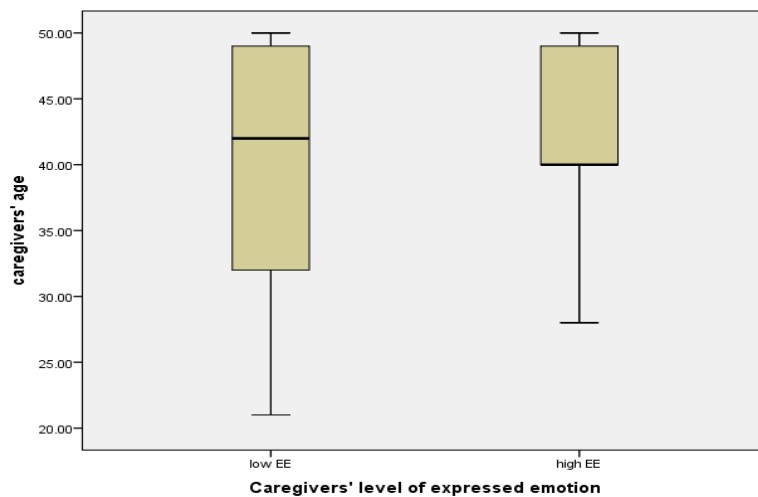
**Table 6: The correlation of caregiver' level of expressed emotion according to ( FAS) and patient and caregiver age**

Caregiver and patient age	Frequency( % ) N=60 (100%)	Low expressed emotion N=51 (85%)	High expressed emotion N=9 (15%)	Test of significance
<b>Caregiver age</b>				
Min-Max	21 – 50	21 – 50	28 – 50	
Mean $\pm$ SD	40.1 $\pm$ 9.2	39.8 $\pm$ 9.5	41.8 $\pm$ 8	Z = 0.458
Median ( IQR)	41.5 ( 16.8)	42 ( 18 )	40 (13.5)	P = 0.7
<b>Patient age</b>				
Min-Max	18 – 50	18 – 50	25 – 42	
Mean $\pm$ SD	35.1 $\pm$ 9.8	35.5 $\pm$ 10.3	32.7 $\pm$ 6.6	Z = 0.715
Median ( IQR)	36.5 ( 16.8)	37 ( 20)	33 ( 12.5)	P = 0.5

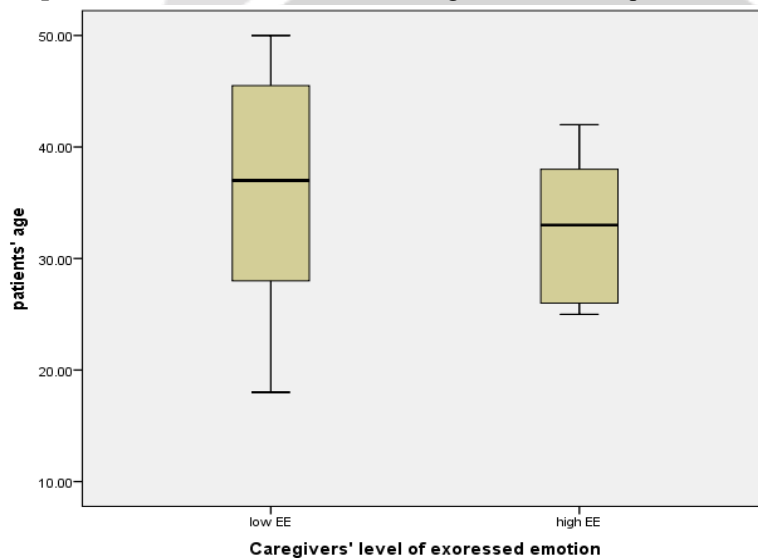
Z = Mann-Whitney Test  
SD = standard deviation

P = probability of chance  
(IRQ) = Inter Quartil Range

Table 6 is shown the difference of relation between caregiver and patient's age and caregiver level of expressed emotion. the caregiver age range from 21 to 50 years old. With average is 40.1 and standard deviation 9.2. and median 41.5 and inter quartile range is ( 16.8). the caregiver from 21 and above are lower in expressed emotion with patient but the age from 28 till 50 are in high expressed emotion with atient with average 41.8, standard deviation is 8 and the median 40 with inter quartil range is 13.5. The relation is not statically significant Z = 0.458 and p = 0.7. Acoording to paient age mimum is 18 and maxmim is 50 years old. with average 35.1 and standard deviation 9.8. the median is 36.5 and inter quartil range (16.8). The caregiver low expressed emotion start with patient is 18 till 50 years old with median 37 (20), and caregiver high expressed emotion is from 25 to 42 years old with median is 33 (12.5). the test of significant is Z = 0.715 and p = 0.5 it is not statically significant with caregiver level of expressed emotion.



**Box plot 1** is shown the correlation of caregiver' level of expressed emotion and caregiver' age.



**Box plot 2** is shown the correlation of caregiver' level of expressed emotion and patients' age.

**Table 7: The relation between caregiver' level of expressed emotion according to (FAS) and the clinical history of patient**

Clinical history	Frequency(%) N=60 (100%)	Low expressed emotion N=51 (85%)	High expressed emotion N=9 (15%)	Test of significance
<b>1- Admission frequency:</b>				
a. Index	12 ( 31.6%)	10 ( 26.3%)	2 ( 5.3%)	
Relapse	26 ( 68.4%)	22 ( 57.9%)	4 ( 10.5%)	
b. Admitted	38 (63.3%)	32 (53.3%)	6 ( 10%)	
Not admitted	22 (36.7%)	19 ( 31.7%)	3 ( 5%)	

c. Frequency admission:				
Min-Max	0 – 25	0 – 25	0 – 20	
Mean $\pm$ SD	2.9 $\pm$ 5.3	2.7 $\pm$ 5.1	4 $\pm$ 6.4	Z = 0.513
Median (IQR)	1 ( 3 )	1 ( 2 )	1 ( 5.5 )	P = 0.6
<b>2- Last admission (months)</b>				
Min-Max	0 – 360	0 – 360	0 – 60	
Mean $\pm$ SD	30.6 $\pm$ 63.6	32.4 $\pm$ 68.1	20.2 $\pm$ 25.2	Z = 0.096
Median (IQR)	7.5 ( 33 )	8 ( 24 )	1 ( 48 )	P = 0.9
<b>3- Duration of diagnosis ( yrs.)</b>				
Min-Max	0.1 – 35	0.1 – 35	1.5 – 12	
Mean $\pm$ SD	7.5 $\pm$ 7.6	7.8 $\pm$ 8.1	6 $\pm$ 3.6	Z = 0.093
Median (IQR)	5 ( 7.8 )	5 ( 8 )	5 ( 6.5 )	P = 0.9
<b>4- Age at diagnosis</b>				
Min-Max	6 – 48	6 – 48	13 – 37	
Mean $\pm$ SD	27.4 $\pm$ 9.1	27.6 $\pm$ 9.3	26.4 $\pm$ 8.4	Z = 0.197
Median (IQR)	27 ( 13.7 )	27 ( 14 )	27 ( 15.5 )	P = 0.8

Z = Mann-Whitney Test  
SD = standard deviation

P = probability of chance  
(IRQ) = Inter Quartil Range

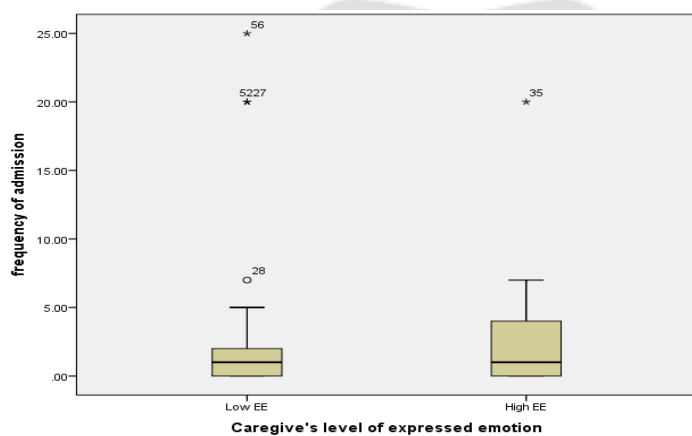
Table 7 is shown clinical history of patient and its relation with caregivers' level of expressed emotion. First, The patient who admitted n = 38 ( 63.3 %) and not admitted to inpatient n= 22 ( 36.7%), from admitted patients, the patient who admitted once time is n=12 (31.6%) and the patient who readmitted more than one time are n= 26 ( 68.4%). The readmitted patients who have highly expressed emotions are 15.3% and patients who have caregivers' low expressed emotion (84.6%).

The admitted patient is majority in caregiver low expressed emotion n=32 ( 53.3%) and only 6 of them had caregiver high expressed emotion. Additionally, the frequency admission arrange from 0 to 25 times, the average = 2.9  $\pm$  standard deviation = 5.3, the median = 1 ( 3), the low expressed emotion ranged from 0 to 25 admission but in high expressed emotion arranged from 0 to 20 times only. The relation between caregivers' level of expressed emotion and frequency of admission is not statically significant Z = 0.513 and p = 0.6.

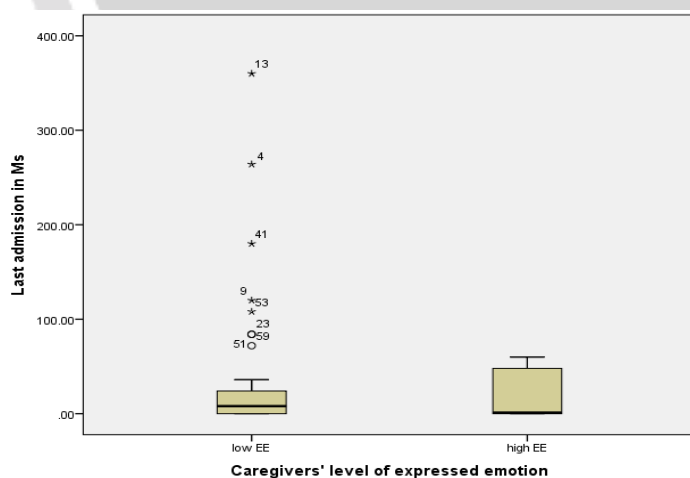
The second relation in clinical history of patient is the last admission of patient and its affect with caregiver level of expressed emotion. The last admission minimum from 0 to 360 months, average = 30.6  $\pm$  standard deviation = 63.6, the median = 7.5 (33). The patients of caregivers' high expressed emotion is less staying at home than caregiver who expressed emotion, they can stay till 360 months. The relation between caregivers' level of expressed emotion and last admission of patient is not statically significant Z = 0.096 and p = 0.9.

The third relation is about the duration of diagnosis of patient and caregivers' level of expressed emotion. The diagnosis is arranged from one month to 35 years. The median is 5 and inter quartile range ( 7.8). The patient who is diagnosis period has taken from one year to 12 years are more have caregiver high expressed emotion than caregiver low expressed emotion. The caregiver low expressed emotion is taken the whole period of patient diagnosis from one month to 35 years. But it is not statically significant  $Z = 0.093$  and  $p = 0.9$ .

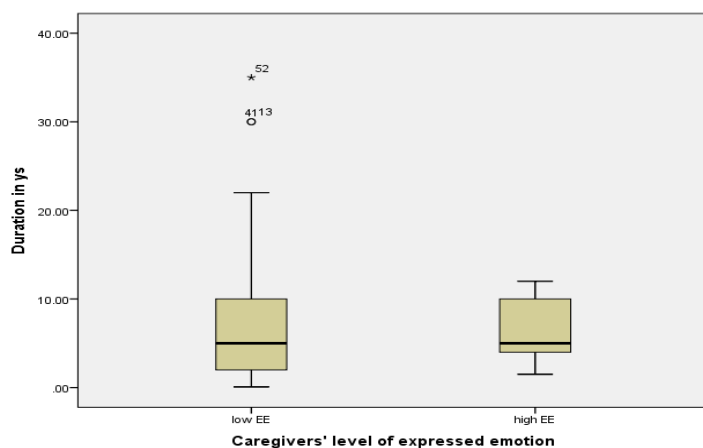
The final relation is about age at diagnosis, It arranges between 6 to 48 years old, average =  $27.4 \pm SD = 9.1$ , the median = 27 (IRQ = 13.7). The caregiver high expressed emotion is happen more with patient in young people minimum 13 and maximum 37 with average  $26.4 \pm 8.4$ . In comparing with caregivers' low expressed emotion, the maximum can range to 48 years old. with average  $27.6 \pm 9.3$ . Test of significant is  $Z = 0.197$  and  $p = 0.8$ . it is not statically significant. The conclude result, there is no relation between caregivers' level expressed emotion and clinical history of patient.



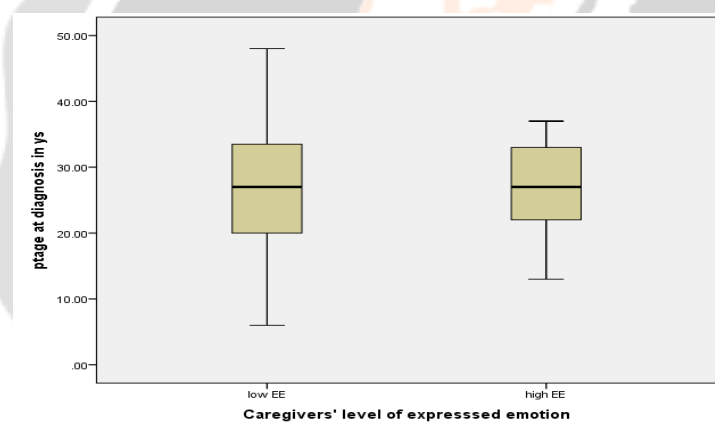
**Box plot 3** is shown the median of both level of expressed emotion of caregiver is = 1, most of caregivers low expressed emotion are between 0 to 5 times admitted only some of outliers till 25 times. But the caregiver expressed emotion most of them from 0 to 7 times approximately with one outlier till 25 times.



**Box plot 4** is shown a lot of outliers of caregivers' low expressed emotion arrange from median 8 to 360 months, and the caregivers' high expressed emotion are more concentrated from 0 to 60 months without outliers, the patient readmitted many times and the maximum of staying home is 60 months.



**Box plot 5** is exhibited the median of them are equal = 5, the caregivers' level expressed emotion deal with patient till long time of disorder, but in caregivers' high expressed emotion is dealing with patient from diagnosis till 12 years of disorder.



**Box plot 6** is shown the median = 27 in caregiver low expressed emotion as same as caregiver high expressed emotion. Nearly the same of frequency from 20s to 30s of patient age.

**Table 8: The relation between caregiver' total of expressed emotion according to (FAS) and the clinical history of patient**

Clinical history	Test of significant
<b>1- Frequency rate of admission</b>	
r =	0.04
p =	0.7
<b>2- The period of last admission</b>	
r =	0.08
p =	0.6



<b>3- Duration of diagnosis in years</b>	
r =	0.29
p =	0.025*
<b>4- Patient age at diagnosis</b>	
r =	0.11
p =	0.4

r = Correlation coefficient      p = probability of chance      \* = statically significant

Table 7 is shown Spearman rank correlation coefficient was carried out between the total score of caregiver expressed emotion and clinical history of patient. The relation of frequency admission and total of expressed emotion also it was not statically significant as  $p = 0.7$  and  $r = 0.04$ . The correlation coefficient in related to period of last admission was 0.07 which is not statistically significant ( $p=0.568$ ). There was a negative relationship between the EE score and duration of diagnosis ( $p = 0.03$ ); when patient had more years of diagnosis the caregiver had more low expressed emotion with patient. The overall EE score was not statistically correlated to patient age at diagnosis ( $p = 0.4$ ).

### 3. Discussion:

Schizophrenia is a difficult condition both to the patients and their family caregivers and due to its chronic nature. The meaning of expressed emotion of relatives is being hostile, very critical and emotional over-involvement toward the patient. These emotions are considered as negatives emotions. It is important to understand the factors influencing expressed emotion and hospitalization of the patients. The study explored the relationship between the caregiver's level of expressed emotion and the rate at which the schizophrenic patients were got admitted in the hospital.

#### (3.1) The relation between caregivers' level expressed emotion and frequency rate of admission among their schizophrenic patient.

The finding of present study have shown that caregivers highly expressed emotion are 15% and caregivers' low expressed emotion are 85 %. And frequency of admission and its relation of readmission are not statically significant as  $p = 0.6$ . The patient who readmitted more than one time are 68.4%. The readmitted patients who have highly expressed emotions are 15.3% and patients who have caregivers' low expressed emotion. In contrast with these findings, Kavanagh found that in his research that the relapse patients rate was 48% who have caregiver high expressed emotion and 21% relapse with caregiver low expressed emotion. In addition, in Egypt, the results have shown increasing expressed emotion of relative cause 55% of relapse schizophrenia patients<sup>(3,7)</sup>.

#### (3.2) The relation of patient's length of stay and caregivers' level expressed emotion

The findings of this study present that regarding the length staying of patient and its relation of caregivers' level expressed emotion, the result shown that the patients of caregivers' high expressed emotion is less staying at home than caregiver who low expressed emotion, the patient readmitted many times and the maximum of staying home is 60 months compared with low expressed emotion they can stay till 360 months. However, the relation between caregivers' level of expressed emotion and last admission of patient is not statically significant as  $p = 0.9$ .

This study compared with study of the effecting of expressed emotion on readmission of schizophrenic patient. Brown and his college noticed that the high frequent admission patient are more relapse than the patients who are staying at home . Also the findings have exhibited that the schizophrenic patients are more likely to be relapse who lived with their parent and wives than the patients who are live with their sisters and brothers.<sup>(18)</sup>

#### (3.3) The relation between patient readmission and expressed emotion components

The present findings revealed that readmitted patient is 26 from 60 patients, they were more suffering of caregivers' highly expressed emotion than the patient who are first admitted or not admitted as 10.5% of readmitted to 5% of both index and not admitted, most of caregivers also increased the distancing and criticism sentences, also patients are able to stayed till with 360 months with caregivers low expressed emotion than patient who are live with caregiver highly expressed emotion.

In comparing with other the results that shown there are 34 patients out of 100 readmitted to psychiatric clinic over two years follow up. There is significant difference with caregiver highly expressed emotion and high patients relapse rates; specifically increasing the rate of patients relapse is with increasing of emotional over involvement and criticism comments.

According to time differences of relapse the patients who have low caregiver expressed emotion they had longer time to relapse and the patient who has high criticism comments from their caregiver had shorter time to relapse<sup>(8)</sup>.

According to the criticism as negative actions of caregivers seems higher than hostility.

For instance, the sentence (16) "Can cope with him" it was answered of three forth of the caregivers that are done every day the percent was very high. Also this sentence seems positive of coping. The sentence (4) "Really hard to take" this sentence is meaning negatively when caregiver suffering of to deal with patient and more than one fourth of caregiver answered by every day is done. Also the sentence (3) Ignores my advice is taken only minority in score (0) in never and take 38 % for some days and that seems that caregiver is suffering of patient ignore their advice.

On the other hand, there was a study has done to explore the relation of expressed emotion of caregiver and hospitalization in 7 years follow up. The number of participants are 108, 93 of them are diagnosed schizophrenia and 15 are diagnosed schizoaffective disorder. The scale was Five Minutes Speech Sample (FMSS). The expressed emotion was measured the Criticism and Emotional Over Involvement. The results have exhibited the increasing of Criticism associated with recurrent admission of patient specially first and second admission. The missing in the present study, it does not use scale that related criticism of caregiver expressed emotion and readmission of hospitalization<sup>(15)</sup>.

#### **(3.4) The rate of caregiving among patients' relatives**

According to the highest rate that the majority of the caregiver were in siblings (brothers and sisters) caregiver followed by the parents. Siblings are most of them were caregiver low expressed emotion 38.3 %. It is less than the parents in high expressed emotion. There is no relation of statically significant between patients' relatives and caregivers' level of

expressed emotion as  $p = 0.5$ . This finding similarly to the study have exhibited that the schizophrenic patients are more likely to relapse who lived with their husband and wives than the patients who are live with their sisters and brothers<sup>(18)</sup>.

Additionally the present study that shown caregiving is also including the partner ( husband and wife), if married then slightly less than partner are off spring ( son and daughter ) from the total participants. While, Montgomery & Kosloski noticed that the care recipient is likely to be cared for primarily by his or her spouse. Similar If the spouse is unable to fulfill that role, children most frequently become caregivers. Among children, daughters and daughters-in-law tend to serve as the primary caregivers. If the family cannot cope with patient that will lead in many issues one of them is the family burden<sup>(19,20)</sup>.

#### **(3.5) The difference of caregivers' level expressed emotion among culture**

The level of expressed emotion and relapse of schizophrenia changes from culture to culture; Dutzlaff and Hooley have done meta-analysis study in western countries for more than 1500 patients, the results are when expressed emotion increase the relapse of schizophrenia will increase and specially in chronic patients. In addition, the another results have shown the high expressed emotion of African American related with preferable patient symptoms, and the white American low expressed emotion have associated with good results<sup>(4)</sup>.

In addition, another study have done with 224 families from Mexican American and Anglo American there has been no significant difference between two cultures to expressed emotion levels. The present study results of eastern residence of Saudi Arabia are different form above western culture<sup>(5,6)</sup>.

## **4. CONCLUSIONS**

This study centers on the relation relationship between caregivers' level of expressed emotion (EE) and frequency rate of admission among schizophrenic patients. From the findings of this study, the researcher found that the caregivers' low expressed emotion were present majority of the sample while the caregivers' highly expressed emotion is low percent. Also, it was found that among the (FAS) into three subscales, the distancing is highly found as expressed emotion between caregivers, followed by criticism than hostility. Finally, only there is one relationship between caregiver' total of expressed emotion according to (FAS) and duration of patient disorder. In particular, There is no relationship between caregivers' level expressed emotion and patients and caregivers' characteristics also no relation between caregivers' level expressed emotion and clinical history of the patient.

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