

# Validation of the Cantonese Version of Family Burden Interview Schedule on Caregivers of Patients with Obsessive-compulsive Disorder

BWM Siu, TMH Yeung

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## Abstract

**Objective:** To validate the Cantonese version of Family Burden Interview Schedule for assessing the burden on caregivers of obsessive-compulsive disorder patients.

**Patients and Methods:** The Family Burden Interview Schedule was first translated into Cantonese, then back-translated into English for comparison. Seventy seven obsessive-compulsive disorder patient-caregiver dyads were recruited from a psychiatric outpatient clinic. The Cantonese version of Family Burden Interview Schedule and the Chinese version of General Health Questionnaire-12 were applied to the caregivers. Patients were assessed by the Yale-Brown Obsessive Compulsive Scale and the Global Assessment of Functioning scale.

**Results:** Concurrent validity was established by correlation with Chinese version of the General Health Questionnaire-12 ( $r_s = 0.644$ ,  $p < 0.01$ ). Construct validity was shown by correlations with Yale-Brown Obsessive Compulsive Scale ( $r_s = 0.621$ ,  $p < 0.01$ ) and Global Assessment of Functioning scale ( $r_s = -0.721$ ,  $p < 0.01$ ), and correlation between objective and subjective burden scores ( $r_s = 0.781$ ,  $p < 0.01$ ). Cronbach's alpha for internal consistency was 0.90. Intra-class correlation coefficients for inter-rater and test-retest reliability were 0.988 and 0.986, respectively.

**Conclusion:** The Cantonese version of Family Burden Interview Schedule is a valid and reliable instrument for assessing the burden on caregivers of obsessive-compulsive disorder patients.

**Key words:** Caregivers, Cost of illness, Hong Kong, Interviews, Obsessive-compulsive disorder, Translating

## Introduction

The subject of burden has become significant with the trends of deinstitutionalisation and the implementation of community mental health service over the last 50 years. Grad and Sainsbury estimated burden by rating the effect the patient had on the family's income, social activities, domestic and school routines; the strain the patient put on other family members and the problems the patient caused with

neighbours.<sup>1</sup> Hoenig and Hamilton tried to differentiate between "objective burden" (effects on the household including financial loss; effects on health, on children and family routine; and the abnormal behaviours shown by the patient) and "subjective burden" (the extent to which relatives felt they carried a burden).<sup>2,3</sup> Up to the early 1980s, multiple definitions of burden existed in the literature. Irrespective of the terminology chosen, they all shared a common underlying frame of reference: "the effect of the patient upon the family" or "the various difficulties felt by the family of a psychiatric patient".<sup>4,5</sup>

Although it is now several decades since the emergence of the concept of burden, studies in the area of burden have mainly focused on specific disease groups, particularly schizophrenia, dementia and affective disorders.<sup>6-9</sup> The burden on families of patients suffering from obsessive-compulsive disorder (OCD) has largely been neglected.

Caregivers of OCD patients are a specific group as they are frequently brought into the patient's illness.<sup>10</sup> Caregivers become involved through participation in patients' rituals and through modifications of their daily routines. By doing so, they become distressed, with burden on areas of family

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Dr Bonnie WM Siu, MBChB (HK), MRCPsych (UK), FHKCpsych, FHKAM (Psychiatry), Medical Officer, Castle Peak Hospital, Tuen Mun, New Territories, Hong Kong.

Dr Timothy MH Yeung, MBBS (Syd), MRCPsych (UK), FHKCpsych, FHKAM (Psychiatry), Consultant, Castle Peak Hospital, Tuen Mun, New Territories, Hong Kong.

**Address for correspondence:** Dr Bonnie WM Siu, Medical Officer, Castle Peak Hospital, 15 Tsing Chung Koon Road, Tuen Mun, New Territories, Hong Kong.  
Tel: 852-2456 7111;  
E-mail: bonnie114m@yahoo.com

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life, social life and personal life. Cooper examined the effects of OCD on 181 family members.<sup>11</sup> About half of the respondents in the study reported great disturbance because of disruption of family social life, loss of relationships, marital discord, loss of leisure, financial problems and hardship to siblings. Most of the respondents noted that the burden of care fell mainly on the principal caregiver. Magliano et al assessed the burden on key relatives of 32 patients with OCD and a control sample of 26 patients with major depression.<sup>12</sup> A moderate to severe burden was detected in both samples in most of the explored situations of objective and subjective burden.

The study also showed that the degree of family burden correlated positively with the severity of OCD symptomatology and the degree of the patient's social disability. In a study on the impact of OCD on the family, Black et al assessed the problems faced by spouses of 15 OCD patients.<sup>13</sup> Sixty percent of the spouses reported that caring for their relatives was burdensome. Disruption of family and social life, anger and frustration that the spouse felt towards the patient, and family conflicts were the most frequently cited problems. Laidlaw et al examined the stress and subjective burden of 46 caregivers of chronic OCD patients who were receiving treatment in an outpatient clinic.<sup>14</sup> Nearly half of the caregivers rated their burden as moderate and more than a quarter classified themselves as suffering severe burden. Thirty five percent of the caregivers were extremely distressed at the idea of having to continue their caregiving role.

To date, no local studies on caregiver burden of OCD patients are available. A burden assessment tool with established psychometric properties is needed for evaluating the burden on this specific group of caregivers in Hong Kong. Family Burden Interview Schedule (FBIS)<sup>5</sup> is a semi-structured interview schedule developed by Pai and Kapur on the basis of the guidelines of other workers who have attempted to assess burden.<sup>1,2</sup> In the development of the original English version of FBIS, Pai and Kapur employed free unstructured interviews with caregivers as the first step; a group of caregivers were interviewed, focusing on the various areas of burden they might have experienced due to the patients' illness. The details of the interviews were recorded verbatim by Pai and Kapur<sup>5</sup> and the content of the interviews was analysed in terms of the various categories of burden experienced.

The interview schedule assesses both objective burden and subjective burden and the time needed to complete the schedule is around 25 minutes.<sup>15</sup> The FBIS has been used in different studies with satisfactory psychometric properties.<sup>5,16,17</sup>

This study set out to translate the English version of FBIS into a Cantonese version which was further modified. The psychometric properties of the Cantonese version of FBIS (C-FBIS) were then assessed in a sample of local caregivers of OCD patients, with the eventual aims of using this instrument in clinical settings and helping to implement programs to address the needs of caregivers of OCD patients.

## Patients and Methods

### *Patients*

Patients were recruited from Tuen Mun Mental Health Centre, which is responsible for all of the psychiatric outpatient services of Tuen Mun and Yuen Long areas, serving a combined population of 937,901.<sup>18</sup> Tuen Mun and Yuen Long areas constituted the New Territories West (NTW) Cluster, according to the division of the Hospital Authority of Hong Kong. Approval to conduct the study was granted by the ethics committee of the NTW Cluster before commencement.

This was a cross-sectional study. A list of all the outpatients under the care of Tuen Mun Mental Health Centre with a principal diagnosis of OCD according to the Tenth Revision of the International Classification of Diseases (ICD-10)<sup>19</sup> was retrieved from a systematic computerised register, the Psychiatric Clinical Information System on 29 November 2003. The recruitment period was between 1 December 2003 and 30 June 2004 when all the patients on the list and their caregivers were assessed. The diagnoses of the patients were made by their case psychiatrists. Consensus of diagnosis was obtained in team meetings between the case psychiatrists and their supervisors, who were trainers of the local training scheme for psychiatrists.

All of the patients recruited met the principal diagnosis of OCD according to the ICD-10 with duration of illness of at least 1 year. They did not meet ICD-10 diagnosis of organic mental disorders, psychosis, mental retardation, autism, Asperger's syndrome, or tic disorders at the same time, and they did not have any chronic physical illness. They were ethnic Chinese of either gender aged between 18 and 64. For each OCD patient, a key caregiver was selected. In this study, the term "key caregiver" is defined as "a non-professional person in the community who is most involved with the everyday care of the case and would be very likely to respond to any request for special assistance at any time, if such a request was made by the case".<sup>20</sup> All of the caregivers recruited were living with the patient and for at least 1 year prior to recruitment and were not involved in the care of any other family member with mental or chronic physical illness. They were ethnic Chinese of either gender aged 18 or above and were able to understand Cantonese. Immediately before the interview, written informed consent was obtained from both the patient and the caregiver.

### *Arrangement of Interview*

Individual face-to-face interview was arranged with the patient and the key caregiver. The interview took place either at the patient's home or at Tuen Mun Mental Health Centre. Caregivers were interviewed without the presence of the patients, to facilitate free expression of their feelings. Each interview took approximately 45 minutes to complete.

### *Assessments*

The original English version of FBIS was translated into Cantonese and then back-translated to English by two bi-lingual psychiatrists. The Cantonese version was

modified until the back-translated English version was comparable with the original version. The content validity of the modified C-FBIS was evaluated by an expert panel comprising health care professionals from different disciplines with at least 3 years of experience in general adult psychiatry.

The Cantonese version was further modified after expert panel evaluation and then discussed in a focus group comprising health care professionals and caregivers of OCD patients for its acceptability, practicality and face validity. The final Cantonese version was pilot tested on 5 caregivers of OCD patients. Practical problems concerning the understandability of the wording of the items in the version and the acceptability of the administration were addressed. No further modification was required in the focus group discussion and the pilot test.

During the interview of the caregivers, family burden over the past one month was assessed by the C-FBIS and the administration time of C-FBIS was recorded. The C-FBIS was administered by a researcher who was blind to the results of all other assessments. The Chinese version of General Health Questionnaire-12 (C-GHQ-12) was completed by the caregivers and sociodemographic characteristics were obtained. The caregivers were also assessed by a questionnaire designed by the researchers concerning the extent of their involvement in the patient's illness over the past one month. In the questionnaire, the caregivers were asked whether they were involved in the patient's illness or not and if yes, the nature of involvement as well as its frequency.

The C-FBIS measures both objective burden and subjective burden. Objective burden is examined by 24 items grouped under 6 categories: (A) financial burden, (B) disruption of routine family activities, (C) disruption of family leisure, (D) disruption of family interaction, (E) effect on physical health of others, and (F) effect on mental health of others. Each item of objective burden is rated on a 3-point scale (0 = no burden, 1 = moderate burden, 2 = severe burden). The total objective burden score (i.e., the total score of FBIS) obtained by adding the rating for each of the 24 items ranges from 0 to 48. A supplementary item with a question asking the caregiver whether there is any other burden on the family which the rater has not asked about, followed the 6 categories of objective burden. Subjective burden is assessed by asking one standard question ("How much would you say you have suffered owing to the patient's illness?") and scoring the answer (0 = not at all, 1 = a little, 2 = severely).

The General Health Questionnaire (GHQ)<sup>21,22</sup> is a self-administered test used for evaluating the psychological components of ill health and is helpful in screening for general emotional distress. Good internal consistency was demonstrated, with Cronbach's alphas ranging from 0.82 to 0.93. GHQ was adopted to establish the concurrent validity of C-FBIS as it had been used by researchers to assess caregiver's distress.<sup>23,24</sup> The C-GHQ-12<sup>25</sup> was adopted in this study.

During the interview of the patients, the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and the Global Assessment of Functioning scale (GAF) were administered for the construct validity of C-FBIS. Sociodemographic and clinical characteristics were obtained.

The Y-BOCS<sup>26</sup> is a clinician-administered semi-structured interview and is the gold standard for assessing the severity of obsessive-compulsive symptoms. It consists of 19 items and provides a subtotal score for obsession (range, 0-20), a subtotal score for compulsion (range, 0-20) and an obsessive-compulsive total score (range, 0-40). The scale has acceptable internal consistency, with Cronbach's alphas ranging from 0.69 to 0.91 for the total scale and from 0.51 to 0.85 for the two subscales.

The GAF scale in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition<sup>27</sup> is a 100-point single-item rating scale for overall psychosocial functioning and takes into account the patient's psychological, social and occupational functioning. It is derived from the Global Assessment Scale (GAS)<sup>28</sup> which has established psychometric properties. Joint reliability on the GAS and the GAF scale across several studies ranged from 0.61 to 0.91, indicating fair to excellent agreement. The functional level of the patient over the past one month was assessed in this study.

The C-FBIS scores of the whole sample of caregivers were examined for evaluation of internal consistency. The Cronbach's alpha and split-half reliability were calculated. From the whole sample of caregivers recruited in the study, 35 were selected for testing inter-rater reliability. The caregivers were seen by two independent researchers. One researcher conducted the C-FBIS while the other remained silent during the interview and did the rating at the same time. The scores rated by the two researchers were compared. Another 35 caregivers were selected from the whole sample for testing test-retest reliability. They were interviewed twice by a researcher. The time interval between the two interviews was 7 to 10 days. The scores of C-FBIS in the first interview were compared with those in the second interview.

### **Statistical Analysis**

Statistical Package for the Social Sciences version 12.0 was used for data analysis. Correlation coefficients were used for the association between the scores of C-FBIS and the scores of other scales including C-GHQ-12, Y-BOCS and GAF. The concurrent validity and construct validity were then estimated. Pearson product-moment correlation coefficient (two-tailed) was adopted for normally distributed continuous variables and Spearman rank correlation coefficient (two-tailed) was used for variables that were not normally distributed.

For estimation of the internal consistency of C-FBIS, Cronbach's alpha was calculated and the Spearman-Brown prophecy statistic was used to estimate the split-half reliability. Intraclass correlation coefficient was used for estimating the inter-rater reliability and test-retest reliability

of the total score of C-FBIS, and 95% confidence interval was computed. Cohen's kappa coefficient was calculated for the inter-rater and test-retest reliability of the individual items of C-FBIS.

## Results

102 patients with the principal diagnosis of OCD according to the ICD-10 were assessed for their eligibility to enter the study. Twenty five of them were excluded: 9 were living alone; 4 were abusing alcohol; 10 were suffering from chronic physical illness; and 2 refused to participate in the study. All the caregivers of the remaining 77 patients agreed to participate in the study. As a result, 77 patient-caregiver dyads were recruited.

Of the 77 patients interviewed, 48 (62.3%) were female and 29 (37.7%) were male (Table 1). Their age ranged from 19 to 64 years, with a mean of 39 years (SD = 10.4). More than half (57.1%) of them were married and about one-third (33.8%) were single. All of those married named their spouses as the key caregivers except one who named his daughter. The majority (67.5%) of them studied up to secondary school level and the mean years of education was 12 (SD = 3.9). Slightly less than half (46.8%) of the patients were earning members of the family. Among those who were not earning, 51.2% were housewives. The mean age of onset of OCD was 26 years (SD = 10.6) and the mean duration of illness was 13.1 years (SD = 9.0). The mean Y-BOCS total score was 16.7 (SD = 6.9). The majority (92.2%) of patients had both obsession and compulsion. The most predominant type of obsession was "fear of

contamination" and the most predominant type of compulsion was "cleaning and washing". The mean GAF score was 64.6 (SD = 7.8).

Of the 77 caregivers interviewed, 43 (55.8%) were spouses and 25 (32.5%) were parents. Forty one (53.2%) were female and 36 (46.8%) were male (Table 2). Sixty five (84.4%) were married and 6 (7.8%) were widowed. Their age ranged from 18 to 79 with a mean of 48.3 years (SD = 14.1). Their mean years of education was 9.8 (SD = 6.1); 59.7% of them studied up to secondary school level and 6.5% of them were illiterate. More than half (58.4%) of the caregivers were employed. Among those who were not earning, 68.8% were housewives. The mean number of years living with the patient was 21.7 (SD = 11.1) and the mean duration of caregiving was 10.2 years (SD = 7.1). The average number of hours per week in contact with the patient was 53.4 (SD = 29.2). Thirty six (46.8%) caregivers reported being involved in the patient's illness. "Reassure patient" such as answering patient's questions, was the commonest type of involvement, with 58.3% of the caregivers with involvement reporting having done so, followed by "participating in behaviours related to patient's compulsions" (36.1%).

The expert panel members had 80% to 100% agreement on the content validity of the 24 items of objective burden except for item B.4 (60% agreement). The panel members opined that the symptomatology described in the item B.4 was too general for OCD patients. This item together with 4 more items of objective burden were modified (Table 3). One hundred percent agreement was obtained for content validity of the item of subjective burden.

**Table 1. Characteristics of obsessive-compulsive disorder patients (n = 77).**

Variable	Female	Male	p Value
Gender*	48	29	0.03
Age <sup>†</sup> (years; mean ± SD)	39.6 ± 10.4	38.3 ± 10.6	NS
Marital status*			NS
Married	30	14	NS
Single/divorced/widowed	18	15	
Years of education <sup>†</sup>	11.4 ± 4.1	13.1 ± 3.4	
Earning status*			NS
Earning	19	17	
Not earning	29	12	
Age of onset of illness <sup>†</sup> (years; mean ± SD)	27.0 ± 10.4	24.5 ± 10.8	NS
Duration of illness <sup>‡</sup> (years; mean ± SD)	12.7 ± 9.4	13.8 ± 8.2	NS
Duration of psychiatric treatment <sup>‡</sup> (years; mean ± SD)	6.4 ± 6.0	7.5 ± 7.2	NS
Days of previous psychiatric inpatient treatment <sup>‡</sup> (mean ± SD)	17.7 ± 53.1	17.5 ± 68.5	NS
Reported time difference between noticeable symptoms and first psychiatric treatment <sup>‡</sup> (years; mean ± SD)	6.2 ± 8.2	6.3 ± 8.2	NS

Abbreviation: NS = not significant.

\* Chi-squared test.

<sup>†</sup> Independent sample t test.

<sup>‡</sup> Mann-Whitney U test.

The total score of C-FBIS had a significant positive correlation with the C-GHQ-12 score ( $r_s = 0.644$ ,  $p < 0.01$ ). Subscores of all the categories of C-FBIS also correlated positively with the C-GHQ-12 score with correlation coefficients ranging from 0.408 to 0.602 (Table 4).

There was a significant positive correlation between the total score of C-FBIS and the total score of Y-BOCS ( $r_s = 0.621$ ,  $p < 0.01$ ). The total score of C-FBIS also correlated positively with the obsession subtotal score ( $r_s = 0.523$ ,  $p < 0.01$ ) and the compulsion subtotal score of Y-BOCS ( $r_s = 0.648$ ,  $p < 0.01$ ). The total score of C-FBIS had a significant negative correlation with the GAF score ( $r_s = -0.721$ ,  $p < 0.01$ ). The total objective burden score of

C-FBIS had a significant positive correlation with the subjective burden score of C-FBIS ( $r_s = 0.781$ ,  $p < 0.01$ ).

The Cronbach's alpha for internal consistency of all 24 items of objective burden was 0.90. The split-half reliability was examined by dividing the 24 items of objective burden into two halves. The first half consisted of 12 odd number items and the second half 12 even number items. The Spearman-Brown coefficient was 0.92.

Intraclass correlation coefficient for the total score of C-FBIS was 0.988 with 95% confidence interval 0.976 to 0.994 for inter-rater reliability. Cohen's kappa for the agreement between the two raters on the individual items of C-FBIS ranged from 0.840 to 1.0. Intraclass correlation

**Table 2. Characteristics of caregivers (n = 77).**

Variable	Female	Male	p
Gender*	41	36	NS
Age <sup>†</sup> (years; mean $\pm$ SD)	51.0 $\pm$ 15.8	45.3 $\pm$ 11.4	NS
Marital status*			NS
Married	32	33	
Single/divorced/widowed	9	3	
Years of education <sup>‡</sup> (mean $\pm$ SD)	9.2 $\pm$ 5.8	10.5 $\pm$ 6.5	NS
Earning status*			0.01
Earning	18	27	
Not earning	23	9	
Years living with the patient <sup>†</sup> (mean $\pm$ SD)	26.0 $\pm$ 11.2	16.8 $\pm$ 9.0	0
Duration of caregiving <sup>‡</sup> (years; mean $\pm$ SD)	10.7 $\pm$ 6.6	9.6 $\pm$ 7.6	NS
Hours per week in contact with the patient <sup>‡</sup> (mean $\pm$ SD)	53.4 $\pm$ 31.5	53.5 $\pm$ 26.8	NS

Abbreviation: NS = not significant.

\* Chi-squared test.

<sup>†</sup> Independent sample t test.

<sup>‡</sup> Mann-Whitney U test.

**Table 3. Modified questions within the items of Cantonese version of Family Burden Interview Schedule after evaluation by expert panel.**

Original question	Modified/added question
Item A.3: Has he spent or lost money irrationally due to his illness?	Modified: Has the family spent extra money due to his illness, such as paying water bill, electricity bill, buying cleaning agents and items used for cleaning?
How much has been spent on other treatments such as temples and native healers?	How much has been spent on other treatments such as visiting temples or consulting shamans, acupuncturists and Chinese medicine practitioners?
Item A.6: Any other planned activity put off because of the financial pressure of the patient's illness: (For instance, postponing a marriage, a journey or a religious rite. How far is the family affected?)	Modified: Any other planned activity put off because of the financial pressure of the patient's illness: (For instance, postponing a marriage, a journey, having a baby, moving house, further studying. How far is the family affected?)
Item B.2: Patient not helping in the household work: How much does this affect the family?	Modified: Patient not helping with the household work or patient trying to help but making a mess: How much does this affect the family?
Item B.4:	Added: Patient requesting someone to help in completing his compulsive rituals? Patient occupying the toilet, kitchen and bedroom most of the time?
Item B.5: Is any other member missing school, meals, etc.?	Modified: Is any other member being late for school, work, and meals, etc.?

**Table 4. Correlation between subscores of the categories of Cantonese version of Family Burden Interview Schedule and Chinese version of General Health Questionnaire-12 score (n = 77).**

Category	Spearman's rho
A. Financial burden	0.515*
B. Disruption of routine family activities	0.470*
C. Disruption of family leisure	0.416*
D. Disruption of family interaction	0.564*
E. Effect on physical health of others	0.408*
F. Effect on mental health of others	0.602*
G. Subjective burden	0.598*

\* Correlation is significant at the 0.01 level (two-tailed).

coefficient for the total score of C-FBIS was 0.986 with 95% confidence interval between 0.973 to 0.993 for test-retest reliability. Cohen's kappa for the agreement between the test and retest on the individual items of C-FBIS ranged from 0.755 to 1.0.

The mean total score of C-FBIS of the 77 caregivers was 9.10 (SD = 7.17) and the average administration time of C-FBIS was 23.3 minutes (SD = 4.3). Tables 5 and 6 show the pattern of objective burden at the category and item level.

"Disruption of activities due to patient's irrational demands" was the item of objective burden most frequently rated as a problem, with 81.8% of the caregivers having moderate or severe burden, followed by "expenses of patient's illness" (76.6%) and "any member becoming depressed, weepy, irritable" (61.0%). For the supplementary question on objective burden, none of the 77 caregivers reported that there were any areas of burden that were not asked of by the C-FBIS. Subjective burden was experienced by 72.7% of the caregivers and 7.8% of them had severe burden in the subjective sense.

## Discussion

The C-FBIS was developed and its psychometric properties were examined on a group of local caregivers of OCD patients. This involved standardised procedures including

translation, cross-cultural adaptation and testing of the schedule in the sample. The face validity and content validity of C-FBIS were established by focus group discussion and expert panel evaluation. The content validity of C-FBIS was further supported by the replies of the 77 caregivers to the supplementary question for objective burden in the latter part of the study which did not reveal any missing area of burden not covered by the schedule. Pilot test of the C-FBIS indicated that it had acceptable administration time and that caregivers had no problem in understanding the wording of the items within the schedule.

Concurrent validity of the C-FBIS was illustrated by its significant positive correlation with C-GHQ-12. Up to the time of the design of the study, there was no "gold standard" available for measuring family burden on local caregivers of OCD patients. As a result, C-GHQ-12, which was used to assess psychological distress, was adopted. The moderate correlation ( $r_s = 0.644$ ) between C-FBIS and C-GHQ-12 was expected, as C-GHQ-12 is a measurement of global psychological distress, whereas C-FBIS only taps on the burden associated with caregiving.

Construct validity was established by "hypothesis testing" and "convergent validity". During hypothesis testing, the relationships between burden and other theoretically relevant constructs were examined. The results were consistent with previous studies<sup>12,29</sup> in that the patient's severity of illness and functional level were significantly correlated with the caregiver's level of burden. Convergent validity was shown by the significant positive correlation ( $r_s = 0.781$ ) between the objective burden score and subjective burden score of C-FBIS as in the studies of Pai and Kapur ( $r = 0.72$ )<sup>5</sup> and Li et al ( $r = 0.68$ ).<sup>16</sup>

Internal consistency, inter-rater and test-retest reliability were examined for the C-FBIS. The Cronbach's alpha was 0.90, indicating the homogeneity of the items in measuring burden. The Spearman-Brown coefficient for split-half reliability was high ( $r = 0.92$ ) as in Li et al's study ( $r = 0.83$ ).<sup>16</sup> These findings revealed that the 24 items of objective burden in C-FBIS were highly consistent in measuring the same construct. The intraclass correlation coefficient of 0.988 for the inter-rater reliability indicated that the two raters achieved excellent agreement in the ratings of C-FBIS, and the intraclass correlation coefficient of 0.986 for the

**Table 5. Pattern of objective burden at the category level (n = 77).**

Category	Mean subscore of C-FBIS (SD)	No. (%) of caregivers with moderate or severe burden*
A. Financial burden	2.22 (1.84)	65 (84.4)
B. Disruption of routine family activities	2.26 (1.94)	64 (83.1)
C. Disruption of family leisure	1.65 (1.80)	49 (63.6)
D. Disruption of family interaction	1.69 (1.91)	49 (63.6)
E. Effect on physical health of others	0.32 (0.57)	21 (27.3)
F. Effect on mental health of others	0.96 (1.08)	47 (61.0)

Abbreviation: C-FBIS = Cantonese version of Family Burden Interview Schedule.

\* No. (%) of caregivers with moderate or severe burden in at least one item of objective burden within the category.

**Table 6. Pattern of objective burden at the item level (n = 77).**

Item within the 6 categories of objective burden	Mean item score of C-FBIS (SD)	No. (%) of caregivers with moderate or severe burden
A1. Loss of patient's income	0.60 (0.75)	34 (44.2)
A2. Loss of income of other family members	0.10 (0.38)	6 (7.8)
A3. Expenses of patient's illness	0.87 (0.57)	59 (76.6)
A4. Expenses due to other changes in arrangements	0.05 (0.22)	4 (5.2)
A5. Loans taken	0.43 (0.57)	30 (39)
A6. Any other planned activity needing finance, postponed	0.17 (0.41)	12 (15.6)
B1. Patient not attending work, school	0.25 (0.46)	18 (23.4)
B2. Patient unable to help in household duties	0.43 (0.55)	31 (40.3)
B3. Disruption of activities due to patient's illness and care	0.31 (0.63)	17 (22.1)
B4. Disruption of activities due to patient's irrational demands	0.92 (0.53)	63 (81.8)
B5. Other family members missing school, meals	0.35 (0.56)	24 (31.2)
C1. Stopping of normal recreational activities	0.39 (0.61)	25 (32.5)
C2. Absorption of another member's holiday and leisure time	0.51 (0.66)	32 (41.6)
C3. Lack of participation by patient in leisure activity	0.48 (0.62)	32 (41.6)
C4. Planned leisure activity abandoned	0.27 (0.48)	20 (26.0)
D1. Ill effect on general family atmosphere	0.62 (0.61)	43 (55.8)
D2. Other members arguing over the patient	0.36 (0.58)	24 (31.2)
D3. Reduction or cessation of interaction with friends and neighbours	0.14 (0.39)	10 (13.0)
D4. Family becoming secluded or withdrawn	0.25 (0.52)	16 (20.8)
D5. Any other effect on family or neighbourhood relationships	0.31 (0.52)	22 (28.6)
E1. Physical illness in any family member	0.06 (0.25)	5 (6.5)
E2. Any other adverse effect on others	0.26 (0.44)	20 (26)
F1. Any member seeking professional help for psychological illness	0.26 (0.59)	14 (18.2)
F2. Any member becoming depressed, weepy, irritable	0.70 (0.63)	47 (61.0)

Abbreviation: C-FBIS = Cantonese version of Family Burden Interview Schedule.

test-retest reliability revealed that C-FBIS was capable of measuring caregiver burden of OCD patients with stability across time.

In this study, 76 (98.7%) of 77 caregivers experienced at least some amount of objective burden. The mean total score of C-FBIS was 9.10 (SD = 7.17), which was lower than the mean total score of 11.53 (SD = 6.32) reported by Chakrabarti et al,<sup>30</sup> using the English version of FBIS to measure the burden on 30 caregivers of OCD patients in India. When the pattern of burden in this study was compared with that in the Indian study, the mean subscores on "disruption of routine family activities", "disruption of family leisure", and "disruption of family interaction" were higher in the Indian study. These differences may be attributed partly to the different nature of the samples recruited. In this study, only outpatients were recruited, whereas Chakrabarti et al recruited both inpatients and outpatients. Patients requiring inpatient treatment are likely to have more severe illness and the caregivers may suffer greater burden.

On the other hand, the subscores on "effect on physical health of others" and "effect on mental health of others"

were higher in the present study. The caregivers in this study were more than 10 years older in mean age than those of Chakrabarti et al<sup>30</sup> (48.3 years versus 37.3 years) and thus the possibility of age-related health problems might be greater in our sample. Moreover, Chakrabarti et al assessed only healthy caregivers, who were therefore unlikely to report health-related problems. However, the exclusion of caregivers with physical and mental illness by Chakrabarti et al may have resulted in bias as those caregivers who were most vulnerable to the stresses of caregiving were not assessed.

The item of objective burden most frequently rated by the caregivers as problematic in this study was "disruption of activities due to patient's irrational demands" under the category "disruption of routine family activities", in which 81.8% of the caregivers had moderate or severe burden. The result was not surprising, as nearly half (46.8%) of the caregivers reported being involved in the patient's illness. In the present study, caregivers were involved in patients' illness mainly by reassuring them and by participating in their rituals. After modifying their routine activities because

of the patient's illness, caregivers suffered a greater amount of burden. One mother caregiver felt upset as her son occupied the toilet at home constantly for his cleaning rituals and she had to use the public toilet daily. These findings point to the importance of identifying the extent of involvement in patient's illness in assessing burden on caregivers of OCD patients.

No attempt was made in this study to assess whether the caregivers had any psychiatric diagnosis. However, more than half (61.0%) of the caregivers in this study had moderate or severe burden on the item "any member becoming depressed, weepy, irritable" under the category "effect on mental health of others". This finding indicates that caregivers of OCD patients may suffer from mental health problems because of their caregiving role and depressive symptoms in caregivers can be prominent. In our clinical setting, it is important to identify this group of caregivers with mental health problems so that support and intervention can be offered to them as soon as possible, in order to shorten their period of emotional suffering.

The sample size was small and the study was restricted to the psychiatric outpatient clinic of the NTW Cluster. Patients attending outpatient clinics may be different from patients treated in hospital in terms of the severity of illness, and the amount of burden on caregivers may be different. Moreover, only those caregivers who were living with the patients were recruited in the study. Caregivers who are not living with patients may also suffer considerable amount of burden and some of them may suffer so great a burden that they have to live apart from the patients. Therefore, the participants in this study were not a representative sample of the whole population of caregivers of OCD patients in Hong Kong and the generalisability of the results is limited.

In this study, structured diagnostic interview was not carried out to determine the diagnoses of patients and formal test for intelligence was not performed to exclude patients with mental retardation. The validity of the diagnoses in this study depended on the clinical judgement of the patient's case psychiatrist and on the consensus made between the case psychiatrist and his supervisor. In addition, the sensitivity of C-FBIS to changes and its predictive validity were not examined in this cross-sectional study. Longitudinal studies aimed at investigating the predictive validity of C-FBIS and its sensitivity to interventions for OCD patients (diagnosed using structured interview) and their caregivers are warranted when C-FBIS is to be used as an outcome indicator for service evaluation.

Factor analysis was not conducted because of the small sample size. Despite the recruitment of almost all the eligible participants from the outpatient clinic, 77 caregivers still did not meet the minimum requirement of 5 subjects per variable necessary for factor analysis. A multicentre study including both outpatients and inpatients would be useful in further testing the psychometric properties of C-FBIS.

C-FBIS can give information on the extent of burden on caregivers of OCD patients. Nevertheless, it does not provide any cut-off scores that can be used to detect individual

family members at risk from burden. Further study might be useful to identify clinical norms or cut-off points for C-FBIS to serve as a basis for clinical intervention for the family member most in need of help. Moreover, the response of C-FBIS is scored on a 3-point scale (no burden, moderate burden, severe burden) and perhaps by increasing the number of anchor points for the response of C-FBIS, a finer picture of the extent of burden on caregivers can be obtained. The C-FBIS hints on the areas in which caregivers need help and serves as a basis for the formulation of care plans for caregivers.

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