

# Survey of High Expressed Emotions Experienced By Community Mental Health Service Users in Hong Kong During the COVID-19 Pandemic

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**Background:** High expressed emotion (EE) experienced by people with mental illness is a known risk factor of relapse. With drastically increased time spent at home and limited health and social service provision during the COVID-19 pandemic, patients' experience of high EE warranted attention. **Aims and Methods:** The study aimed to investigate the experience of high EE among people with mental illness during the COVID-19 pandemic. We surveyed the service users of 2 community mental health centers, including participants with psychotic and nonpsychotic disorders. **Results:** Valid responses from 303 participants indicated an overall high EE prevalence of 71.62%, much higher than previous findings, which range between 30% and 40%. People with other psychotic and nonpsychotic disorders showed a higher probability of experiencing high EE than people with schizophrenia. Participants reported a higher probability of experiencing high EE as a result of caregiving by other family relatives and friends than by parents. **Conclusion:** Findings suggest a significantly elevated high EE prevalence among people suffering from mental illness in the community during the COVID-19 pandemic. It is worth further evaluating the long-term effects of high EE beyond the pandemic.

**Key words:** expressed emotions/schizophrenia/mental illness/COVID-19/pandemic

## Introduction

High expressed emotion (EE) is a known risk factor of relapse in patients with schizophrenia.<sup>1</sup> The classic study by Vaughn and Leff<sup>2</sup> revealed that the 9-month relapse rates of schizophrenia were 53% and 92% for patients experiencing high EE in the family context, among those taking medications and not taking

medications respectively, vs a rate below 15% among those patients in low EE family contexts. High EE has 3 components, namely criticism, hostility, and emotional over-involvement (EOI). More recent studies have revealed that high EE within the family context can be identified from both overt and covert perspectives.<sup>3</sup> The overt expression of high EE largely corresponds to the established 3-factor structure of the construct. The covert expression of high EE includes disassociative behaviors and apathetic attitudes. In addition to schizophrenia, the high EE construct has also been found to be applicable to other mental illnesses, including bipolar affective disorders, depression, and anxiety disorders.<sup>4,5</sup>

High EE was traditionally assessed by the Camberwell family interview (CFI), which is a semi-structured interview administered by specially trained personnel to a patient's caregiver.<sup>6</sup> While the CFI is widely regarded as the benchmark in EE assessment, it is impractical in clinical settings because the assessment and data-coding processes are excessively time-consuming and technically demanding. In response to the need for a more practical measurement tool, a 12-item self-report scale—the Concise Chinese level of expressed emotion scale (CCLEES)—was developed and validated with people suffering from schizophrenia in Hong Kong.<sup>7</sup> Using the CCLEES as the assessment tool, patients with schizophrenia experiencing high EE showed a one-year relapse rate more than 5 times higher than those experiencing low EE.<sup>8</sup> In addition to good predictive validity, the CCLEES has shown concurrent validity of 90% agreement with the CFI in identifying high EE.

Hong Kong has experienced multiple waves of COVID-19 since its first outbreak in early 2020. To contain the pandemic, the government implemented various stringent social distancing measures during critical

times, including a work-from-home policy and closure of many public facilities. To adhere to the government's policy, as well as for the safety of clients and staff, many social services providers, including community mental health services, greatly reduced regular face-to-face services. As a result during the pandemic, people with mental illnesses and their family members stayed at home much more often, implying a drastic increase of time that they were together inside family. Acknowledging the potential negative impacts of high EE, the current study aimed to investigate the experience of high EE among people with mental illness in Hong Kong during the COVID-19 pandemic.

## Methods

In collaboration with 2 community mental health service centers in Hong Kong, we conducted a survey on high EE experienced by people with mental illness during the third wave of the COVID-19 pandemic in Hong Kong, from August to October 2020. Targeted participants were current service users of the 2 centers whose mental condition was stable and who were able to give informed written consent to participate in the study. We adopted the CCLEES to measure participants' experienced EE from their caregiver. The questionnaire also included items enquiring into the basic demographic characteristics of participants. The research was approved by the Human Research Ethics Committee of The University of Hong Kong.

### *Concise Chinese Level of Expressed Emotion Scale*

The Concise Chinese Level of Expressed Emotion Scale (CCLEES) is a 12-item self-report scale measuring the patient's subjective experience of EE from the most significant family member. The scale comprises 3 factors: criticism, hostility, and EOI, with 4 items under each factor. The total score of EE is the sum of the 3 factors' scores, with higher total scores indicating higher levels of EE. The CCLEES was validated with people suffering from schizophrenia in Hong Kong.<sup>7</sup> It showed good correspondence (90%) with the CFI, the classic EE measure, and satisfactory internal consistency (Cronbach's alphas = 0.84 for the whole scale and ranging between 0.75 and 0.77 for the 3 subscales). In a 1-year prospective study with 101 patients with schizophrenia, the CCLEES has shown good predictive validity: odds ratio = 6.3 in 1-year relapse rate between patients experiencing high EE versus low EE.<sup>8</sup>

### *Statistical Analysis*

Descriptive statistics were computed to examine the sample's demographic and clinical characteristics, and caregivers' information. The prevalence of high EE and its 3 factors among the participants were calculated. The

**Table 1.** Participant characteristics ( $N = 303$ )

Variables	Categories	Frequencies	Percentages	
Gender	Male	78	25.74	
	Female	225	74.26	
Age	20 or under	27	8.91	
	21–30	53	17.49	
	31–40	56	18.48	
	41–50	48	15.84	
	51–60	76	25.08	
	61 or above	43	14.19	
	Missing data	1	0.33	
Diagnosis	Depression	119	39.27	
	Schizophrenia	54	17.82	
	Other psychotic illnesses	34	11.22	
	Anxiety/obsessive compulsive disorder	31	10.23	
	Adjustment disorder	17	5.61	
	Mixed anxiety/depression disorders	9	2.97	
	Suspected <sup>1</sup>	25	9.57	
	Others (missing data and rare conditions)	14	4.62	
	Time from first diagnosis	< 1 year	21	6.93
		1–5 years	146	48.18
6–10 years		72	23.76	
11–15 years		12	3.96	
16–20 years		24	7.92	
> 20 years		27	8.91	
Missing data		1	0.33	
Services receiving at center	Casework service only	178	58.75	
	Casework service and day activities	107	35.31	
	Day activities only	17	5.61	
	Missing data	1	0.33	
	Duration of	< 1 year	69	22.77
1–2 years	90	29.7		
3–4 years	85	28.05		
5–6 years	25	8.25		
7–8 years	14	4.62		
> 8 year	20	6.6		
Caregiver's relationship to participant	Mother	76	25.08	
	Husband	60	19.8	
	Son	28	9.24	
	Daughter	26	8.58	
	Sibling	23	7.59	
	Other family member	22	7.26	
	Father	18	5.94	
	Friend	16	5.28	
	Wife	15	4.95	
	Boy/girlfriend	13	4.29	
Missing data	6	1.98		

<sup>1</sup>“Suspected” indicates participants who have experienced symptoms of mental disorder but have not met diagnostic standard.

profiles of high EE prevalence across different diagnoses, caregiver relationships, and demographic characteristics were examined. The association between high EE and individual/clinical characteristics was analyzed by Chi-squared tests and logistic regressions. All analyses were performed with SPSS 24.0.<sup>9</sup>

**Results**

*Demographic Characteristics*

A total of 303 valid responses were obtained from a questionnaire survey conducted among service users of the 2 community mental health centers. Participants' mean age was 43.08 and there were more women (74.26%). The top 3 diagnoses were depression (39.27%), schizophrenia (17.82%), and anxiety/obsessive compulsive disorder (10.23%). Nearly half of the participants (48.18%) had suffered from mental illness for between 1 and 5 years. Caregivers were most frequently the mother (25.08%) and husband (19.80%). Detailed demographic and clinical information of the participants is depicted in table 1.

*High EE Prevalence*

Many participants reported high EE total scores (71.62%) (table 2). Among the 3 components of high EE, high

**Table 2.** Results of the CCLEES (N = 303)

Variables	High/Low EE	Frequencies	Percentages
Criticism	High	198	65.3
	Low	105	34.7
Hostility	High	111	36.6
	Low	192	63.4
EOI	High	88	29.04
	Low	215	70.96
EE total	High	217	71.62
	Low	86	28.38

criticism appeared to be the most common, at 65.30%, vs 36.60% and 29.04% for high hostility and EOI, respectively. Among participants diagnosed with schizophrenia, 62.96% of them experienced high EE. The prevalence of high EE among other mental illnesses appeared to be even higher (70.18%–82.15%). Over 80% of participants diagnosed with other psychotic illnesses and over 70% of participants with depression and other non-psychotic disorders reported experiences of high EE (table 3). Significant differences could be found in hostility, EOI, and total EE scores among patients with different diagnoses. Specifically, people having psychotic illnesses (except schizophrenia) reported significantly higher hostility scores compared with people who only presented mental disorder symptoms (P = .016). Regarding relationship to caregiver, high EE prevalence appeared to be lower among parents (57.45%), than among partners (79.55%), other family members (including children and siblings, 74.75%), and friends (86.36%) (table 4). Regarding the perceived negative impacts of specific high EE items, the 4 items under hostility were rated by participants as the most undesired. Items under criticism and EOI were perceived to be relatively less undesirable (table 5).

*Associations Between Demographic Information and EE Scores*

Chi-squared tests and correlational analyses showed significant associations between EE (total/factor scores) and age, gender, diagnosis, duration of mental illness, and caregiver-patient relationship. The results are presented in tables 6–9. Specifically, participants' age showed

**Table 3.** High EE among different diagnoses

Diagnosis	High/Low EE	Frequencies	Percentages	Total EE score		Criticism score		Hostility score		EOI score	
				Mean (SD)	P	Mean (SD)	P	Mean (SD)	P	Mean (SD)	P
Schizophrenia	High	34	62.96	39.09 (4.23)	.044*	15.00 (1.19)	0.987	15.23 (0.93)	0.016*	15.80 (0.42)	.046*
	Low	20	37.04	25.05 (6.03)		9.73 (2.29)		8.37 (2.88)		9.93 (3.06)	
Other psychotic illness <sup>1</sup>	High	28	82.35	39.50 (4.66)		14.56 (1.26)		14.63 (1.01)		15.57 (0.53)	
	Low	6	17.65	24.33 (3.78)		9.22 (2.73)		8.87 (2.45)		10.56 (2.83)	
Depression	High	86	72.27	40.50(5.97)		14.99 (1.16)		15.04 (1.14)		15.77(0.43)	
	Low	33	27.73	25.33 (5.97)		9.57 (2.28)		8.38 (2.52)		10.23 (2.93)	
Other non-psychotic disorder <sup>2</sup>	High	40	70.18	41.00(5.08)		15.08 (1.11)		15.17 (1.10)		15.86 (0.36)	
	Low	17	29.82	25.47 (4.30)		9.29 (2.28)		8.97 (2.81)		10.53 (2.68)	
Suspected <sup>3</sup>	High	16	64.00	36.50 (5.94)		14.13 (.99)		14.00 (1.22)		15.50 (.58)	
	Low	9	36.00	22.00 (6.16)		9.10 (2.38)		7.50 (3.22)		9.38 (3.51)	
Others	High	10	100	38.70 (6.46)		14.60 (1.26)		14.40 (1.52)		15.50 (0.58)	
	Low	0	0	0	0	0		7.40 (2.88)		11.67 (2.34)	

<sup>1</sup>Other psychotic illnesses included delusional and bipolar affective disorders.

<sup>2</sup>Other nonpsychotic disorders included anxiety/obsessive compulsive disorders, mixed anxiety/depression disorders, and adjustment disorder.

<sup>3</sup>Suspected indicates participants who have experienced symptoms of mental disorder but have not met diagnostic standard.

\*P ≤ .05.

a positive correlation with their reported EE scores ( $r = .179, P = .002$ ). Older participants reported more criticism, EOI, and overall EE experience than younger participants. Male participants reported more high EE experience than female participants ( $\chi^2 = 4.328, P = .037$ ). Participants diagnosed with depression reported higher chances of facing hostility from their caregiver than participants diagnosed with schizophrenia ( $\chi^2 = 19.989, P = .029$ ). The longer participants had lived with their mental illness, the lower the hostility scores they reported ( $r = -.124, P = .032$ ). Participants whose main caregiver was their mother or partner had a lower chance of facing high hostility than those who had another relationship with their main caregiver ( $\chi^2 = 25.901, P = .004$ ).

Logistic regression analyses were performed to examine the predictive power of demographic variables regarding EE total and factor scores (table 9). It was revealed that for every 1-year increase in age, participants were expected to see a 3.8% increase in the odds of experiencing high EE (OR = 1.038,  $P = .000$ , 95% CI = 1.020–1.056). Male participants were expected to have 1.4 times higher odds of experiencing high EE than female peers (OR = 2.425,  $P = .008$ , 95% CI = 1.254–4.688).

**Table 4.** Percentage of high EE among different main caregivers

Relationship	High/Low EE	Frequencies	Percentages
Parents (mother, father)	High	54	57.45
	Low	40	42.55
Partners (husband, wife, boy/girlfriend)	High	70	79.55
	Low	18	20.45
Other family members (son, daughter, sibling, other family member)	High	74	74.75
	Low	25	25.25
Friends and other	High	19	86.36
	Low	3	13.64

**Discussions**

The current study investigates the high EE experienced by people with mental illness in Hong Kong during the COVID-19 pandemic. Responses from 303 service users of 2 community mental health service centers show an overall high EE prevalence of 71.62%, much higher than was found in a previous study in Hong Kong (32.7%<sup>8</sup>). Plausible factors in such a sharp increase in high EE prevalence are the stringent social distancing policies and the suspension of many health and social services, which led to a drastic increase of contact among people living together. Previous research has suggested that limiting family contact to fewer than 35 h per week may help mitigate the negative effects of high EE.<sup>10</sup> However, during the COVID-19 pandemic, the contact between people with mental illness and their caregivers increased hugely.

A recent mental health survey of Hong Kong adults during the COVID-19 found that 40.6% of respondents showed probable symptoms anxiety, depression, and posttraumatic stress disorder.<sup>11</sup> Specifically, individuals with preexisting health issues presented higher severity of Post-traumatic stress disorder (PTSD). The longer individuals were confined at home, the more likely they were to report a negative mental health status. Distress experienced by patients may intensify the tension among family members, and vice versa. Previous studies have revealed that caregivers’ negative attitudes and behaviors could reinforce patients’ internalized dysfunctional cognition, which in return could worsen patients’ mental health status and intensify the tension between patients and caregivers.<sup>12,13</sup> Findings from our survey could also reflect this tendency, as hostility and criticism were presented more frequently than EOI by main caregivers. And patients with mental illness showed increasing sensitivity of anger and criticizing behavior. Mental health support for both patients and their caregivers are highly desirable under this prolonged pandemic period.

**Table 5.** The most undesired items (choose 1–3 options from 12 items of CCLEES,  $N = 303$ )

Rank	Items	Frequencies	Percentages	Category
1	He/she blames me for things not going well.	73	24.09	Hostility
2	He/she gets angry with me when things don’t go right.	73	24.09	Hostility
3	He/she gets irritated when things don’t go right.	68	22.44	Hostility
4	He/she is always interfering.	61	20.13	Criticism
5	He/she “flies off the handle” when I don’t do something well.	60	19.80	Hostility
6	He/she often checks up on me to see what I’m doing.	41	13.53	EOI
7	He/she often accuses me of making things up when I’m not feeling well.	34	11.22	Criticism
8	He/she always has to know everything about me.	25	8.25	EOI
9	He/she insists on knowing where I’m going.	24	7.92	EOI
10	He/she is always nosing into my business.	23	7.59	EOI
11	He/she accuses me of exaggerating when I say I’m unwell.	23	7.59	Criticism
12	He/she says I cause my troubles to occur in order to get back at him/her.	21	6.93	Criticism

Although the construct of EE originated in research on people with schizophrenia, it has also been examined in other mental illnesses, such as bipolar affective disorder, depression, and anxiety disorders.<sup>4,5</sup> The current study revealed a high EE prevalence across a wide spectrum of psychotic illnesses and non-psychotic disorders under the COVID-19 pandemic. It is worth noting that the high EE prevalence rates in patients with schizophrenia were lower than among those with other diagnoses. Findings of the current study suggested that people with depression received more hostile and over-involving feedback compared with those with schizophrenia and other mental

disorders. The predicaments of these patients worth more attention. Previous studies have suggested that stigma may exert negative perception and stress towards people with mental illness and their family members, stimulating the occurrence of high EE in the family circumstance.<sup>14</sup> People with other mental disorders, even common mental disorders like depression, may still experience severe high EE conditions. The interactions between people with different mental disorders and their caregivers, and the precise mechanisms of high EE could be further explored.

Being older and being male were revealed to be risk factors of experiencing high EE from caregivers. It has been suggested that age may lead to attenuated engagement between patients and their caregivers,<sup>15</sup> and this effect was stronger in high EE families. However, during the pandemic period, the proliferated contacting time between the 2 sides may break the balance. The increased critical comments and reduced warmth in the family context further exacerbate the situation.<sup>1</sup> Regarding the caregiver's relationship with the patient, parents showed lower high EE prevalence rate than partners, friends, and other family caregivers (including sons, daughters, and siblings). Factors affecting high EE experiences are multidimensional, relating among other things to individual and family characteristics, mental status, and psychosocial functioning. To dissect the complex interactions among various factors, more in-depth research in this area is warranted.

The current study has a number of limitations. First, the sampling method was convenience sampling undertaken at 2 community mental health centers. Since many people suffering from mental disorders, especially non-psychotic disorders, are not service users of formal mental health services, the representativeness of the sample is limited, and is likely to be generalizable only to those with higher symptom severity and psychosocial impairments.

**Table 6.** Chi-squared test on categorical variables with high/low EE

Variable 1 × Variable2	N	χ <sup>2</sup>	df	P value
Gender × Criticism (H/L)	303	2.772	1	.096
Gender × Hostility (H/L)	303	0.151	1	.697
Gender × EOI (H/L)	303	0.229	1	.632
Gender × Total LEE (H/L)	303	4.328	1	.037*
Diagnosis × Criticism (H/L)	303	8.001	10	.629
Diagnosis × Hostility (H/L)	303	19.989	10	.029*
Diagnosis × EOI (H/L)	303	18.855	10	.042*
Diagnosis × Total LEE (H/L)	303	10.067	10	.435
Caregiver relationship × Criticism (H/L)	303	13.966	10	.175
Caregiver relationship × Hostility (H/L)	303	25.901	10	.004**
Caregiver relationship × EOI (H/L)	303	15.619	10	.111
Caregiver relationship × Total LEE (H/L)	303	18.177	10	.052

\*P ≤ .05, \*\*P ≤ .01.

**Table 7.** Mean and standard deviation of EE for categorical variables

Variables	Categories	No	Mean (EE)	SD (EE)
Gender	Male	78	36.35	8.49
	Female	225	35.35	8.83
Diagnosis	Schizophrenia	54	33.89	8.43
	Other psychotic illness <sup>1</sup>	34	36.82	7.38
	Depression	119	36.29	9.05
	Other non-psychotic disorder <sup>2</sup>	57	36.37	8.64
Caregiver's relationship to participant	Parents (mother, father)	94	32.83	8.49
	Partners (husband, wife, boy/girlfriend)	88	36.76	7.80
	Other family members (son, daughter, sibling, other family member)	99	36.55	9.12
	Other family members (son, daughter, sibling, other family member)	22	38.64	9.26
	Friends and other			

<sup>1</sup>Other psychotic illnesses included delusional and bipolar affective disorders.

<sup>2</sup>Other non-psychotic disorders included anxiety/obsessive compulsive disorders, mixed anxiety/depression disorders, and adjustment disorder.

**Table 8.** Correlation of continuous variables with level of EE

Variable 1 × Variable2	N	r	df	P value
Age × Criticism (score)	303	.204	301	.000***
Age × Hostility (score)	303	.054	301	.351
Age × EOI (score)	303	.206	301	.000***
Age × Total LEE (score)	303	.179	301	.002**
Time since diagnosis (months) × Criticism (score)	302	-.031	300	.588
Time since diagnosis (months) × Hostility (score)	302	-.124	300	.032*
Time since diagnosis (months) × EOI (score)	302	-.105	300	.070
Time since diagnosis (months) × Total LEE (score)	302	-.109	300	.059

\* $P \leq .05$ , \*\* $P \leq .01$ , \*\*\* $P \leq .001$ .

**Table 9.** Logistic regression model of predictors of total LEE

Total LEE				
Covariate	N	Odds ratio	95% Confidence Interval	P value
Age	303	1.038	(1.020, 1.056)	.000***
Gender (male)	303	2.425	(1.254, 4.688)	.008**

\*\* $P \leq .01$ , \*\*\* $P \leq .001$ .

Second, the assessment method used solely self-reporting by participants. It is desirable to incorporate other assessment modalities in future studies, such as involving the caregivers as well. Third, due to adoption of a cross-sectional survey study design, the causal relations among various factors could not be ascertained. It is desirable to conduct follow-up studies with the same participants after the pandemic.

## Conclusion

This study has investigated the EE experienced by people with mental illness during the COVID-19 pandemic in Hong Kong. Findings reveal a significantly elevated prevalence of high EE. In addition to schizophrenia, the study revealed elevated high EE prevalence across a wide spectrum of psychotic illnesses and non-psychotic disorders. While mothers and husbands were the most common caregivers, caregivers with other relationships to patients, including children, siblings, and friends, were

also common. Elevated high EE prevalence by caregivers of diverse relationships with patients was revealed. More attention to people with mental illness and their family should be given during the pandemic.

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