

Validation of the Chinese Challenging Behaviour Scale: clinical correlates of challenging behaviours in nursing home residents with dementia

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SUMMARY

Background Behavioural and psychological symptoms of dementia (BPSD) are associated with considerable burden to patients with dementia and their caregivers. Formal caregivers in residential care settings face different challenges when delivering care.

Objective This study aimed at assessing the clinical correlates of challenging BPSD using the Chinese version of the Challenging Behaviour Scale (CCBS) designed for residential care settings.

Methods One hundred and twenty-five participants were recruited from three care-and-attention homes in Hong Kong. The CCBS was administered together with the Cantonese version of Mini-Mental State Examination (MMSE), Clinical Dementia Rating (CDR), Disability Assessment for Dementia (DAD) and Neuropsychiatric Inventory (NPI) to explore the relationships between challenging behaviour and important clinical correlates.

Results The CCBS had good internal consistency ($\alpha = 0.86$), inter-rater (ICC = 0.79) and test–retest reliability (ICC = 0.98). A four-factor structure is demonstrated by factor analysis: hyperactivity behaviours, hypoactivity behaviours, verbally aggressive and aberrant behaviours. Challenging behaviours were associated with male gender, cognitive impairment, functional disability, neuropsychiatric symptoms, and higher caregiver's workload.

Conclusions The CCBS is a valid and reliable measure to assess BPSD in residential care settings in local Chinese community. It is useful in evaluating the challenges faced by formal caregivers during daily care of the dementia patients. Copyright © 2006 John Wiley & Sons, Ltd.

KEY WORDS — dementia; Chinese; BPSD; challenging behaviour; nursing home

INTRODUCTION

Behavioural and psychological symptoms of dementia (BPSD) are highly prevalent, associated with caregiver burden and complicate clinical management. It is estimated that up to 90% of patients with dementia may present with BPSD during the course of their illness (Cohen-Mansfield *et al.*, 1989; Finkel *et al.*, 1992; O'Connor, 2000). In a local community sample, the prevalence of different subtypes of BPSD as assessed by the Alzheimer's disease Behavioural pathology

rating scale (BEHAVE-AD) (Reisberg *et al.*, 1996) ranged from 15% to 61%, with aggressive behaviour, activity disturbances and sleep disturbance being the most common (Lam *et al.*, 2001). A recent prospective study revealed that BPSD runs a chronic course and tends to be intermittent and persistent (Aalten *et al.*, 2005). As the slowly progressive nature of cognitive impairment is often regarded as part of the normal ageing process in the Asian culture, it is not uncommon that Chinese patients present at a late stage of dementia and are living in residential homes (Chow *et al.*, 2002). Those residents usually have BPSD that required psychiatric treatments. In local clinical practice, the formal caregivers often believe that psychotropic medications could alleviate the behavioural disturbance despite the fact that medications may cause significant

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adverse side effects. In spite of the growing demand and clinical significance, there are relatively few local studies focusing on the behavioural disturbances of residents with dementia in local care homes (Choy *et al.*, 2001; Lam *et al.*, 1997, 2001; Leung *et al.*, 2001). One of the hindrances is the lack of a specifically designed assessment tool that could reliably measure the BPSD on one hand, and the challenges faced by the formal caregivers on the other hand. There is a pragmatic need for a simple and reliable assessment tool that can be used to quantify the behavioural disturbances and their challenges in this unique group of patients.

More than 30 rating scales are available for patients with dementia (Hemels *et al.*, 2001). Most of the scales are based upon an informant interview that provides either a broad assessment of symptoms or specific types of BPSD. The Neuropsychiatric Inventory (NPI) (Cummings, 1997); the Behavioural pathology in Alzheimer's Disease (BEHAVE-AD) (Reisberg *et al.*, 1996); and the Behaviour Rating Scale for dementia (BRSD) (Tariot *et al.*, 1995) are assessment tools to map behavioural profiles. Scales that focus specifically on the behavioural disturbance in residential settings are the Disruptive Behaviour Rating Scales (DBRS) (Mungas *et al.*, 1989); Disruptive Behaviour Scale (DBS) (Beck *et al.*, 1997); and Rating Scale for Aggressive Behaviour in the Elderly (RAGE) (Patel and Hope, 1992). These scales do not include items relating to apathy and withdrawal, which have significant impact on family relationships (de Vugt *et al.*, 2003). Although these scales have achieved excellent inter-rater reliability, these reliability evaluations have been undertaken for raters with formal training procedures. It is therefore very important that these training procedures are followed for any centre wishing to use these instruments, as inter-rater reliability cannot be assumed in different settings (Ballard *et al.*, 2001).

The Challenging Behaviour Scale (CBS) was developed to meet the need for a measure of resident behaviours that formal caregivers in long-term care facilities find difficult to manage (Moniz-Cook *et al.*, 2001). It defines challenging behaviour as 'behaviour of such an intensity, duration or frequency, that the physical safety of the person or another is placed in serious jeopardy, or behaviour which is likely to seriously limit or deny access to ordinary community facilities' (Emerson *et al.*, 1988). The challenging behaviours can be explained by a behavioural model that encourages the analysis of staff/client interactions and the implementation of behavioural modification programmes (Harborne and Solly, 1996). The strength of the CBS is that it covers both global and specific

behaviours in residents with dementia such as lack of occupation, agitation, aggression, eating and sleep problems (Moniz-Cook *et al.*, 2001). It describes the challenging behaviours in common language and incorporates a measurement of 'challenge' (Moniz-Cook *et al.*, 2000). The CBS can be used by both trained and untrained formal caregivers and is particularly useful in residential settings (Moniz-Cook *et al.*, 2001). The present study reported the psychometric properties of the CCBS and clinical correlates of challenging behaviours in nursing home residents with dementia in Hong Kong.

METHODS

This study took place in the care homes in Tuen Mun district in Hong Kong from August 2004 to July 2005. Approval for translation was granted by the original author of CBS, Dr Esme Moniz-Cook. This study had been approved by the Ethics Committee of the New Territories West Cluster of the Hospital Authority of Hong Kong.

Participants

One hundred and twenty-five participants with dementia were recruited from the three subvented care-and-attention homes. The participants were recruited based on the following inclusion criteria: they must be ethnically Chinese aged 65 or above, and fulfilled the diagnostic criteria of dementia as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (American Psychiatric Association, 1994). Informed consent was sought from the participant and/or his/her relative. As the purpose of this study was to examine the psychometric properties and clinical correlates of challenging behaviours in patients with primary degenerative dementia, subjects were excluded if they had co-morbid early onset major psychiatric disorders including psychoses and affective disorders (as patients with other psychiatric disorders may present with specific sets of challenging behaviours not directly related to underlying dementia). The demographic and clinical data were extracted from their case records.

ASSESSMENT

Validation of the Chinese Challenging Behaviour Scale (CCBS)

The English Challenging Behaviour Scale (CBS) was translated into Chinese and then back translated by two bilingual psychiatrists. The content validity and

comprehensibility of the individual items of the modified CCBS were reviewed by an expert panel comprising members from different disciplines in elderly care. A pilot sample of 20 inpatients with dementia was recruited from the psychogeriatric unit of Castle Peak Hospital to test the applicability of the CCBS. The finalised CCBS was distributed by a senior staff-in-charge to two formal caregivers of different posts (namely case nurse and health care assistant). The CCBS was completed by the two key caregivers after discussion and consensus. The CCBS was repeated 7 to 14 days later by the same pair of caregivers for the first 30 consecutive participants to calculate the test-retest reliability. The inter-rater reliability of the CCBS was calculated by comparing the ratings of another pair of caregivers on another 30 participants. The internal consistency of the CCBS was calculated using data from all the 125 participants.

The Cohen-Mansfield Agitation Inventory (Cohen-Mansfield, 1986) was used as a test for concurrent validity of the CCBS. It has been validated in nursing home settings (Finkel *et al.*, 1992) and a Chinese version is available (CCMAI) (Choy *et al.*, 2001). A Clinical Impression Rating (CIR) is a simple rating scale designed by the author that rate the frequency and severity of challenging behaviours in a five-point Likert scale. It was adopted for comparison with the CCBS because there was no validated global assessment tool available within the local community. It was completed by an independent psychogeriatrician (WC) via a clinical interview. Exploratory factor analysis using the principal axis factoring was performed with data from the 125 participants so as to delineate any clustering of the 25 items in the CCBS.

Clinical correlates of challenging behaviours

The relationship between challenging behaviours and other clinical variables including demographic characteristics, severity of dementia, functional disability and neuropsychiatric syndromes were assessed by the following instruments:

- *The Mini-Mental State Examination* (Folstein *et al.*, 1975). This is the most commonly used screening instrument for cognitive impairment and dementia (Chiu *et al.*, 1994). It was used to establish the relationship between global cognitive impairment and CCBS.
- *The Clinical Dementia Rating (CDR)* (Hughes *et al.*, 1982, Morris, 1993). This is a global measure for staging of dementia with a semi-structured clinical interview. It contains five global rating scores, from

0, 0.5, 1, 2 and 3 indicating no dementia to severe dementia. There are six symptoms categories in the rating scale: memory, orientation, judgement and problem solving, community affair, hobbies, and personal care.

- *The Chinese version of the Disability Assessment for Dementia (CDAD)* (Mok *et al.*, 2005; Gelinas *et al.*, 1999). This is an instrument designed to assess functional disability in patients with dementia. It was translated and modified to a 47-item scale to suit the Chinese population. Through an interview, caregivers are requested to indicate the actual performance of the patient in functional tasks over the previous two weeks. A total score is obtained by adding the rating for 11 domains and converting it to a percentage. Higher scores represent less functional disabilities. CDAD was used to establish the relationship between functional disability and the CCBS.
- *Chinese version of the Neuropsychiatric Inventory—nursing home version (CNPI-NH)* (Cummings, 1997). This is an interview-based instrument to evaluate the 12 symptom domains of neuropsychiatric disturbance commonly encountered in dementia patients (Lange *et al.*, 2004). The nursing home version of NPI has been validated by various researchers in different languages (Lange *et al.*, 2004). The nursing home version of the Chinese NPI was used to assess different neuropsychiatric symptoms in the participants and their relationship with CCBS. The caregiver distress subscale of the NPI was modified to provide a proxy measure for formal caregiver workload in the nursing home version. It is a simple scale added on each symptom domain specifically addressing the level of increased workload on the formal caregivers (NPI-W). The subscale has been shown to have adequate reliability and validity (Hatoum *et al.*, 2005; Woods *et al.*, 1999). The formal caregiver is asked how much the occupational disruptiveness or increased workload the symptom causes and it is scored from 0 (no disruption) to 5 (most severe disruption). The total caregiver's increased workload is the sum of the increased workload of the 12 individual domains. CNPI-W was used in the present study to investigate for any correlation with difficulty and challenge scores of CCBS.

STATISTICAL ANALYSIS

Intraclass correlation coefficient (ICC) was used to calculate the inter-rater reliability and test-retest reliability. For the estimation of the internal consistency,

Cronbach's alphas were calculated. Principal axis factoring with varimax rotation was performed on the CCBS. Factors were selected on the basis of eigenvalues greater than one. Correlation coefficient was used for the association between the scores of the CCBS and other correlates. Pearson product moment correlation coefficient (two-tailed) was adopted for normally distributed continuous variables and Spearman rank correlation coefficient (two-tailed) was used for continuous variables that were not normally distributed. Chi-square test was used for categorical data. Independent sample *t*-test was used to compare two groups with continuous variables of a normal distribution. Mann-Whitney *U* and Kruskal-Wallis tests were used to compare two or more groups with continuous variables that were not normally distributed. All the data analyses were performed using the Statistical Package for the Social Science (SPSS), version 12. To correct for multiple comparisons, the significant level was set at $p < 0.01$ level.

RESULTS

Demographic characteristics

There were 73 (58.4%) female and 52 (41.6%) male participants. Their age ranged from 65 to 96 years with a mean of 82.04 (8.00) years. The mean (SD) years of education were 1.92 (3.17). The mean (SD) duration of stay in the homes was 4.25 (2.06) years. Their mean (SD) CMMSE score was 8.62 (6.04). The most common type of dementia was Alzheimer's disease (43.2%), followed by vascular dementia (24.8%). Ninety-one percent had at least one chronic medical problem. The commonest physical problems were hypertension (54.4%), cataract (38.4%), cerebrovascular accident (34.4%), diabetes mellitus (20.0%) and fracture (20.0%). The current psychiatric medications prescribed were antipsychotic medications (40.8%), antidepressant (32.8%), hypnotic (16.8%) and anti-dementia drugs (6.4%).

Psychometric properties of CCBS

The translated Chinese version of CBS was reviewed by an expert panel (80 to 100% agreement). All 25 items except 'lack of occupation' achieved excellent agreement between the panel members (70% agreement). Nearly all participants (97.6%) had at least one challenging behaviour. The Cronbach's alphas indicated that the internal consistency of the 25 items of CCBS ranged from 0.84 to 0.88. The intraclass correlation coefficients for test-retest reliability

ranged from 0.96 to 0.98 and that for the inter-rater reliability ranged from 0.79 to 0.85. All of the subscales of CCBS were significantly correlated with CCMAI and CIR. The correlations coefficients with the CIR ($\rho = 0.73\text{--}0.86$) were in general higher than the correlations coefficients with the total score of the CCMAI ($\rho = 0.68\text{--}0.69$).

Factor analysis using principal axis factoring was performed. Behaviours that occurred rarely and were manifested by less than 5% of the participants were excluded from the analysis. Three behaviours were identified. These were 'manipulative', 'inappropriate sexual' and 'dangerous' behaviours. One factor, 'self harm' was included in our analysis but failed to load on any one of the factors. The factor structures of behaviours and the loading of individual behaviour are presented in Table 1. The four factors were named as follows: factor 1 = *hyperactivity behaviours*; factor 2 = *aberrant behaviours*; factor 3 = *verbally aggressive behaviours*; factor 4 = *hypoactivity behaviours*. In order to obtain a better and more accurate evaluation of the reliability of the CCBS, further analysis was carried out with each subtypes of challenging behaviours (Cohen-Mansfield, 1990). The internal consistency for each factor was as follows: 0.84 for hyperactivity behaviours, 0.79 for aberrant behaviours, 0.76 for verbally aggressive behaviours and 0.64 for hypoactivity behaviours.

Table 1. Principal axis factoring (varimax rotation with Kaiser normalisation) of the Chinese Challenging Behaviour Scale

Challenging behaviour	Factor 1	Factor 2	Factor 3	Factor 4
Sleep problems	0.581	0.303		
Non-compliance	0.409			
Restlessness	0.462		0.458	
Wandering	0.627	0.313		
Clinging	0.693			
Interfering with other people	0.562		0.485	
Demands attention	0.517			
Perseveration	0.497	0.512	0.530	
Pilfering or hoarding		0.424		
Spitting		0.555		
Faecal smearing		0.606		
Stripping		0.372		
Physical aggression		0.331		
Verbal aggression			0.733	
Shouting			0.642	
Screaming/crying out			0.584	
Suspiciousness			0.488	
Inappropriate urinating				0.355
Lack of self care			0.308	0.515
Lack of motivation				0.611
Lack of occupation				0.344

Clinical correlates of CCBS

There were no statistically significant association found between the CCBS scores and age, marital status and educational level. Men had higher score on the CCBS than women (CCBS score for Men = 60.83, CCBS score for Women = 39.60; Mann–Whitney U test, $p = 0.002$). CMMSE was found to be negatively associated (Spearman $\rho = -0.299$, $p < 0.001$) and CDR was found to have positive correlation with CCBS scores (Spearman $\rho = 0.395$, $p < 0.001$). There were no significant associations between physical problems, dementia subtypes and medication with the CCBS scores ($p = \text{n.s.}$).

Functioning ability and neuropsychiatric symptoms

The functioning ability, in terms of disability in initiation, planning and organisation and effectiveness as assessed by the CDAD was negatively correlated with the CCBS (Spearman $\rho = -0.30$, $p < 0.001$) (Table 2). The total score of CNPI-NH correlated with the CCBS score. The correlations between individual domain of the CNPI-NH and CCBS are presented in Table 3. The domain scores of CNPI-NH in delusion, agitation, apathy, disinhibition, irritability, aberrant motor and night-time behaviours and sleep were significantly correlated with CCBS scores. Associations between hallucination, anxiety, dysphoria, euphoria and appetite and CCBS were not significant. The total score of the CNPI-W correlated with CCBS scores. Similarly, the increased workload score of the CNPI-NH in delusion, agitation, apathy, disinhibition, irritability, aberrant motor behaviours and night-time behaviours were significantly correlated with CCBS scores (Table 4). The increased workload score of CNPI-NH were significantly correlated with the CCBS challenge scores.

DISCUSSION

The results suggested that the CCBS possesses satisfactory psychometric properties in the measurement of challenging behaviours in demented patients. The CCBS has significant correlations with the CMAI, a similar scale assessing agitated behaviours in the elderly. A CIR has been developed to measure a global clinical impression of the severity of challenging behaviours. The associations between the scores of CIR and CCBS were high, suggesting that clinical judgment of the severity of challenging behaviours concurred with the caregivers' perception of challenge in delivering care to demented patients. To evaluate specific correlates of perception of challenge, however, the CCBS provides a more comprehensive mapping of the behavioural pattern. The participants in the study give a typical profile of residents with dementia in local clinical practice. Most of them are female, aged over 80 and widowed. The majority did not receive any formal education and have late stage dementia. They also have multiple chronic medical problems. The relationships between different demographic and clinical variables and BPSD are important in helping the caregivers to identify behaviours perceived as challenging by the nursing home staff (Beck *et al.*, 1998). In consonant with a previous local study (Lam *et al.*, 2001), male gender is associated with more challenging behaviours. In the present study, age, educational level and medical diagnoses are not associated with challenging behaviours and these findings are supported by previous literature (Cummings, 1997; Ballard *et al.*, 2001; Aalten *et al.*, 2005). The confounding effect of the severity of dementia and functional impairment were therefore explored in this study.

Relatively few studies focus on residents with severe dementia (Ballard *et al.*, 2001). In this study, nearly all participants (97.6%) have at least one challenging behaviour; patients with severe dementia

Table 2. Correlation between CDAD sub-scores and CCBS scores

	CDAD subtotal in % initiation	CDAD subtotal in % planning & organisation	CDAD subtotal in % effective performance	CDAD total score in %
CCBS incidence	-0.289*	-0.263*	-0.232*	-0.267*
CCBS frequency	-0.351*	-0.293*	-0.279*	-0.320*
CCBS difficulty	-0.339*	-0.286*	-0.274*	-0.310*
CCBS challenge	-0.339*	-0.263*	-0.259*	-0.300*

*Spearman rank correlation is significant at the 0.01 level (two-tailed); CDAD = Chinese Disability Assessment for Dementia; CCBS = Chinese Challenging Behaviour Scale.

Table 3. Correlation between CNPI domain score and CCBS score

NPI scores	CCBS incidence	CCBS frequency	CCBS difficulty	CCBS challenge
Delusion	0.288*	0.27*	0.352*	0.325*
Hallucination	0.095	0.114	0.107	0.109
Agitation	0.417*	0.418*	0.456*	0.415*
Dysphoria	0.019	0.032	0.067	0.035
Anxiety	0.058	0.029	0.103	0.092
Euphoria	0.148	0.034	0.123	0.200
Apathy	0.314*	0.325*	0.376*	0.384*
Disinhibition	0.428*	0.436*	0.381*	0.394*
Irritability	0.446*	0.378*	0.449*	0.412*
Aberrant motor behaviour	0.374*	0.300*	0.337*	0.291*
Night-time behaviours	0.289*	0.256*	0.231*	0.225*
Appetite disturbances	0.113	0.137	0.123	0.131
CNPI total score	0.458*	0.453*	0.526*	0.490*

*Spearman rank correlation is significant at the 0.01 level (two-tailed); CNPI = Chinese version of Neuropsychiatric Inventory; CCBS = Chinese Challenging Behaviour Scale.

impose the greatest challenge on the formal caregivers. There were different patterns of agitated behaviour associated with stage progression as measured by the Global Deterioration Scale (Reisberg *et al.*, 1982; Choy *et al.*, 2001). The attempt to look into different stages of dementia in this study concurred with previous results that BPSD are correlated with global cognitive impairment and severity of dementia as measured by the CMMSE and the CDR respectively.

Dementia is associated with impairments in both basic and instrumental activity of daily living (ADL) (Agüero-Torres *et al.*, 2001). Particular BPSD, such as agitation and aggression, are mostly seen during care for basic ADL (Cohen-Mansfield *et al.*, 1989) especially in those residents who are bed-ridden with loss of speech and who are dependent. Mok *et al.*

(2004) have shown that functional impairment has significant effects on BPSD. The results of this study also demonstrate the relationship between BPSD and functioning disability. The higher the functional disability, the greater the challenge as measured by the CCBS.

As the CBS was developed for frontline workers to assess challenging behaviours, most symptoms are described in relatively simple terms. The NPI was used in this study to evaluate the associations between perception of challenge with specific BPSD. Symptoms that significantly correlated with the CCBS scores are delusion, apathy, disinhibition, irritability, aberrant motor behaviours and night-time behaviours. Delusion is associated with physical aggression and motor hyperactivity (McShane *et al.*, 1998). In contrast to previous studies (Ballard *et al.*, 2001; Mok *et al.*, 2004),

Table 4. Correlation between CNPI-W score and CCBS score

NPI scores	CCBS incidence	CCBS frequency	CCBS difficulty	CCBS challenge
Delusion	0.314*	0.303*	0.359*	0.337*
Hallucination	0.050	0.073	0.064	0.067
Agitation	0.443*	0.428*	0.477*	0.437*
Dysphoria	0.016	0.027	0.062	0.032
Anxiety	0.056	0.025	0.098	0.087
Euphoria	0.006	0.110	0.024	0.122
Apathy	0.302*	0.311*	0.335*	0.329*
Disinhibition	0.439*	0.447*	0.392*	0.406*
Irritability	0.426*	0.385*	0.452*	0.429*
Aberrant motor behaviour	0.360*	0.294*	0.357*	0.314*
Night-time behaviours	0.281*	0.280*	0.260*	0.259*
Appetite disturbances	0.127	0.149	0.127	0.138
CNPI total score	0.457*	0.447*	0.518*	0.473*

*Spearman rank correlation is significant at the 0.01 level (two-tailed); CNPI-W = Chinese version of Neuropsychiatric Inventory—workload increase; CCBS = Chinese Challenging Behaviour Scale.

hallucinatory symptoms do not correlate with the CCBS. This may be attributable to the fact that hallucinations are more readily relieved by psychotropic medications (Hemels *et al.*, 2001). It is also possible that the psychotic symptoms give rise to different challenging behaviours and the formal caregivers do not recognise the psychiatric symptoms because of lack of knowledge or inadequate training. Although some of the scores of the CCBS are significantly correlated with the NPI domain scores of some behaviours, the associations with other behaviours are relatively modest. This observation suggests that the presence of neuropsychiatric symptoms may not be associated with perception of challenge by the caregivers.

Apathy is another significant neuropsychiatric symptom in this study. In the factor analysis of the CCBS, the fourth factor (hypoactivity behaviours) is probably the behavioural manifestation of apathy. The results show that apathy is a perceived challenge and associated with increased workload (Cummings, 1997; Ballard *et al.*, 2001; Starkstein *et al.*, 2005). Agitation, disinhibition, irritability and aberrant motor behaviours are inter-related neuropsychiatric symptoms (Lange *et al.*, 2004; Schreinzer *et al.*, 2005). They are more common in later stage dementia patients as revealed in this sample. Self-harm behaviour was not loaded onto a particular factor in the analysis. As reported previously, self-harm behaviours in the elderly may present as specific behaviour that adversely influence care and predict poorer prognosis (Draper *et al.*, 2003; de Jonghe-Rouleau *et al.*, 2004; Low *et al.*, 2004). The present study represented an initial attempt to categorise groups of challenging behaviours from the perspective of the caregivers. It would also be important to study the correlates of specific behaviours such as self-injurious behaviour in the future. It is interesting to note that the overall workload as measured by the CNPI-W correlates only moderately with challenging behaviours. This suggests that, in the delivery of care, challenging behaviour constitutes only part of the total work load. Some behaviours may impose extra workload while not perceived as challenging.

It would be interesting to explore the significance of clinical characteristics of demented patients with challenging behaviours, particularly predictors for the emergence of challenging behaviours as the dementia progresses. The present study focuses on the evaluation of psychometric properties of the CCBS and interpretations of predictors are limited by the cross-sectional design. Most participants were in the late stages of dementia. The effects of different staging and severity of dementia on the perceived challenges of different BPSD by formal caregivers should be

examined in future prospective studies. Nearly one-third of the participants were bed-ridden with profound cognitive impairment. The use of the modified version of the CDR that included 'advanced' and 'profound' stages of dementia would improve the sensitivity in nursing home settings and may predict survival in demented patients (Dooneief *et al.*, 1996).

Challenging behaviours in dementia should not be overlooked. The CCBS is useful in evaluating the challenges faced by residential home staff during daily care of demented patients. While conventional scales measuring BPSD focus on the intensity of the disturbed behaviours, the CCBS adds to an important dimension of perception of challenge by the caregivers, a frequently neglected area which directly affects workload and work stress.

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