

## Relationship of Expressed Emotion with Burden of Care and Health of Caregivers of Patients with Schizophrenia

Sarosh Sadiq and Kausar Suhail  
GC University, Lahore.

The present study is the pioneering attempt to examine the effects of high Expressed Emotion (EE) on health and burden of care among primary caregivers of patients with schizophrenia in Pakistan. Fifty two caregivers of inpatients, diagnosed with schizophrenia using Structured Clinical Interview for DSM- IV Axis I (SCID-1), were assessed for EE through Camberwell Family Interview (CFI). Three health measures including burden of care (Burden Assessment Scale, BAS), general health (General Health Questionnaire-12, GHQ-12) and physical health (Physical Health Checklist, PHC) were used to assess health status of caregivers. Burden Assessment Scale (BAS) was used to assess the link of burden of care with EE and health of the caregivers. High EE was found to have a significant negative effect on health and burden of care. Further analysis revealed high Emotional Over Involvement (EOI) as a robust predictor of poor health and cause of high burden of care among primary caregivers of patients. Considering the negative impact of high EOI on burden of care and health status of the caregivers, there is a need for intervention programs aimed at reducing EOI and in turn EE for improving health and reducing burden of care in caregivers of patients with severe mental illnesses. Considering a higher frequency of mothers on all EE components, they require greater attention of mental health professionals.

*Keywords:* expressed emotion, burden of care, health, caregivers, schizophrenia

The role of families in caring for a patient with schizophrenia is vital and has led to intensive research in this area over the last three decades. The two factors of family life, Expressed Emotion (EE) and burden imposed by care giving have been found to play a significant role in the course of schizophrenia (Brown, Rutter, Monck & Carstairs, 1962; Butzlaff & Hooley, 1998) and for the health of caregivers (Mitsonis et al., 2012) respectively.

In the field of psychiatry EE has been thoroughly investigated as a psycho-social construct (Jenkins & Karno, 1992). It measures a wide range of emotional expressions which are exhibited by a family towards a patient with a psychiatric illness and this expression of emotion has harmful and destructive effects on the course of illness (Hooley & Hoffman, 1999).

Since the inception of EE construct (Brown et al., 1972; Brown, Monck, Carstairs, & Wing, 1962) many studies have been conducted around the globe focusing on the relationship of EE with relapse. These studies have found EE as a strong predictor of relapse of schizophrenia regardless of the culture in which the study was conducted (Barrelet, Ferrero, Szigethy, Giddey, & Pellizzer, 1990; Bebbington & Kuipers, 1994; Butzlaff & Hooley, 1998; Leff et al., 1987; Monking & Buchkremer, 1995; Mottaghipour, Pourmand, Maleki, & Davidian, 2001; Roseliza- Murni, Oei, Fatimah, & Asmawati, (in press); Vaughn & Leff, 1976a; Vaughn, Snyder, Jones, Freeman, & Fallon, 1984).

EE is based on five types of emotions expressed by families, namely, Critical Comments (CC), Hostility (H), Emotional Over

Involvement (EOI), Warmth and Positive Remarks (PR). However ratings of high-EE are determined by scores on its first three scales only (Vaughn & Leff, 1985).

Although EE has been found to predict relapse in patients of schizophrenia, but prediction rates of EE vary culturally. In general, studies conducted in Western cultures document higher rates of EE (Nuechterli et al., 1986) than those conducted in Asian cultures (Azhar & Varma, 1999; Wig, 1987). However, Asian studies report high variability, for example, extremely low rates (23%) of EE have been reported from India (23%), while considerably high EE rates were found among other Asian cultures like in Pakistan (75%), Iran (56%), Egypt (55%), Japan (46%) and China (42%; Ikram, Suhail, Jaferi & Singh, 2011; Kamal, 1995; Mino, Inoue, Tanaka & Tsuda, 199; Mottaghipour, 2001; Wig, 1987).

Like EE rates vary culturally, the relevant construct of Burden of Care (BOC) among families is also considered to be culture specific (Awad & Voruganti, 2008) and has been found to ignite negative emotions in caregivers (Rodrigo, Fernando, Rajapakse, Silva, & Hanwella, 2013). Studies revealed that negative behaviors of patients with schizophrenia adversely affect families especially when care was provided for a longer time negative consequences such as distress, frustration, loneliness and anger among caregivers emerged (Grandon, Jenaro, & Lemos, 2008; Shu-Ying, Chiao-Li, Yi-Ching, For-Wey, & Chun-Jen, 2008; Caqueo-Urizar & Gutierrez-Maldonado, 2006). This care giving burden also affects the general and mental health of caregivers (Adewuya, Owoeye, & Erinfolami, 2011; Grandón, Jenaro, & Lemos, 2008; Reinhard, 1994; Reinhard & Horwitz, 1995; Caqueo-Urizar, Gutierrez-Maldonado, & Miranda-Castilo, 2009). In most cases, this role is performed by mothers of patients with schizophrenia (Ikram, Suhail, Jaferi, & Singh, 2011; Gutierrez-Maldonado, Caqueo-Urizar, & Kavanagh, 2005).

Although both terms BOC and EE are reciprocal concepts, but very few studies have examined direct relationship between

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Sarosh Sadiq, PhD scholar, Department of Psychology, GC University; Professor Kausar Suhail, Chairperson, Department of Psychology, GC University, Lahore.

Correspondence concerning this paper should be addressed to Sarosh Sadiq, Department of Psychology, GC University, Katchery Road, Lahore, Pakistan. Email: Sarosh\_haneef@hotmail.com

expressed emotion and caregiving burden among relatives of patients with schizophrenia. In an early study, Jackson, Smith, and McGorry (1990) found that critical comments are associated with high levels of burden. Similarly Scazufca and Kuipers (1996) reported that high-EE caregivers found to have more BOC than low-EE caregivers, whereas Smith et al. (1993) showed that high-EE relatives reported higher levels of disturbed behavior in patients, more subjective burden, and perceived themselves as coping less effectively than low-EE relatives.

In Pakistan very few researches have assessed the relationship between EE and BOC. Looking for potential predictors of BOC in Pakistan, Ilyas, (2009) found that majority of the caregivers (54%) were high on BOC. Researcher also found that EE and BOC were significant predictors of each other. In an ethnographic analysis of EE of Pakistani families, Suhail, Ikram, Jafri, Sadiq, and Singh (2011) discovered that self-sacrificing and devoted behavior is a norm in Pakistani culture and many caregivers especially mothers go above and beyond the established norms and general expectations of people. Due to these overly involved care-giving functions and owning responsibilities, many caregivers reported to have experienced negative effects of care-giving on their own health and they felt that their health was deteriorating with the passage of time. These caregivers also reported considerable BOC. This shows cultural factors might play a role in determining the level of burden of care associated with caring a person with severe mental illness like schizophrenia in Pakistan. Likewise in an Italian study, Carra, Cazzullo, and Clerici (2012) found that high-EE caregivers of patients of schizophrenia experienced more subjective burden and more adverse effects in areas relating to household, work and leisure time. However, Nirmala, Vranda, and Reddy (2011) were unable to find any relationship between caregiver's burden and EE in India. These contrasting results point towards some peculiar cultural factors that may play a role in determining relationship in EE and BOC in caregivers of patients with schizophrenia.

The present research was designed to assess the extent of EE associated with BOC and health of care givers of patients with schizophrenia in Pakistan. Based on a previous observation (Suhail et al., 2011) two hypotheses were formed; first, high-EE caregivers of patients with schizophrenia will have poorer health than their low-EE counterparts, second, high levels of EE relatives will have greater objective and subjective BOC than those with low-EE.

## Method

### *Phase I: Training*

In this phase, the second author certified CFI rater trained the first author in administering and scoring of Urdu version of CFI (Jafri, 1997). Data of previous studies (Jafri, 1997; Suhail et al., 2011) were used for the training. Training continued until the first author obtained fairly high inter-rater reliability on all components of EE. Kappa (Cohen, 1960) values for overall EE ( $k = .99$ ), CCs ( $k = .87$ ), H ( $k = .89$ ), and EOI ( $k = .80$ ) were significantly high. The Spearman-rank order correlations were calculated for rating of inter-rater reliability for Warmth and PRs which were significantly high ( $r_s = .95$  &  $r_s = .94$  respectively). The inter-rater reliability was obtained for 30 interviews.

The second author also trained the first author to reliably administer the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-1).

### *Phase II: Rating of EE*

#### *Sample*

Patients diagnosed with schizophrenia consecutively admitted to two mental health facilities of Lahore, Punjab, from January 2010 to December 2012 inclusive were recruited to assess the expressed emotion in their key relatives. The inclusion criteria for the patients were: (1) in-patients diagnosed with schizophrenia and had lived with their families for at least three months prior to the hospital admission; (2) intended to have lived with their families after hospitalization; (3) confirmation of diagnosis through SCID-1; see below for details) for their diagnosis, (4) aged 18 years or above; (5) those who could understand and talk Punjabi (Regional) or Urdu (National) languages.

Only primary caregivers were chosen from each household to participate in the study. The inclusion criteria for the primary caregivers were: (1) The key relatives of patients; (2) aged 18 or above and were living with the patient for at least three months prior to the admission; (3) Those who spent minimum 35 contact hours per week with the patient; (4) Those who could understand and talk Urdu or Punjabi languages.

Sixty- five patients who fulfilled these criteria were referred by the consulting psychiatrist. Two were dropped because they were suffering from dual diagnosis, three patients and their caregivers were dropped mainly because of language problem, five caregivers refused to take part in the study at later stages, so their respective patients were also dropped and three were not selected because they had lack of adequate family involvement either before hospitalization or for the planned post hospitalization.

#### *Instruments*

A standard form was used to collect information on socio-demographic characteristics of patients and relatives.

Instrument used with patients was: Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; Screening and modules B & C). The SCID- I was employed for screening and confirmation of schizophrenia diagnosis (First, Spitzer, Gibbon & Williams, 2002). The following instruments were administered to the relatives:

(i) Camberwell Family Interview (CFI; Vaughn & Leff, 1976b). The CFI is a semi- structured interview schedule and was used to assess Expressed Emotion in the relatives. CFI has the five scales: Criticism, Hostility, Emotional Over involvement, Warmth and Positive Remarks. A relative is considered high-EE if s/he made six or more critical comments or exhibited any type of hostility or secured three or more scores on EOI.

(ii) Burden Assessment Scale (BAS; Reinhard, Gubman, Horwitz, & Minsky, 1994). The BAS was used to assess caregivers burden. It is a 19- item questionnaire and was used to assess subjective and objective burden. The subjective burden of care is emotional cost of the presence of patient on his/ her family and objective burden is the disruptions a patient has on his/her family. This BAS measures that how much lives of caregivers have been affected by caring a relative with schizophrenia on a rating scale from 1 (Not at all) to 4 (A lot). Caregivers also have a choice to rate any item as not applicable. The scale was translated in Urdu for this research using formal procedure in which the scale was first translated in Urdu by five psychologists then back translated in English. During translation process, special attention was paid to

retain the conceptual meaning of items rather than their literal meanings. Cronbach's alpha calculated for this study was .78.

(iii) General Health Questionnaire-12 (GHQ-12; Goldberg & Williams, 1988). The GHQ-12 was used to assess psychological distress among the caregivers. It has 12 items with four response categories from much less than usual to much more than usual. Higher scores indicated more psychological distress and low scores indicated less distress. Urdu translated version of GHQ-12 was used in this study.

(iv) Physical Health Checklist (PHC). The PHC was developed by the current researchers. It is a symptom checklist which measures the common stress related problems including hypertension, cardiac problem, muscular problems, bodily pains, asthma, diabetes, feelings of fatigue at a 5- point scale ranging from 1 'do not know' to 5 'very much'. High scores at the PHC indicated more stress related problems. There were total 10 questions in the PHC.

(v) Rand- 36 item health survey (Hays, Sherbourne, & Mazel, 2006). The Rand is a measure of physical and psychological health. It has eight different sub-scales: physical functioning, bodily pain, role limitations due to physical health, role limitation due to emotion/personal problems, mental health, social functioning and perceived change in health.

The Rand-36 also provides three composite scores on physical health, mental health and general health. For this study seven items were taken from the Rand-36 for assessing health of caregivers. These items were translated into Urdu language using standardized procedure in which items were first translated in Urdu and then in English by five Psychologists for each translation. They were requested to focus on translating conceptual meaning of the items. The seven items were extracted from the following Rand-36 sub scales: Physical functioning (1 item), General mental Health (4 items), Social functioning (1 item), and Health Change (1 item). These seven items were: 1, 2, 4, 32, 33, 34 and 35. This seven item scale was named as RAND Modified (RAND- M). On the original Rand-36 scale high scores indicate good health and low scores indicate poor health. However to make it compatible with other two study measures (GHQ-12 & PHC) and to facilitate statistical analysis in this research scoring was reversed. Accordingly, high scores on RAND-M scale indicated poor health while the low scores meant good health. The test- retest reliability of the scale was calculated with one month interval for the present research and was found to be fairly high .95.

### Procedure

The study had a cross sectional design. All patients were contacted by the first author to establish initial rapport and conduct a brief screening interview to determine whether all selection criteria were met. Informed consent was obtained from the patients and caregivers. Final sample comprised of 52 patients. SCID-I was applied on the patient for the confirmation of diagnosis.

After confirmation of patients' initial diagnosis, adult key carers were administered the Urdu translated version of modified Camberwell Family Interview (Vaughn & Leff, 1976a). Only those key carers were selected who spent maximum time with the patient. Allocation of time spent was judged through 'time budget section' of CFI. Only primary caregivers were selected for the interview. Most interviews were conducted in the hospital but a few were carried out at the patients' residences. All interviews were recorded for the later analysis. Caregivers were also administered the three

health measures (PHC, GHQ, RAND-M) and BAS. All patients and relatives were interviewed by the first author (SS).

### Statistical Analysis

All statistical analyses were carried out using the SPSS version-16 for windows. For all statistical tests 5% level of significance with two tailed p values were used. Kolmogorov-Smirnov tests assessed normal distribution of all measures. Pearson Product-Moment correlation was used to examine the association between all continuous variables. Descriptive analysis was followed by the multivariate analysis for comparison between groups (high/low-EE). The MANOVA was carried to check the effect of EE on health of caregivers and burden of care. In order to assess Sphericity of variance/ covariance patterns, the Levene's test of equality of error variance was also performed. Regression analysis was performed to construct a statistical model that could explain that EE components were the better predictor of poorer health and BOC. Durbin-Watson test was also performed for checking the lack of autocorrelation assumption.

## Results

### Demographic variables of patients

Out of 52 patients interviewed, 23 were men (44 %) and 29 were women (56 %). On marital status 19 patients were married (36%), 26 were single (50%), 5 were divorced (10%) and 2 were widowed (4%). On literacy level 13 patients were illiterate (25%), 17 were under matriculation (33%), 6 were matriculate (11%), 6 had qualification of Intermediate (11%), 8 were graduate (16%) and only 2 got higher/ professional qualification (4%). Age range for patients was between 19 and 56 years. Mean Age was 33.85 years ( $SD= 9.45$ ) for both genders.

### Demographic variables of Relatives

Mothers comprised the major chunk of caregiver's sample (31, 60%), whereas fathers were only 2 (4%), siblings were 7(13%), spouses were 7(13%) and 5 others (10%). Majority of caregivers were women (45, 87%), whereas men were only 7 (13%). Out of 52 caregivers 19 (37%) were illiterate, 14 were under matriculation (27%), 5 were matriculate (10%), 6 were Intermediate (11%), 7 were graduates (13%), and only 2 had studied up to Master Level (4%). Family system analysis showed that 39 belonged to nuclear family (75%), while 13 were living in joint family (25%). According to employment status 41 caregivers were employed (79%) and 11 were unemployed (21%). Age range for relatives was 25- 68 ( $M= 48.06$ ,  $SD= 11.35$ ).

### Distribution of high and low-EE components

Results of descriptive statistics indicate that majority of caregivers were designated as high-EE ( $n=29$ , 56%) as compared to low-EE ( $n=23$ , 44%; see Table1). Among all groups, mothers were rated as the highest on EE ( $n = 18$ , 35%) in comparison to any other group. Apparently spouses seem to be more critical and more hostile. Similarly fathers and daughters appear to be higher on EOI. However, except mothers there are very limited cases in all categories of relatives, hence no conclusive statement can be made regarding other relatives' high or low membership in any component of EE. Thus for comparison all relatives were combined into one group ( $n = 11$ ). Accordingly, their combined rates on three EE components Critical comments, Hostility and EOI were 36%, 54% and 45% respectively, which are lower than the frequency of

Table 1  
Type of High-EE Relatives and Components of High-EE  
(N= 52)

EE Component Relative (n, %)	CC ≥ 6 n (%)	H ≥ 1 n (%)	EOI ≥ 3 n (%)
Mothers (18, 34.62)	7 (39)	10 (55.56)	12 (66.62)
Fathers (1, 1.92)	--	--	1 (100)
Brothers (2, 3.85)	--	1 (50)	1 (50)
Sister (1, 1.92)	--	1 (100)	--
Sister in Law (1, 1.92)	1 (100)	1 (100)	--
Husband (1, 1.92)	1 (100)	1 (100)	--
Wife (4, 7.69)	2 (50)	2 (50)	2 (50)
Daughter (1, 1.92)	--	--	1(100)
Total	11 (21.15)	16 (30.77)	17(32.70)

Note. CC = Critical comments; EOI = Emotional over involvement

mothers in all three categories.

Considering the finding of greater EOI in mothers, a separate MANOVA with type of relatives (mothers vs. all others) as independent variable and three health measures along with BOC as dependent variables was carried out. The multivariate test result showed the significant effect of type of relatives on outcome measures,  $F(4, 46) = 5.22, p < .5, Wilk's \Lambda = .79, \eta^2 = .20$ . Between subjects effects showed significant effect of type of relatives on GHQ  $F=5.22, p < .5, \eta^2 = .09$  and RAND-M,  $F=7.52, p < .5, \eta^2 = .14$ . A review of descriptive statistics indicated that mothers are higher on both health measures GHQ ( $M= 4.03, SD= 1.89$ ) and RAND-M ( $M= 49.97, SD= 15.83$ )

Table 2  
MANOVA Showing the Effect of Level of EE on Burden of Care and Health of Caregivers

Sources of Variations	DVs	SS	df	MS	F	$\eta^2$	Observed Power	Error	Corrected total
EE	R-M	1745.59	1	1745.59	5.27*	.95	.54	1653.08	18298.67
	GHQ	6.074	1	6.074	1.718*	.03	.82	176.75	182.83
	PHC	142.76	1	142.76	4.20*	.07	.55	1699.78	1842.52
	Obj.B	607.69	1	607.69	13.99**	.22	.99	43.42	2778.52
	Sub.B	102.12	1	102.12	4.727*	.19	.78	21.60	1182.23

Note. R-M = Rand Modified; GHQ = General Health Questionnaire; PHC = Physical Health Checklist; Obj.B = Objective Burden of Care and Sub.B = Subjective Burden.

\* $p < .01$ . \*\* $p < .001$ .

Table 3  
Comparison of Scores of Burden of Care and Health Measures with Levels of EE

	Low-EE		High-EE	
	M (SD)	95% CI	M (SD)	95% CI
Obj. Burden	23.57 (6.37)	[21.84, 25.3]	30.45(6.77)	[28.61, 32.29]
Sub. Burden	16.59 (4.46)	[15.38, 17.8]	20.08 (4.60)	[18.83, 21.33]
GHQ	3.17 (1.77)	[2.69, 3.65]	3.86 (1.94)	[3.33, 4.39]
RAND-M	37.78 (18.35)	[32.79,42.77]	49.44(18.07)	[44.53, 54.35]
PHC	9.04 (6.09)	[7.38, 10.7]	12.38 (5.51)	[10.88,13.88]

Note. BOC = Burden of Care; Obj. B = Objective burden; sub. Burden = Subjective burden; GHQ = General Health Questionnaire; RAND-M = RAND Modified and PHC = Physical Health Checklist.

#### Effects of EE on health and BOC

In order to determine the effect of level of EE on health of caregivers and their BOC, a MANOVA was carried out. The EE scores were dichotomized into low and high-EE. The criterion for high-EE was six or more scores on CC or presence of any hostility or three or more scores on EOI. The results of this analysis indicated a significant effect of EE on BOC and on the health of caregivers of patients with schizophrenia  $F(5, 46) = 3.06, p < .001, Wilk's \Lambda = 0.75, \eta^2 = .25$  (Table 2). The between subjects analysis indicated that the level of EE had a significant effect on health as well as objective and subjective burden.

The effect sizes and observed power were reasonably high for all variables measured. However for objective burden of care it was the highest as compared to all other measures.

Levene's test of equality of error variances was applied and its results were non-significant for BOC and for all health measures which showed that sphericity assumption had been met and in this study multivariate statistics was a robust test of effects of EE on BOC and health of caregivers.

Following the significant results of multivariate tests, descriptive statistics of all variables was computed which showed high-EE caregivers scored higher on all health measures and both objective and subjective BOC (Table 3). These results indicate poorer health of high-EE relatives on all health indices as well as indication of experiencing of high levels of objective and subjective BOC among them.

#### Effects of Components of EE on Health and BOC

To understand the effect of all components of EE on burden of care and health indices, Pearson Product-Moment Correlations were carried out between all study variables (Table 4). Its results showed a highly significant positive correlation between CC and hostility, EOI and burden of care. The correlations between EOI and BOC were highly significant but moderate between burden of care and all

Table 4  
*Inter-correlations among Subscales of CFI, Burden of Care and Health Measures*

Components	CC	Hostility	EOI	BOC	PHC	GHQ	RANDM
CC	--	.80**	-.19	.02	.28*	.30*	.29*
Hostility	--	--	-.05	.07	.41**	.33*	.22
EOI			--	.66**	.17	.18	.20
BOC				--	.47**	.41**	.42**
PHC					--	.47**	.32*
GHQ						--	.18
RAND-M							--

Note. CC = Critical comments; EOI = Emotional over involvement; BOC = Burden of care; PHC = Physical health checklist; GHQ = General Health Questionnaire; RANDM= RAND Modified  
\* $p < .01$ . \*\* $p < .001$ .

Table 5  
*Regression Analysis for Health*

	B	SE B	$\beta$
Step 1			
Constant	35.78	1.95	
EOI	5.09	.84	.67*
Step 2			
Constant	34.83	2.12	
EOI	5.16	.82	.67*
HOS	.79	1.67	.08
CC	.09	.49	.03

Note. EOI = Emotional over involvement; HOS = Hostility; CC = Critical comments  
 $R^2 = .44$  for step 1;  $\Delta R^2 = .01$  for step 2  
\* $p < .001$ .

three health measures.

Following the significant relationships between EE components and measures of health and BOC two separate regression analysis were performed to find out the better predictors of health change and burden of care in caregivers from three components of EE (Table 5 & 6). In the first analysis, aggregate scores of all three health measures were entered as a dependent variable and individual components of EE were as independent variable, while in the second analysis, same procedure was repeated for BOC as a dependent variable. Results revealed that among all three components of EE only EOI emerged to be a significant predictor of poorer health and BOC among caregivers.

Table 6  
*Regression Analysis for Burden of Care*

	B	SE B	$\beta$
Step 1			
Constant	51.9	5.11	
EOI	3.50	2.19	.29
Step 2			
Constant	44.70	5.37	
EOI	4.14	2.02	.27*
HOS	1.84	4.05	.09
CC	1.67	1.18	.31

Note. EOI = Emotional over involvement; HOS = Hostility; CC = Critical comments  
 $R^2 = .52$  for step 1;  $\Delta R^2 = .15$  for step 2  
\* $p < .05$ .

Durbin- Watson test was also applied for both analyses. It measures lack of autocorrelation assumption. Values greater than two at this test indicate a positive correlation between adjacent residuals and lower than one indicates negative correlations between adjacent residuals. The acceptable value should be closer to two (Field, 2003). For this research its values for separate regression analyses for health and burden of care was 1.76 and 1.72 respectively which shows that assumption of independent errors are significantly met.

## Discussion

This research attempts to find out the effect of EE on health status and BOC in primary caregivers of patients with schizophrenia in Pakistan. The results of this work showed that the mean scores for all health measures as well as objective and subjective burden of care in the high-EE group were significantly higher than those in the low-EE group. It suggests that caregivers with high-EE group had poor health and experienced more BOC than the caregivers exhibiting low-EE. These findings are in congruence with both of our research hypothesis and with studies conducted in other countries that examined the relationship between EE, BOC and health of caregivers at a single point of time (Abiodun et al., 2011; Caqueo-Urizar & Gutierrez-Maldonado, 2006; Carra et al., 2012; Jackson et al., 1990; Scazufca & Kuipers, 1996). As components of EE vary across the cultures, the associations between high-EE, experiencing burden of care and bad health also vary in cultures. For example in India which shares similar cultural characteristics with Pakistan, a study by Nirmala et al. (2011) could not find any relationship between EE and subjective burden of care. The high mean scores of high-EE caregivers on BOC in this study should be viewed with regard to the mental health situation in Pakistan. In Pakistan there are insufficient mental health services, which are not enough to cater for the needs of mentally ill and their caregivers and due to this scarcity of mental health facilities, most of the patients with mental illnesses have to reside with their families. Patients are dependent on their caregivers for all of their needs including lodging, feeding and medication. Similarly, due to poor infrastructure of mental health facilities, most of the good hospitals are in big cities in Pakistan and people from rural or far flung areas with a patient of mental illness have to travel long distances (in some cases even for a whole day) to reach these mental hospitals which adds to the burden of caregivers. Hence these results suggest the requirement of intervention programs aimed at reducing the high-EE and BOC among caregivers as well as guiding them for improving their health and quality of life. However, it is worth

mentioning here that high effect size and high observed power for objective BOC may have relationship with current situation of Pakistan, for example, price hike, recent increased in inflation rate, poverty, unemployment, etc.

Although more people were rated as high-EE in the current study, the difference between both high and low-EE groups (56% vs. 44%) is non-significant. Hence, no conclusion can be drawn about the Pakistani caregivers as being high or low in exhibiting this behavior. Rates of high-EE (56%) among caregivers are nevertheless comparable to those from some other Asian countries, such as, Iran (56%; Mottaghipour et al., 2001), Egypt (55%; Kamal, 1995) and Japan (46%; Mino et al., 1997). However these rates are lower than a previous study conducted in Pakistan which detected very high rates of EE (75%; Ikram et al., 2011).

A few explanations can be presented to understand these discrepancies as both studies were conducted by the same group of researchers. Firstly, the previous research on EE was the first attempt to investigate rates of EE in Pakistan. It is possible that the authors were more sensitive to pick the indicators of EE at that time. Secondly, in the current study special care was taken to rate EE, the research group read transcripts and listened to audio tapes back and forth many times during the process of interpretation of scores. A special attention was also paid to problems associated with the order effect. After rating all interviews all those with very high and low scores on all components of EE, especially EOI, were discussed again and in case of any discrepancy between authors the concerned rating was modified with consensus.

Among 29 high-EE relatives, the majority were women ( $n = 23$ ). Among all high-EE groups mothers showed the highest rates on all three components with the highest percentage on EOI (67%). This observation has been made in many studies conducted previously (Ran, Leff, Hou, Xiang, & Wan, 2003; Leff & Vaughn, 1985). This finding is not surprising because in many cultures the role of women and especially mothers has been considered as nurturing and caring (Jenkins & Karno, 1992). Consistent with the current findings, previous studies conducted in Pakistan highlight the significant role of mothers in caring for the ill person and also exhibiting many EOI characteristics (Jafery, 1997; Suhail et al., 2011).

In the current study the high percentage of EOI (33%) among all components of high-EE could be interpreted in relation to its links to be present in caregivers of close-knit societies and also in agreement with previous studies like in Mexican-Americans (Karno et al., 1987), Egypt (Kamal, 1995), and Pakistan (Ikram et al., 2011).

It should be noted that in the present study a significant effect of EOI has been found on burden of care. This link has been discovered in previous studies as well (Jenkins, 1992; King, Ricard, Rochon, Steiger, & Nelis, 2003). Comparatively recent research Breitborde, Lopez, Chang, Kopelwicz, and Zarate (2009) found that EOI is deleterious for the health of caregivers and that BOC plays a significant role in determining these relationships.

The present research has high implications for both researchers and clinicians. As being pioneering in determining the relationships between EE, BOC and health of caregivers, this study might be helpful for future researchers in investigating the path through which these three variables are interlinked with each other through mediators.

Findings of the present study indicate the need of focused clinical intervention programs for caregivers of mentally ill patients for

reducing their EOI as the best predictor of EE and in turn reducing their BOC and improving their psychological and physical health.

Comparison between the frequency of high and low-EE relatives indicates that 44% of primary caregivers in Pakistan exhibited low-EE. These people are not only good care takers of people with mental disorders like schizophrenia, but also are less perturbed mentally, and in terms of health. Thus they can provide better care to patient for a long time. Knowledge about the personality traits and other compliant measures of these people can help mental hospital to hire staff with such characteristics. Further studies can be conducted to reveal these positive personality traits.

This study shows high vulnerability of mothers in experiencing and perceiving BOC as well as deteriorating health. These findings suggest that mothers require special attention of clinicians and health psychologists in alleviating their problems as caregivers and in maximizing their mental health.

Despite its significance the results of this work need to be interpreted in the light of following limitations: As the study is cross-sectional, it cannot determine any causal relationship between high-EE, BOC and health of caregivers. Therefore, a longitudinal research is required to find out any casual relationships between these variables.

The study sample was taken from the city of Lahore only, which may threaten the external validity of the results. At the same time, it is true that Lahore enjoys the rich mix of people from all walks of life and socio-economic strata. For many years, people from nearby villages and distant towns are migrating to Lahore in search of employment as well as for academic and professional growth. In addition, due to the scarcity of appropriate psychiatric facilities in their areas, many people in other cities of Punjab prefer consulting these services in Lahore. Considering these factors we hope that the external validity of the study is not compromised to a greater extent.

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Received September 29, 2012

Revision Received December 17, 2013