Clinical factorial distribution of Anosognosia Questionnaire for Dementia (AQ-D) in a sample of patients with Alzheimer’s disease

Introduction

Patients with anosognosia have been presented more dangerous behaviours and difficulties with treatment adherence, leading to increased burden on caregivers (Conde-Sala et al., 2015). Anosognosia Questionnaire for Dementia (AQ-D; Migliorelli et al., 1995) has been used to collect patients and caregivers’ perceptions about anosognosia. A factor analysis of the AQ-D produced two factors: lack of awareness of cognitive deficits and behavioural symptoms (Starkstein et al., 2006). However, when we considered Alzheimer’s disease (AD) diagnostic criteria from American Psychiatric Association, whose principal aspects are cognition, functionality and behaviour/personality, those two factors proposed may not be enough to analyse anosognosia.

We investigated the factorial structure of the AQ-D from a clinical perspective. Specifically, the objectives were to examine the following: (i) the discrepancies between patients and caregivers in AQ-D clinical factors, and (ii) the association between the AQ-D clinical factors, and socio-demographic and clinical characteristics of patients and caregivers.

Methods

Design and study population

Cross-sectional study using 221 patients and their caregivers from Bellvitge University Hospital were included.

Variables and instruments

Patients evaluated their cognition and anosognosia level (AQ-D; Migliorelli et al., 1995). Caregivers evaluated patients’ variables (age, gender, marital status, education, family relationship, anosognosia, functionality, depression, neuropsychiatric symptoms and dementia severity) and had caregiver burden, physical and mental health assessed.

Statistical analysis

Wilcoxon test determined the differences between caregivers and patients’ AQ-D scores, and Cohen’s $d$ measured the effect size in these differences.

### Table 1 Multivariate linear regression analysis: AQ-D clinical factors and patients and caregivers’ variables

| Patients | $R^2$ | $\beta$ | $t$ | $p$ | $\beta$ | $t$ | $p$ | $\beta$ | $t$ | $p$ | $\beta$ | $t$ | $p$ |
|----------|-------|---------|-----|-----|---------|-----|-----|---------|-----|-----|---------|-----|-----|
| AQ-D total | 0.666 | -0.51 | -10.9 | $<0.001$ | 0.34 | 7.4 | $<0.001$ | -0.31 | -8.0 | $<0.001$ | 0.09 | 2.4 | 0.014 |
| Factor 1 | 0.559 | -0.51 | -9.5 | $<0.001$ | 0.25 | 4.7 | $<0.001$ | -0.30 | -6.6 | $<0.001$ | 0.10 | 2.2 | 0.023 |
| Factor 2 | 0.596 | -0.54 | -10.5 | $<0.001$ | 0.25 | 5.0 | $<0.001$ | -0.28 | -6.5 | $<0.001$ | 0.01 | 2.5 | 0.012 |
| Factor 3 | 0.460 | -0.24 | -4.0 | $<0.001$ | 0.47 | 8.1 | $<0.001$ | -0.25 | -5.0 | $<0.001$ | 0.02 | 0.5 | 0.585 |
| Gender (women) | ZBI | | | | | | | | | | | |

| Caregivers | $R^2$ | $\beta$ | $t$ | $p$ | $\beta$ | $t$ | $p$ | $\beta$ | $t$ | $p$ |
|------------|-------|---------|-----|-----|---------|-----|-----|---------|-----|-----|
| AQ-D Total | 0.299 | 0.50 | 8.7 | $<0.001$ | 0.14 | 2.3 | 0.019 | 0.13 | 2.3 | 0.021 |
| Factor 1 | 0.220 | 0.42 | 6.9 | $<0.001$ | 0.14 | 2.2 | 0.023 | 0.15 | 2.4 | 0.016 |
| Factor 2 | 0.226 | 0.45 | 7.4 | $<0.001$ | 0.09 | 1.4 | 0.140 | 0.11 | 1.8 | 0.068 |
| Factor 3 | 0.305 | 0.51 | 8.9 | $<0.001$ | 0.13 | 2.3 | 0.022 | 0.07 | 1.3 | 0.185 |

Factor 1, Cognition; Factor 2, Functionality; Factor 3, Behaviour/Personality.

$R^2$ = Determination coefficient; $\beta$ = standardized beta coefficient; $t$ = Students $t$-test.

AQ-D, Anosognosia Questionnaire for Dementia; DAD, Disability Assessment for Dementia; NPI, Neuropsychiatric Inventory; GDS-d, Geriatric Depression Scale; ZBI, Zarit Burden Interview.
Spearman’s correlations explored the relationship between AQ-D and patients and caregivers’ variables.

A principal components analysis for the AQ-D was carried out with rotation (varimax). To verify clinical perspective, the researchers grouped the 30 items of the AQ-D on three factors. Variance and Cronbach’s alpha for each factor estimated contribution and internal consistency. Two multiple linear regression analyses were performed to determine the influence of the independent variables on existence of anosognosia.

The level of significance for comparisons was \( p < 0.05 \). SPSS v22.0 for Windows (SPSS Inc., Chicago) was used to statistical analysis.

**Results**

Most patients were women (63.3%), with mean age of 77.8 ± 6.3 years, with formal education >5 years (36.7%), and with a mean MMSE score of 18.3 ± 5.4.

Cronbach’s alpha was high (\( \alpha = 0.91 \)), indicating excellent internal consistency. Three factors were grouped as follows: 1 Cognition, 2 Functionality and 3 Behaviour/Personality. In the multivariate analysis, to patients, the factor Functionality was the most relevant in the association between high levels of anosognosia and deficits in activities of daily living (ADLs) (\( p < 0.001 \)), less depressive symptoms (\( p < 0.001 \)), more neuropsychiatric symptoms (\( p < 0.001 \)) and older patients (\( p = 0.012 \)). To caregivers, the factor Personality was the most important in the relationship between high levels of anosognosia and caregiver burden (\( p < 0.001 \)) and female gender (\( p = 0.022 \)) (Table 1).

**Discussion**

Factor 1 Cognition presented high Cronbach’s alpha (\( \alpha = 0.84 \)), indicating good to excellent internal consistency of the scale. Cronbach’s alpha was moderate in Factor 2 Functionality (\( \alpha = 0.77 \)) and Factor 3 Behaviour/Personality (\( \alpha = 0.70 \)). Our results may suggest a relative independence between anosognosia levels for different abilities (Starkstein et al., 2006).

The highest discrepancy between patients and caregivers in AQ-D clinical factors occurred in factor 1 Cognition. Correa et al. (1996) indicated that AD patients showed anosognosia of the severity of their memory decline on a questionnaire and made fewer self-corrections.

Anosognosia Questionnaire for Dementia clinical factor varied according to the rater in the present study, to patients was factor 2 Functionality that was influenced by deficits in ADLs. This finding deserves attention, because functionality scores predicted the scores for the domains of anosognosia of functional deficits on the AQ-D clinical factor (Starkstein et al., 2006). Likewise, another consensus in literature is a higher frequency of neuropsychiatric symptoms in the anosognosia, and our study is in line with this finding (Conde-Sala et al., 2015). Furthermore, we suggested that less depressive symptoms in patients with AD were associated with high levels of anosognosia. The presence of low levels of depression may mean non-awareness of deficits (Portellano-Ortiz et al., 2014). While to caregivers, the factor was 3 Behaviour/Personality. Higher discrepancies of anosognosia between patients and caregivers have been mostly correlated with neuropsychiatric symptoms. Moreover, the presence of more neuropsychiatric symptoms and anosognosia were related to caregiver burden (Conde-Sala et al., 2015).

Finally, our findings indicated that in a clinical perspective, the grouping of AQ-D items on three factors Cognition, Functionality and Behaviour/Personality was consistent. Also, we confirmed that anosognosia is multidimensional phenomenon that it is in agreement with AD diagnostic criteria.

**Conflict of interest**

None declared.

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From the social representation of the people with dementia by the family carers in Republic of Congo towards their conviction by a customary jurisdiction, preliminary report from the EPIDEMCA-FU study

For many people, dementia, its manifestations and absences, remains a mystery. Social representations, conceptions of the disease, and its images contribute, beyond medical knowledge, to the construction of the social reality of the ill person and all those who, directly or indirectly, informally or formally take care of them. They are an integral part of the disease and condition as much its management than attitudes towards those who are affected (Mushi et al., 2014). Indeed, stigma derives of social representations and is linked to negatives stereotypes (Goffman, 1963).

The people with dementia (PWD) in our study come from a recent population-based survey, “Epidemiology of Dementia in Central Africa (EPIDEMCA)” (Guerchet et al., 2014). Based on the previous quantitative research in this population, we conducted a qualitative survey of an ethno-anthropological type, among PWD and representatives of customary jurisdiction of “Tenrikyo.” After we gained the confidence of interviewees (major element in a good field investigation), this survey was conducted through non-structured interviews, participant observation, and the analysis of official and personal “materials.”

In total, 36 life narratives (19 in the urban area, Brazzaville, and 17 in the rural area, Gamboma) were collected among PWD and family carers speaking for some in French (official language) for others Lingala, Kituba (national languages), or even in Lari and Teke (vernacular languages). The customary jurisdiction of “Tenrikyo” or tribunal for witches (according to the Congolese jargon) only exists in urban area, Brazzaville (political capital of Congo). It is a customary jurisdiction that was created in 1972, which has been placed under the authority of a President, a retired health worker, for the last 15 years (Talani et al., 2015). Its organization and functioning were recognized and validated by a presidential decree. The filing of a complaint costs the equivalent of US $3.2.

The price of the notification is US$4.8. The complainant or the defendant who speaks up in front of the judge must have paid US$ 21 (Talani et al., 2015). The fees are usually used to cover compensations for judges who are volunteers. The customary jurisdiction is in charge of settling amicably and fairly the minor problems, customary in nature submitted to it. Among the cases submitted to it, there are among other things: problems related to witchcraft accusations. Witchcraft accusations from family carers towards PWD was the major form of stigma. The PWD are therefore treated like witches, which motivates immediately their appearance followed by their condemnation before that customary jurisdiction. The tragic end of this condemnation is the death of the accused following a combination of various traditional rituals particularly “mystics.” Because the disease is considered mystical, among the 19 PWD interviewed, 13 (68.4%) were accused of witchcraft. They were mostly widows, three (23.1%) of them have already been presented before that customary jurisdiction and later were killed, according to the narratives of the president of the customary jurisdiction. Current anthropological data tend to show that, in the various human societies facing this phenomenon, witchcraft appears as an explanatory principle of all that happens to us when