Characteristics of Parents With High Expressed Emotion and Related Factors-A Study of Parents of Adults With Schizophrenia

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Running title: High-EE and Related Factors

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Abstract

This study aimed to clarify characteristics of parents with high expressed emotion (EE) and related factors among parents of adults with schizophrenia. In total, 73 of the 289 parents (25.3%) had high EE (Family Attitude Scale (FAS) score ≥ 60) and 216 (74.7%) had low EE (FAS score < 60). A multiple logistic regression analysis showed that high EE parents were more distressed (OR = 1.27; 95% CI 1.16–1.39) and experienced more physical violence from their adult children with schizophrenia (OR = 2.86; 95% CI 1.28–6.43); the children with schizophrenia had been hospitalized at time of survey (OR = 6.54; 95% CI 1.10–38.89) and were less likely to attend rehabilitation services (OR = 2.56; 95% CI 1.06–6.17). Practitioners need to provide crisis intervention, home-visiting services, and support services for parents during hospitalization of their children with schizophrenia.

Keywords: expressed emotion, schizophrenia, parents of adults with schizophrenia

INTRODUCTION

It is clear from past research that family factors influence the course of schizophrenia. The strongest support for this claim comes from studies on expressed emotion (EE) (Amaresha and Venkatasubramanian, 2012; Butzlaff and Hooley, 1998; Wearden et al., 2000; Weintraub et al., 2017). Substantial research conducted in various countries has revealed that people with schizophrenia, who are from families that express high levels of criticism, hostility, or over-involvement, and are therefore defined as having high EE, have more frequent relapses than do those with similar problems from families who tend to be less expressive of their emotions (Pharoah et al., 2010). Further, high EE has consistently been found to be an important predictor of relapse among persons with schizophrenia (Butzlaff and Hooley, 1998). There are currently various psychosocial interventions designed to reduce high levels of EE within families (Pharoah et al., 2010).

Given that EE has been found to be influenced by the cultural context, the percentage of persons with schizophrenia living with family members with high EE ranges from 23% to 75%, varying across countries and environmental settings, such as rural–urban, and ethnic groups (Bebbington and Kuipers, 1994; Satyakam and Rath, 2013; Suhail et al., 2011; Wang et al., 2017). The characteristic response style of low EE relatives is described as tolerant, non-intrusive, and sensitive to the needs of their relative

with schizophrenia, while their high EE counterparts are prone to intolerance of their relative's problems, to intrusiveness, and to the use of inappropriate and inflexible strategies in dealing with difficulties posed by their relative's behaviors. Such a portrayal of family behavior style is clearly inadequate for explaining the development and maintenance of high EE behavior, as it merely suggests that a high EE response is a personality-like trait (Amaresha and Venkatasubramanian, 2012; Wearden et al., 2000).

Several studies have shown that family members with high EE are more distressed (Barrowclough and Parle, 1997; Domínguez-Martínez et al., 2017; Shimodera et al., 2000; Wearden et al., 2000), experience greater family stigma (Cherry et al., 2017; Phillips et al., 2002), are more bothered by the presence of symptoms and their inability to cope effectively with them (Barrowclough and Parle, 1997), experience a higher care burden (Möller-Leimkühler and Jandl, 2011; Wang et al., 2017; Wearden et al., 2000), and are more likely to respond with criticism (Brady and McCain, 2004; King, 2000; Rosenfarb et al., 1995), which may be a precipitant to physical violence by their relative with a severe mental illness (Amaresha and Venkatasubramanian, 2012). However, research on this topic is scarce, and it is unclear as to what accounts for high EE among families (Brady and McCain, 2004). A multivariate analysis is appropriate for determining multiplicity of factors related to EE. However, most previous studies have

had sample sizes of 100 or less, which likely precluded the conduct of multivariate analyses.

A recent national survey of family members from self-help family groups in Japan showed that 85% of the members were parents of adult child with a mental illness, 75.6% lived with their relative with a mental illness, 40% had experienced physical violence from their relative during a crisis situation, and 73.3% were distressed (Minna-net, 2018). A qualitative study on the coping processes of parents who experienced violence from their relatives with schizophrenia found that such parents had endured repeated incidents of violence over a long period of time (Kageyama et al., 2018). Parents' endurance of this challenging situation may be further exacerbated by engagement in behaviors that are commonly observed in those with high EE. In Japan, mental health practitioners sometimes label parents as high EE to denote an unfavorable personality (Kageyama, 2016). This type of labeling by practitioners may complicate an already difficult situation and may inhibit cooperation by the person in recovery, the provider, and the parents. Therefore, practitioners need to better understand the characteristics of parents with high EE.

The present study aimed to examine parental factors (i.e., demographic characteristics, primary caregiver, cohabiting with the relative, degree of distress, family

stigma, empowerment, and physical violence experienced) and factors of the adult children with schizophrenia (i.e., years since onset, regular visits with psychiatrist, taking medication as prescribed, number of hospitalizations, and rehabilitation attendance or not), by categorizing parents into high and low EE groups, based on their scores on the Family Attitude Scale (Fujita et al., 2002). Bivariate and multivariate statistical procedures were employed.

METHODS

Study sample and data collection

The present analyses were part of a larger study, Japanese Family Violence and Mental Illness (Kageyama et al., 2015), that aimed to examine the prevalence of familial violence and related factors among caregivers and siblings in 866 households belonging to 27 affiliate family groups under a prefectural-level family group association in Japan.

Questionnaires were distributed to 768 of the 866 households in the association. The method of distribution was determined based on a discussion with board members of the association. The resolution regarding whom to distribute questionnaires to was made by family group leaders, as they did not want to overburden family members who were dealing with a major family or medical issue. Questionnaires were not distributed to 118 households, due to such an assessment. The following were the main reasons for not

recruiting certain households: frail elderly (42), heavy care burden (22), unknown household issue (15), potential respondent having own mental disorder (10), relative with mental illness deceased (5), and other (24). Of the 482 caregiver questionnaires that were returned (from 350 households), 463 were valid (346 households). The 386 caregiver questionnaires (289 households) were completed by parents of adults with schizophrenia, after the exclusion of respondents related to persons who had been diagnosed with illnesses other than schizophrenia (n = 43), respondents other than parents (n = 22), and respondents with missing data on EE (n = 20) (considering overlap, n = 77 were excluded). For the present data analysis, if more than one parent in a household completed a questionnaire, one parent was randomly selected for inclusion, to avoid nested data. This was necessary as nested data would violate the assumption of independence required for the analyses. The final sample size for the current analysis was 289 parents.

Measures

Expressed emotion was the only dependent variable. The following were the independent variables related to parents: relationship with the relative with schizophrenia, age, household income, distress, family stigma, family empowerment with reference to concerns about symptoms and coping efficacy, being a primary caregiver and cohabitation with the relative with schizophrenia (as indicators of care burden), and

experiences of physical violence.

The following were the independent variables for the relative with schizophrenia: years since onset of the disorder, visit to psychiatrist, taking medication as prescribed, number of hospitalizations, and attendance of a rehabilitation program.

Expressed emotion. To assess EE, criticism and hostility were measured using the Family Attitude Scale (FAS), which is a self-report measure translated into Japanese. The FAS is a 30-item scale with scores ranging from 0 to 120, with higher scores indicating a greater degree of criticism and hostility. The reliability and validity of the Japanese version has been established (Fujita et al., 2002). In Japanese samples, the best cut-off for the FAS, with the highest sensitivity and specificity, was 59/60. Cronbach's alpha was 0.95 in the present study.

Parents' distress. The K6, a short questionnaire comprising six items, was developed as a screening scale for non-specific psychological distress, but not for any particular diagnosis (Kessler et al., 2002). It has since been used as an indicator of mood/anxiety disorders (Sakurai et al., 2011) and was employed in the present study to assess parents' psychological distress. Respondents were asked, "During the past 30 days, about how often did you feel 1) nervous, 2) hopeless, 3) restless or fidgety, 4) so depressed that nothing could cheer you up, 5) that everything was an effort, and 6) worthless?"

Respondents rated each item on a 5-point scale (0 = none of the time to 4 = all of the time), resulting in a score range of 0–24. The higher the score, the greater the level of psychological distress. The reliability and validity of the Japanese version of the K6 has previously been evaluated; the best cut-off point has been estimated as 4/5, featuring 100% sensitivity and 68.7% specificity for the screening of mood/anxiety disorders (Furukawa et al., 2008; Sakurai et al., 2011). Cronbach's alpha for this tool was 0.91 in the present study. The K6 score has been used to categorize participants into two groups: high (K6 ≥ 5) and low (K6 ≤ 4) distress. In the multiple logistic regression, the K6 scores were used as a continuous variable.

Family stigma. As there are no specific Japanese scales assessing family stigma, an English subscale of the Caregiver's Burden Scale by Song (1999), whose accuracy has been confirmed through back-translation into English, was used. The scale's reliability and validity have been evaluated in China and found to be acceptable (Song, 1999). The subscale features the following two items: "having a family member with mental illness makes my family feel ashamed" and "having a family member with mental illness makes me feel ashamed," with responses on a 5-point Likert scale (1 = never to 5 = always). The resulting scores range from 2 to 10, with higher scores indicating a greater degree of stigma. Cronbach's alpha for this subscale was 0.94 in the present study.

Family empowerment. The Family Empowerment Scale (FES) is a 34-item self-report instrument originally designed to measure empowerment among parents whose children have emotional disabilities (Koren et al., 1992). The FES produces scores for the following three subscales assessing the level of empowerment: Family (12 items), Service System (12 items), and Community/Political (10 items). The Family subscale assesses the immediate situation at home and primarily involves assessing the parent's management of day-to-day situations. The Service System subscale pertains to professionals and agencies providing services to the child, and involves parents' consultation with the service system to obtain adequate services for their children. The Community/Political subscale pertains to legislative bodies, policymakers, agencies, and community members; it assesses parents' advocacy efforts on behalf of the population. A Japanese version of the FES for family caregivers of adults with mental disorders was developed and tested for its validity and reliability among parents (Kageyama et al., 2016). The present study used only the Family subscale. Each item in this subscale is rated on a Likert-type scale ranging from 1 (not true at all) to 5 (very true). The FES produces scores for the three subscales based on the level of empowerment. The Cronbach's alpha coefficient of the Family subscale was 0.88 in the present study.

Physical violence. The presence of physical violence perpetrated by the relative

with schizophrenia was assessed using the following nine violent acts: destroyed property, pushing, punching and kicking, throwing an object, visit to a physician resulting from an injury, a knife injury, threatening with a knife, beating with a physical object, and choking. Respondents rated the frequency of the nine acts of physical violence as never, 1–4 times, and 5 times or more within the past year. For analysis, we categorized the responses of 1–4 times and 5 times or more as "ever," thus dichotomizing responses into ever or never.

Analysis

Initially, the normality of the variables was assessed by employing descriptive statistics and examining the distribution of each variable. The background characteristics of the high and low EE groups were compared using t-tests, χ^2 tests, and Fisher's exact tests. T-tests were used for continuous variables, chi-square tests for categorical variables in which each cell had an expected frequency of five or more, and Fisher's exact tests for categorical variables in which one or more cells had an expected frequency of less than five. To identify factors related to parents' EE, a multiple logistic regression was performed with the high and low EE groups as the dependent variable, as determined by FAS scores. Independent variables that were related to the dependent variable at $p < 0.2$ were included in the model. Multicollinearity was tested using the variance inflation factor (VIF), and confirmed VIF < 2 among the selected variables. All analyses were

conducted using SAS Version 9.4 (SAS, North Carolina, United States).

Ethical considerations

The University of Tokyo Research Ethics Committee approved the study (February 24, 2014; No. 10415). All participants were informed of the study's aim and that their participation was voluntary. Informed consent was implied through questionnaire completion and return. Identification numbers of the particular family group to which questionnaires were distributed were used. However, to ensure that confidentiality of the collected data and anonymity of respondents were maintained, no identification number or code that could be linked to a specific household or individual respondent's name was employed. Additionally, contact information of agencies that could assist participants who required help pertaining to experiences of violence was provided.

RESULTS

Demographic characteristics of respondents

Three-fourths of the respondents were mothers (74.4%), three-fourths were primary caregivers (75.9%), and most lived with their relatives with schizophrenia (82.9%). The average age of the respondents was 69 years old. Two-thirds of the relatives with schizophrenia were male (61.8%) and their average age was 39.1 years. An average

of almost 20 years had passed since the onset of schizophrenia. Most of the relatives with schizophrenia visited a psychiatrist regularly (87.8%) and took medication as prescribed (93.7%). More than half (53.5%) was not attending rehabilitation services. The average K6 score was 6.5 ± 5.5 points. More than half of the parents (56.6%) exhibited high distress. Just over one-third (36.0%) of the parents had experienced physical violence within the past year.

[Insert Table 1 about here]

Expressed Emotion

In the current study, 73 of the 289 parents (25.3%) had high EE (FAS ≥ 60) and 216 parents (74.7%) had low EE (FAS < 60). Compared to parents with low EE, those with high EE were more likely to live separately from the relatives with schizophrenia, experienced more distress, encountered higher family stigma, had low family empowerment, and experienced more physical violence perpetrated by their relatives with schizophrenia. Further, the relatives whom they cared for had had schizophrenia for a longer period of time, had been hospitalized at the time of survey, had been hospitalized more often, were less likely to take medication as prescribed, and were less likely to attend rehabilitation services. Among 20 adults with schizophrenia who lived separately from parents with high EE, 5 (25.0%) were attending rehabilitation services and 15 (75.0%)

were not. Among 52 adults with schizophrenia who lived with their parents with high EE, 17 (32.7%) were attending rehabilitation services, 33 (63.5%) were not, and 2 (3.8%) had missing data. There was no significant relationship between cohabitation status and attending rehabilitation services (χ^2 test, $p = .321$).

Years since the onset of the illness highly correlated with the age of parents and of their relatives with schizophrenia. Therefore, the ages of parents and their relatives with schizophrenia were excluded from the independent variables entered into the multiple logistic regression analysis. VIF < 2 among the other 11 independent variables selected for the analysis were confirmed. Parents with high EE were more distressed (based on the K6 score) (OR = 1.27; 95% CI 1.16–1.39), had experienced more physical violence from their adult children with schizophrenia (OR = 2.86; 95% CI 1.28–6.43); and the children for whom they cared were hospitalized at the time of the survey (OR = 6.54; 95% CI 1.10–38.89) and were less likely to attend rehabilitation services (OR = 2.56; 95% CI 1.06–6.17).

[Insert Table 2 about here]

DISCUSSION

Characteristics of parents with high expressed emotion

In the current study, 73 of the 289 parents (25.3%) had high EE (FAS ≥ 60) and

216 parents (74.7%) had low EE (FAS < 60). In another Japanese study that used the Japanese version of the FAS on family members of hospitalized patients with schizophrenia, 9 (22%) family members had high EE and 32 (78%) had low EE (Fujita et al., 2002). Thus, the proportional breakdowns were similar to those in the current study.

In the univariate analyses, compared to parents with low EE, those with high EE were more likely to live separately from their relatives with schizophrenia, experienced more distress, encountered higher family stigma, had lower family empowerment, and were more likely to have experienced physical violence perpetrated by their relatives with schizophrenia. Further, they had been caring for their relatives with schizophrenia for a longer period of time and their relatives had been hospitalized at the time of survey, had been hospitalized more often, and were less likely to take medication as prescribed. These characteristics of high EE parents seem to exemplify distressed elderly caregivers who cared for adult children with a severe disability, who were not attending rehabilitation, and perpetrated physically violent acts against the parents in the home environment, likely during a crisis situation. As a consequence, the adult children were periodically in need of hospitalization.

Factors related to expressed emotion

A multiple logistic regression analysis showed that high EE parents were more

distressed and had experienced more physical violence from their relatives with schizophrenia. Further, the adult children whom they cared for were hospitalized at the time of the survey and were less likely to attend rehabilitation services.

The FAS and K6 scores were highly correlated. In the present study, the average K6 score among the respondents was 6.5 ± 5.5 points, which is higher than that observed in the general population (3.6 ± 3.9) in Japan (Sakurai et al., 2011). Parents of adults with schizophrenia seemingly demonstrate a higher level of distress, compared to the general population, and family members with high EE were more distressed than those with low EE. These findings support the results of previous research, which also demonstrated that family members with high EE were more distressed (Barrowclough and Parle, 1997; Domínguez-Martínez et al., 2017; Shimodera et al., 2000).

The present study found that parents of adults with schizophrenia, who experienced the latter's violent behavior, were more likely to have high EE. Previous research determined that family members with high EE were more likely to respond with criticism (Brady and McCain, 2004; King, 2000; Rosenfarb et al., 1995), which may potentially exacerbate physically violent behaviors (Amaresha and Venkatasubramanian, 2012). Highly critical caregivers are more likely to hold relatives with schizophrenia responsible for their own difficulties (Barrowclough & Hooley, 2003). In Japan, 61.8%

of the family caregivers are fearful of persons with severe mental illness acting out bizarrely or violently, thereby causing a commotion, such that their neighbors may become aware of their critical circumstances (Minna-net, 2018). Therefore, parents who experience violence may feel responsible to strangers for the behaviors of their relatives with severe mental illness. Consequently, parents with high EE may react critically toward their adult children with schizophrenia, with the intent of controlling and avoiding their potentially violent acts. In addition, persons who have experienced violence are likely to be at a higher conditional risk of PTSD (Kawakami et al., 2014), which may make it almost impossible for them to communicate with their relatives with schizophrenia warmly. Regardless of speculation about causality, parents with high EE are more likely to experience violence, which may be an indicator that they are frequently in a crisis mode or are under ongoing stress and tension, which makes embracing others with warmth difficult.

In addition, high EE parents were more likely to care for a child who had been hospitalized. This result supports previous research finding that high EE is a robust predictor of symptom relapse for those with schizophrenia (Weintraub et al., 2017). When persons with schizophrenia relapse in Japan, they are often treated in psychiatric hospitals. Japanese psychiatric hospitals provide long-term hospitalization for persons with

schizophrenia (average 610 days) (Ministry of Health Labour and Welfare, 2014). Therefore, in the present sample, it is likely that high EE parents were caring for adult children with schizophrenia, who had been hospitalized due to illness relapse and were likely to have continued to be hospitalized until the time of this survey.

Finally, the multiple logistic regression analysis showed that parents with high EE had adult children who were less likely to attend rehabilitation services. Bivariate analyses indicated that these parents were more likely to live separately from their adult children, who were less likely to attend rehabilitation services. When taken individually, living separately and non-attendance of rehabilitation services are both important. One of the reasons for separate living arrangements is the fear of violence (Kageyama et al., 2018), which is related to high EE. However, when considered in relation to all the independent variables in the model, non-attendance of rehabilitation takes precedence and suppresses the effect of separate living arrangements. For families with high EE non-attendance of rehabilitation did not differ by co-habilitation status. Consequently, attendance of rehabilitation services may have other important implications for parental EE. For example, a national survey in Japan found that outpatients with mental health disorders, who do not use rehabilitation services, were more likely to have more severe disabilities and 78% were living with parents and/or other family members (Hirakawa,

2010). Another survey on family group members in Japan found that 85% of the members were worried about their own aging (Minna-Net, 2010). Parents who have an adult child with a severe disability, who does not use rehabilitation services, may feel extremely uneasy regarding the child's future following their own incapacitation or death. This is because the child's functional limitations and anticipated lack of support heighten their concern. Furthermore, due to the child's severe disability, parents with high EE may have difficulty communicating empathetically with their child.

Practice implications

The current study revealed that parents with high EE were more likely to experience violence, to be more distressed, to care for a relative who was hospitalized and who spent the majority of his/her time at home, without availing himself/herself of rehabilitation services. These results suggest that high EE may be an indicator of two situations. Firstly, the relative with schizophrenia relapses, having engaged in violent behavior, which may have precipitated admission to the hospital. Secondly, the family caregiver becomes extremely distressed due to the inactivity of the adult child not taking advantage of the rehabilitation services available and simply remaining homebound. Consequently, in crisis situations, parents with high EE may be exhausted from a high level of volatility at home, including experiences of physical violence. Therefore, they

may resort to seeking hospital admission in order to calm the home environment. The availability of respite care and crisis intervention services to these families might help reduce their distress, by preventing the occurrence or escalation of such volatile situations to the point of physical violence. There is an urgent need for the establishment of crisis services in Japan, as they are rather scarce. Moreover, practitioners must also provide appropriate assistance to distressed parents during their children's hospitalization. Practitioners could provide counseling and family education to parents, and offer information regarding family support groups. High EE parents are more likely to be distressed. In Japan, 58% of the parents or siblings of patients who had undergone long-term hospitalization had a high risk of PTSD (Miyagi et al, 2013). Therefore, practitioners must assess the psychological status of parent caregivers and provide treatment and supportive resources for heavily distressed parents.

Practitioners must support distressed parents of adult children with schizophrenia, who spend the majority of their time at home. Most parents in the current study were caring for an adult child who had the onset of the illness almost 20 years previously. Consequently, these parents had been caring for a relative with a likely severe level of disability for a long time. Recent data showed that approximately 60% of homicides committed by parents against their children with mental disorders, were due to

parents' pessimism about the children's future (Yomiurishimbun, 2017). Practitioners need to provide home-outreach services to families whose relatives with schizophrenia do not attend rehabilitation services, as such supportive services may not only be helpful to the relatives with schizophrenia, but also to their parents.

Strengths and limitations of the present study

The present study had some strengths. First, the current study showed the relationship between high EE and parents' experiences of violence, perpetrated by a relative with schizophrenia. This finding indicates a new characteristic of high EE family members, which has not been identified in previous research on EE. In addition, the sample size for the present analysis was almost 300, which was more than sufficient for conducting multivariate analyses.

However, the present study also has several limitations. First, EE was measured using the FAS, which assesses only criticism and hostility, and not over-involvement. Additionally, the study used self-administered questionnaires, and not interviews. The latter may have enabled a more in-depth assessment of the concepts. Third, the respondents did not represent family members from all family groups in Japan. However, the characteristics of respondents in the current study are similar to those of typical family members belonging to family self-help groups in Japan, as determined by a national

survey (Minna-net, 2018). The study sample for these analyses included only parents of adults with schizophrenia. However, the sample likely best represents parents who are caring for adult children with schizophrenia, who had spent time in a psychiatric hospital. Since Japan is currently deinstitutionalizing, it is important to develop services to better prepare families for the return of their ill relatives to the family home. Such measures should focus on the provision of strategies to prevent violent crises. Furthermore, this study employed a cross-sectional design in which the directionality of the relationship between the independent and dependent variables cannot be determined. However, the focus of the study was not to predict high EE, but to examine variables that were related to it. The study findings offer some preliminary direction, namely, that reducing EE may help decrease parents' distress and violent encounters with their adult children with schizophrenia.

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DISCLOSURE

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The other authors declare no conflict of interest.

REFERENCES

Amaresha, C., & Venkatasubramanian, G. (2012). Expressed emotion in schizophrenia: An overview. *Indian J Psychol Med*, *34*(1), 12–20. http://doi.org/10.4103/0253-7176.96149

Barrowclough, C., & Parle, M. (1997). Appraisal, psychological adjustment and expressed emotion in relatives of patients suffering from schizophrenia. *British Journal of Psychiatry*, *171*(1), 26–30. http://doi.org/10.1192/bjp.171.1.26

Bebbington, P., & Kuipers, L. (1994). The predictive utility of expressed emotion in schizophrenia: An aggregate analysis. *Psychological Medicine*, *24*(3), 707–718. http://doi.org/10.1017/S0033291700027860

Brady, N., & McCain, G. C. (2004). Living with schizophrenia: a family perspective. *Online Journal of Issues in Nursing*, *10*(1), 7. http://doi.org/0.3912/OJIN.Vol10No01HirshPsy01

Butzlaff, R. L., & Hooley, J. M. (1998). Expressed emotion and psychiatric relapse: a meta-analysis. *Archives of General Psychiatry*, *55*(6), 547–552. http://doi.org/10.1001/archpsyc.55.6.547

Cherry, M. G., Taylor, P. J., Brown, S. L., Rigby, J. W., & Sellwood, W. (2017). Guilt, shame and expressed emotion in carers of people with long-term mental health difficulties: A systematic review. *Psychiatry Research*, *249*(July 2016), 139–151. http://doi.org/10.1016/j.psychres.2016.12.056

Domínguez-Martínez, T., Medina-Pradas, C., Kwapil, T. R., & Barrantes-Vidal, N. (2017). Relatives' expressed emotion, distress and attributions in clinical high-risk and recent onset of psychosis. *Psychiatry Research*, *247*(November 2016), 323–329. http://doi.org/10.1016/j.psychres.2016.11.048

Fujita, H., Shimodera, S., Izumoto, Y., Tanaka, S., Kii, M., Mino, Y., & Inoue, S. (2002). Family attitude scale: measurement of criticism in the relatives of patients with schizophrenia in Japan. *Psychiatry Research*, *110*(3), 273–280. http://doi.org/10.1016/S0165-1781(02)00108-7

Furukawa, T. A., Kawakami, N., Saitoh, M., Ono, Y., Nakane, Y., Nakamura, Y., … Kikkawa, T. (2008). The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. *International Journal of Methods in Psychiatric Research*, *17*(3), 152–158.

Hirakawa, H. (2010). *Syakaiteki shienga todoiteinai bodaina kazuno hitotachieno shieno kangaeru [How to support for many people who cannot reach any supportive resources]*. Tokyo.

Kageyama, M., Nakamura, Y., Kobayashi, S., & Yokoyama, K. (2016). Validity and

reliability of the Family Empowerment Scale for caregivers of adults with mental health issues. *Journal of Psychiatric and Mental Health Nursing*, *23*(8), 521–531. http://doi.org/10.1111/jpm.12333

Kageyama, M., Yokoyama, K., Nakamura, Y., Kobayashi, S., & Fujii, C. (2018). The Coping Process of Japanese Parents Who Experience Violence From Adult Children With Schizophrenia. *Archives of Psychiatric Nursing*. http://doi.org/10.1016/j.apnu.2018.03.004

Kageyama, M., Yokoyama, K., Nakamura, Y., Sayaka, K., & Chiyo, F. (2018). The Coping Process of Japanese Parents Who Experience Violence From Adult Children With Schizophrenia. *Archives of Psychiatric Nursing*, *Epub ahead*. http://doi.org/https://doi.org/10.1016/j.apnu.2018.03.004

Kawakami, N., Tsuchiya, M., Umeda, M., Koenen, K. C., Kessler, R. C., & World Mental Health Survey Japan. (2014). Trauma and posttraumatic stress disorder in Japan: Results from the World Mental Health Japan Survey. *Journal of Psychiatric Research*, *53*(1), 157–165. http://doi.org/doi:10.1016/j.jpsychires.2014.01.015

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., … Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, *32*(6), 959–976. http://doi.org/10.1017/S0033291702006074

King, S. (2000). Is expressed emotion cause or effect in the mothers of schizophrenic young adults? *Schizophrenia Research*, *45*(1–2), 65–78. http://doi.org/10.1016/S0920-9964(99)00174-7

Koren, P. E., DeChillo, N., & Friesen, B. J. (1992). Measuring empowerment in families whose children have emotional disabilities: a brief questionnaire. *Rehabilitation Psychology*, *37*(4), 305–321. http://doi.org/10.1037/h0079106

Ministry of Health Labour and Welfare. (2014). *Kanja chosa 2014 [Patients survey 2014]*. Retrieved from http://www.e-stat.go.jp/SG1/estat/List.do?lid=000001141596

Minna-net. (2018). *Heisei 29 nendo nihon zaidan josei jigyo hokokusyo [Project report supported by the Nippon Foundation 2017]*. Tokyo.

Minna-Net. (2010). *Shogaisya jiritushien chosakenkyu purojekuto hokokusho [A report of research project for independent living of people with disabilities 2009]*. Tokyo. Retrieved from http://seishinhoken.jp/researches/view/345

Miyagi, T., Toyosato, T., & Yokota, T. (2013). [Togoshichosyo kanjawo sasaeru kazokuno shinriteki gaisyogo sutoresu shogaito syukanteki konnan hutankan oyobi seishinkenko tonokanren] Comparing the relationships of post-traumatic stress

disorder (PTSD) in families with schizophrenics with their family. *Ryukyu Igakukaishi*, *32*(1), 45–52. Retrieved from http://okinawa-repo.lib.u-ryukyu.ac.jp/handle/okinawa/17621

Möller-Leimkühler, A. M., & Jandl, M. (2011). Expressed and perceived emotion over time: Does the patients' view matter for the caregivers' burden? *European Archives of Psychiatry and Clinical Neuroscience*, *261*(5), 349–355. http://doi.org/10.1007/s00406-010-0178-y

Pharoah, F., Mari, J., Rathbone, J., & Wong, W. (2010). Family intervention for schizophrenia. *The Cochrane Database of Systematic Reviews*, (12), CD000088. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4204509&tool=pmcentrez&rendertype=abstract

Phillips, M. R., Pearson, V., Li, F., Xu, M., & Yang, L. (2002). Stigma and expressed emotion: a study of people with schizophrenia and their family members in China. *The British Journal of Psychiatry : The Journal of Mental Science*, *181*(6), 488–93. http://doi.org/10.1192/BJP.181.6.488

Rosenfarb, I. S., Goldstein, M. J., Mintz, J., & Nuechterlein, K. H. (1995). Expressed emotion and subclinical psychopathology observable within the transactions between schizophrenic patients and their family members. *Journal of Abnormal Psychology*, *104*(2), 259–267. http://doi.org/10.1037/0021-843X.104.2.259

Sakurai, K., Nishi, A., Kondo, K., Yanagida, K., & Kawakami, N. (2011). Screening performance of K6/K10 and other screening instruments for mood and anxiety disorders in Japan. *Psychiatry and Clinical Neurosciences*, *65*(5), 434–441. http://doi.org/10.1111/j.1440-1819.2011.02236.x

Satyakam, M., & Rath, N. (2013). Expressed Emotion in Psychiatric Disorders. *Eastern Journal of Psychiatry*, *16*(1–2), 17–22. Retrieved from http://www.researchgate.net/profile/Satyakam_Mohapatra/publication/259937919_EXPRESSED_EMOTION_IN_PSYCHIATRIC_DISORDERS/links/02e7e53493a2412f74000000.pdf#page=24

Shimodera, S., Mino, Y., Inoue, S., Izumoto, Y., Fujita, H., & Ujihara, H. (2000). Expressed emotion and family distress in relatives of patients with schizophrenia in Japan. *Comprehensive Psychiatry*, *41*(5), 392–397. http://doi.org/10.1053/comp.2000.9019

Song, L. (1999). [The study on caregivers of persons with psychiatric disability: caregiver burden and its correlates]. *Formosa Journal of Mental Health*, *12*(1), 1–30.

Suhail, K., Ikram, A., Jafri, S. Z., Sadiq, S., & Singh, S. P. (2011). Ethnographic Analysis of Expressed Emotions in Pakistani Families of Patients with Schizophrenia. *International Journal of Mental Health*, *40*(4), 86–103. http://doi.org/10.2753/IMH0020-7411400406

Wang, X., Chen, Q., & Yang, M. (2017). Effect of caregivers ' expressed emotion on the care burden and rehospitalization rate of schizophrenia, 1505–1511.

Wearden, a J., Tarrier, N., Barrowclough, C., Zastowny, T. R., & Rahill, a a. (2000). A review of expressed emotion research in health care. *Clinical Psychology Review*, *20*(5), 633–666. http://doi.org/10.1016/S0272-7358(99)00008-2

Weintraub, M. J., Hall, D. L., Carbonella, J. Y., Mamani, A. M. Y. W. D. E., & Hooley, J. M. (2017). Integrity of Literature on Expressed Emotion and by a p -Curve Analysis. *Faimly Process*, *56*(2), 436–444. http://doi.org/10.1111/famp.12208

Yomiurishimbun. (2017, April 2). Kono syogai byoki nayami satsugai [Killing children with disabilities and illness by their worried parents], p. 1. Tokyo.

Table 1. Demographic data of parents from high and low EE groups

			All	Low EE group (FAS < 60)	High EE group (FAS ≥ 60)	
			N = 289	n = 216	n = 73	
		n	n (%) Mean ± SD	n (%) Mean ± SD	n (%) Mean ± SD	*P*
Parents' factors						
Relationship	Father	289	74 (25.6%)	54 (25.0%)	20 (27.4%)	.685
	Mother		215 (74.4%)	162 (75.0%)	53 (72.6%)	
Age (years)	Average	281	69.0 ± 7.6	68.6 ± 7.2	70.3 ± 8.5	.113
Primary caregiver	Yes	282	214 (75.9%)	160 (75.8%)	54 (76.1%)	.969
	No		68 (24.1%)	51 (24.2%)	17 (23.9%)	
Cohabitation with patient	Yes	287	238 (82.9%)	186 (86.5%)	52(72.2%)	.0005
	No		49(17.1%)	29 (13.5%)	20 (27.8%)	
Household income[1)]	Less than US$ 20,000	282	72 (25.5 %)	49 (23.2%)	23 (32.4%)	.294

	US$ 20,000 to 40,000		144 (51.1%)	112 (53.1%)	32 (45.1%)	
	Over US$ 40,000		66 (23.4%)	50 (23.7%)	16 (22.5%)	
K6	Average	279	6.5 ± 5.5	4.6 ± 3.8	12.3 ± 5.6	< .0001
	Low distress	< 5	121 (43.4%)	116 (55.2%)	5 (7.3%)	< .0001
	High distress	≥ 5	158 (56.6%)	94 (44.8%)	64 (92.8%)	
Family stigma		285	4.8 ± 2.2	4.4 ± 2.1	5.9 ± 2.2	< .0001
Family empowerment		286	3.0 ± 0.6	3.1 ± 0.6	2.7 ± 0.5	< .0001
Physical violence	Never	289	185 (64.0%)	152 (70.4%)	33 (45.2%)	.0001
	Ever		104 (36.0%)	64 (29.6%)	40 (54.8%)	
Patients' factors						
Gender	Male	283	175 (61.8%)	126 (59.4%)	49 (69.0%)	.150
	Female		108 (38.2%)	86 (40.6%)	22 (31.0%)	
Age (years)	Average	283	39.1 ± 7.9	38.7 ± 7.7	40.4 ± 8.6	.131
Years since onset		282	18.7 ± 8.4	17.9 ± 8.0	21.1 ± 8.9	.0005
Psychiatrist visit	Regularly	287	252 (87.8%)	200 (93.0%)	52 (72.2%)	< .0001

	Hospitalized		23 (8.0%)	7 (3.3%)	16 (22.2%)	
	Not regularly visit		12 (4.2%)	8 (3.7%)	4 (5.6%)	
Taking medication as prescribed	Yes	287	269 (93.7%)	205 (95.8%)	64 (87.7%)	.022
	No		18 (6.3%)	9 (4.2%)	9 (12.3%)	
Number of hospitalizations	0	287	56 (19.5%)	47 (21.9%)	9 (12.5%)	.006
	1–2		136 (47.4%)	104 (48.4%)	32 (44.4%)	
	3 or more		95 (33.1%)	64 (29.8%)	31 (43.1%)	
Rehabilitation	Yes	284	132 (46.5%)	111 (52.4%)	21 (29.2%)	.0007
	No		152 (53.5%)	101 (47.6%)	51 (70.8%)	

1): Conversion of 100 JPY to US$ 1

P values were calculated for the differences between the high and low distress groups using the t-test, χ^2 test, or fisher's exact test.

Abbreviations: SD, Standard deviation; EE, Expressed Emotion; FAS, Family Attitude Scale.

Table 2. Odds ratio for parents with high EE (FAS ≥ 60)

N = 253

		OR	95% CI	*P*
Parents' factors				
Primary caregiver	Yes	0.81	0.28–2.35	.709
Cohabitation with adult child	No	1.53	0.41–5.79	.528
K6	(1 increment)	1.27	1.16–1.39	< .0001
Family stigma	(1 increment)	1.17	0.97–1.41	.099
Family empowerment	(1 increment)	0.49	0.23–1.04	.062
Physical violence	Ever	2.86	1.28–6.43	.011
Adult Child factors				
Years since onset	(1 increment)	1.05	0.99–1.11	.065
Psychiatrist visit	Hospitalized	6.54	1.10–38.98	.039
	Not regularly visit	1.78	020–16.00	.607
Taking medication as prescribed	No	2.24	0.41–12.16	
Number of hospitalizations	1–2	1.01	0.34–3.04	.985
	3 or more	0.74	0.22–2.43	.613
Rehabilitation attendance	No	2.56	1.06–6.17	.037

Abbreviations: CI, Confidence interval; EE, Expressed Emotion; FAS, Family Attitude Scale.

Reference categories are “No” (primary caregivers), “Yes” (cohabitation with adult child), “Never” (physical violence), “Regularly visit” (psychiatrist visit), “Yes” (taking medication as prescribed), “0” (number of hospitalizations), and “Yes” (rehabilitation attendance).