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Stress and coping in older people with Alzheimer's disease

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Aim. To investigate stress intensity and coping style in older people with mild Alzheimer's disease.

Background. The potential risk assessment of a stress event and the devising of coping strategies are dependent on cognitive function. Although older individuals with Alzheimer's disease present significant cognitive impairment, little is known about how these individuals experience stress events and select coping strategies in stress situations.

Design. Survey.

Method. A convenient sample of 30 cognitively healthy older people and 30 individuals with mild Alzheimer's disease were given an assessment battery of stress indicators (Symptom Stress List, Cornell Scale for Depression in Dementia, State-Trait Anxiety Inventory), coping style (Jalowiec Coping Scale) and cognitive performance (mini-mental state exam) were applied in both groups. Statistical analysis of the data employed the Mann–Whitney test to compare medians of stress indicators and coping style, Fischer's exact test to compare proportions when expected frequencies were lower than five, and Spearman's correlation coefficient to verify correlation between coping style and cognitive performance.

Results. Both groups suffered from the same stress intensity (p = 0·254). Regarding coping styles, although differences were not statistically significant (p = 0·124), emotion-oriented coping was predominant in the patients with Alzheimer's disease. However, those individuals displaying better cognitive performance in the Alzheimer's disease group had selected coping strategies focused on problem solving (p = 0·0074).

Conclusions. Despite a tendency for older people with Alzheimer's disease to select escape strategies and emotional control, rather than attempting to resolve or lesser the consequences arising from a problem, coping ultimately depends on cognitive performance of the individual.

Relevance to clinical practice. The findings of this study provide information and data to assist planning of appropriate support care for individuals with Alzheimer's disease who experience stress situations, based on their cognitive performance.

Key words: cognition, coping, dementia, older people, nursing, stress

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Introduction

The neurodegenerative process of Alzheimer's disease (AD) is characterised by diverse cognitive and functional alterations expressed as progressive changes in affection, behaviour and independence of older individuals, leading to impairment in performing daily life activities (Dawbarn & Allen 1995, Mesulam 2000). In AD subjects, these daily life changes resulting from cognitive impairment eventually become a threat to biopsychosocial equilibrium, thus constituting a

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stress factor capable of stimulating behavioural and neurovegetative responses in an attempt to reestablish adequate homeostasis.

Different theoretical frameworks have been developed to characterise events with stress potential. Several authors regard all events, both positive and negative, leading to changes in an individual's life as stress events which require adjustment strategies (Selye 1956, Holmes & Rahe 1967, Dohrendwend & Dohrendwend 1974). Other authors, however, only consider threatening and harmful events as stressful (Emmerson *et al.* 1989, Kiecolt-Glaser *et al.* 1995). There is also a school which defines stressful events as those having strong emotional impact (Brown & Harris 1978).

The changes caused by the degenerative nature of AD can, therefore, be considered stress factors, as they demand adjustment strategies, constitute threatening events and exert intense emotional impact.

Considering the different theories in relation to the definitions of stress, there is a consensus that individual differences in reactions to stress emanate from the individual's appraisal of adverse situations. Thus, the magnitude of the impact of a given stress situation will be larger or smaller according to the appraisal that the individual makes of the specific situation and of previous experiences acquired in dealing with this (Lazarus & Folkman 1984).

In the present study, the definition of stress emphasises the relationship between the person and the environment, taking into account both characteristics of the person and the nature of the event environment, which in turn is appraised by the person as taxing or exceeding their resources and endangering their well-being (Lazarus 1999).

This appraisal process, which defines why and to what extent the relationship between the individual and their surrounding environment is stressful, is called 'cognitive appraisal' (Lazarus & Folkman 1984, Lazarus 1999). In this respect, it is not the quality of the event, but how it is perceived, that classifies it as stressful or otherwise. The evaluation stage is followed by the judgment phase, in which the individual analyses whether environmental or internal (fear, anxiety) demands are greater than their personal capacity to modulate the stress experience. This conflict between demands and the effort needed to act upon them is called 'coping' (Folkman 1997, Lazarus 1999).

Coping consists of 'constant cognitive change and behavioural adaptation when handling specific external and/or internal demands that are evaluated as something that exceeds the resources of the person' and can be classified into two distinct divisions or styles: those centred on the problem and those centred on the emotion (Gottlieb 1997, Halamandaris & Power 1999, Lazarus 1999). Coping centred on the problem encompasses all the attempts by the individual to administer or modify the problem, whereas coping centred on emotion describes an attempt to substitute or regulate the emotional impact of stress on the individual, which principally derives from defensive processes, leading the individual to avoid confronting the threat in a realistic manner (Diener *et al.* 1999, Lazarus 1999, Jones & Bright 2001).

In the context of cognitive and functional impairment in AD, the devising of coping strategies along with the perception of conflicting events can be altered, as global cognitive function and, more specifically, planning, abstract thought and judgment, suffer progressive decline. According to the theoretical supposition presented, depending on the stage of the disease, individuals with AD may encounter difficulties or even be incapable of evaluating the potential threat of a given stress event. This may possibly lead to a lessening in their ability to judge the real potential for stress risk, which can subsequently be under or overestimated. Moreover, such patients might be limited in their judgment of whether their personal resources to confront environmental or internal demands are sufficient to modulate the stressful experience, as to achieve this, access to the limbic system and cortical areas related to cognition, emotion and behaviour is required, where these areas are the very functions most compromised in AD.

In view of the influence that cognitive impairment can have on evaluation, reaction and management in adverse situations, the hypothesis has been raised that individuals with mild AD could present different stress levels and emotion-focused coping, with adjustment strategies derived from defensive processes. The lack of studies focusing on the resources available to confront or manage stressful situations in older people suffering from dementia, along with their reactions to these situations, constitute the rationale for investigating this topic. In light of the questions raised, the objective of the present study was to analyse the characteristics of stress indicators and coping styles in older subjects with mild AD, and to compare them with cognitively healthy older individuals.

Methods

Design

This was a cross-sectional, descriptive correlation study. The data collection period was from August 2004–May 2005. This study was carried out within the Cognitive and Behavioral Neurology Unit (CBNU) of Clínicas Hospital of São Paulo University School of Medicine (HC-FMUSP).

Population

Sixty individuals were included in the study, subdivided into two groups: the *control group*, composed of 30 fully independent older individuals with normal cognitive function randomly chosen from a group of subjects participating in cultural activities at the university campus, and the *AD group*, composed of 30 older individuals with mild AD randomly chosen from the group of outpatients followed at the CBNU of the HC-FMUSP.

The names and phone numbers of older people with AD were obtained from the hospital while those of the healthy cognitive older people were obtained from the university campus at which data were collected. Potential eligible subjects were then screened via telephone regarding their eligibility. The eligibility criteria for older people with AD included fulfilling NINCDS-ADRDA criteria (McKhann *et al.* 1984) for probable AD, and the DSM-III-R criteria (American Psychiatric Association 1987) for disease intensity. Older people who were illiterate or with any other neurological or neurodegenerative disease, history of alcohol or drug abuse within the last year or for a previous prolonged period, were excluded from the groups.

Instruments

All individuals participating in the study were submitted to the study protocol evaluation, which included the following: demographic data, the mini-mental state examination (MMSE) (Folstein *et al.* 1975, Brucki *et al.* 2003), an assessment battery of stress indicators: the Symptom Stress List (SSL) (Ferreira *et al.* 2002), State-Trait Anxiety Inventory (STAI) (Spielberger 1983), the Cornell Scale of Depression in Dementia (CSDD) (Alexopoulos *et al.* 1988a, b) and an instrument to assess coping style: the Jalowiec Coping Scale (JCS) (Jalowiec 1987). A demographic questionnaire was used to collect information on age, gender, education level, use of drugs and presence of chronic or acute disease.

The MMSE (Folstein *et al.* 1975, Brucki *et al.* 2003) was employed as a global measure of cognitive function and the following education-adjusted cut-off scores were adopted for controls: ≥28 for subjects with more than seven years of formal education, ≥24 for subjects with four to seven years and ≥23 for subjects with one to three years of schooling (Brucki *et al.* 2003). The evaluation instrument for stress indicators, the SSL (Ferreira *et al.* 2002), is composed of 59 items related to symptoms of a psychophysical nature and to social attributes of the stress state, in which the individual is required to mark the presence and note the frequency of each by assigning scores from 0–3. The highest possible score is 177 points, where the higher the score, the greater the manifestation of stress symptoms. The STAI (Spielberger 1983) is an inventory measuring non-specific aspects involved in problematic or stressful situations. It is composed of 20 statements which the individual answers, stating how they usually feel, thus verifying the presence of routine symptoms of anxiety. Scores range from 20–80 points, higher scores indicating increased anxiety.

The CSDD (Alexopoulos *et al.* 1988a, b) is an instrument that investigates depression, which is valid both for older people with dementia and for apparently cognitively healthy older individuals. The CSDD is composed of 19 items investigating signs related to mood, behavioural disorders, physical signs, cyclic functions and ideational disorders, occurring within the week prior to the interview. Scores range from 0–38 points.

Although anxiety and depression have different underlying concepts to stress, these variables were used to complement stress evaluations using anxiety and depression symptoms. Moreover, regarding that these symptoms are person related they have particular relevance to appraisal, conferring meaning on an event (Lazarus & Folkman 1984). Therefore, anxiety and depression variables were chosen because a case can be made for their importance in determining the significance of an encounter to an individual's well-being.

The JCS (Jalowiec 1987) was used to measure perceived use of coping strategies. The scale consists of 60 items describing cognitive and behavioural efforts regarding how a person responds to stress. The strategies are grouped into eight coping styles: confrontational (10 items), optimistic (nine items), fatalistic (four items), evasive (13 items), emotive (five items), palliative (seven items), supportive (five items) and self-reliant (seven items). The confrontational, evasive, supportive and self-reliant styles are problem-oriented coping, while optimistic, fatalistic, emotive and palliative styles are emotion-oriented coping (Jalowiec 1987). In this study, subjects were asked to select each behaviour (total 60 items) used to cope with events they had evaluated as stressful in their daily life. The raw use score and the mean use score for each coping style was obtained. Raw use scores are calculated by adding the subject's use ratings for all items within a given coping style. To obtain mean use scores, the subject's raw use score for a given coping style should be divided by the total number of possible items for the given coping style. Although the instruments SSL, STAI and JCS are not specifically for older people with mild dementia, they proved reliable for this group, according to the Cronbach's alpha value (SSL: 0·92; STAI: 0·7; JCS: 0·8).

Data collection

After screening potential eligible subjects for the study, individual interviews were conducted with each subject and all instruments applied face-to-face in both groups. Instrument application took approximately 50 minutes per participant and was administered by the same researcher (JNST) in both controls and AD patients. Possible confounding factors such as distraction and tiredness were controlled using subjects' self evaluation of these factors. Thus, during the interview it was asked for all subjects how they were feeling concerning the interview and questionnaire applications. In the case of subjects who reported feeling uncomfortable, the interview was interrupted according to their opinion.

Statistical analysis

Data were coded and input to the SPSS (version 12.0) program (SSPS Inc., Chicago, IL, USA). Data were analysed using descriptive and analytic procedures. Descriptive statistics (frequency, percentage and measure of central tendency) were generated to describe the quantitative data (age, educational level, stress symptoms, anxiety traits, depression, cognitive performance). For the qualitative variables such as coping style, the relative and absolute frequencies were calculated. The test of hypothesis equality between two groups was performed using the non-parametric Mann–Whitney test (Rosner 1986), when the supposition of data normality was not observed. Spearman's correlation coefficient (Rosner 1986) was used to study the correlation between two variables. Fischer's exact test (Rosner 1986) was used to compare proportions when expected frequencies lower than five occurred. The level of significance used for all tests was 0·05.

Ethical considerations

This study was approved by the Ethics and Research Committee of the institution, and also by the Ethics Committee of the University of São Paulo, School of Nursing. Principles of informed consent and confidentiality were observed throughout the project. All participants were volunteers.

Results

Sample characteristics

The AD group was composed of 30 older individuals, predominantly female (70%), with a mean age of 78·9 years (SD 6·36, ranging from 67–89) and mean education of 5·5 years (SD 4·17, ranging from 1–22). The control group comprised 30 older individuals, again predominantly female (88·3%), with a mean age of 72·6 years (SD 6·52, ranging from 62–90), and mean education of 6·7 years (SD 4·28, ranging from 2–19). Comparison of means for the variables gender, age and education level, with the exception of age ($p < 0{\cdot}001$; patients being significantly older than controls), presented no statistically significant difference between groups.

Cognitive performance

Regarding global cognitive performance, a mean score of 20·6 (ranging from 14–28) on the MMSE was observed in the AD group, and 27·4 (ranging from 23–30) in controls. As expected, the difference between the two groups was statistically significant ($p < 0{\cdot}001$).

Stress indicators

With respect to the severity of the stress symptoms (SSL), the AD group scored a mean of 36·4 points (ranging from 3–88), whereas the control group scored a mean of 41·2 points (ranging from 15–76). Although the control group presented higher scores than the AD group on the SSL, this difference was not statistically significant ($p = 0{\cdot}254$, the Mann–Whitney non-parametric test).

In relation to anxiety traits, the mean score on the STAI was 33·6 points in the AD group (ranging from 22–53) and 34·3 (ranging from 32–53) in the control group. Although the control group presented higher scores than the AD group on the STAI, this difference was not statistically significant ($p = 0{\cdot}903$, the Mann–Whitney non-parametric test). Regarding depressive symptoms, as indicated by the CSDD, the AD group presented a higher mean score than the control group ($p = 0{\cdot}01$, the Mann–Whitney non-parametric test), indicating a greater stress indicator in the dementia group.

To investigate the emotional and behavioural changes in the AD group vs. controls further, we carried out a subanalysis of the scores for each item in the scales, which revealed significant differences for some variables (Table 1). In AD patients, physical signs (lack of appetite, sensation of fear, knots in the stomach, fatigue, pessimism, loss of interest) predominated as stress indicators, as opposed to emotional sensations ('I feel emotionally fatigued'). In the control group, however, an absolute predominance of existential questions related to emotional state was seen (sensation of anger, relationship difficulties, depression and anxiety).

Table 1 Statistical difference of SSL, STAI and CSDD scales items between controls and AD subjects

	AD		Control		
Scale item	*n*	%	*n*	%	*p*-value*
SSL					
Lack of appetite	10	33·3	00	0·0	< 0·001
Fear	10	33·3	08	26·6	0·05
Emotional fatigue	14	46·6	08	26·6	0·04
Letting daily chores slide	01	3·3	06	20·0	0·02
Anger	13	43·3	17	56·6	0·01
Relationship difficulties	08	26·7	09	30·0	0·02
Depression	15	50·0	25	83·3	0·06
Stomach in knots	06	20·0	01	3·3	0·03
STAI					
Tire easily	17	58·6	09	30·0	0·02
CSDD					
Anxiety	02	6·7	10	33·3	0·02
Loss of interest	11	36·7	00	0·0	< 0·001
Pessimism	08	26·7	00	0·0	0·005

*Fischer's exact test.

Correlation between demographic data, cognitive performance and stress indicators

When comparing the scores of stress indicators with the respective mean age and educational level, a significant negative correlation between education and the mean scores on the SSL and STAI was seen in the AD group, indicating that individuals with less extensive formal education experienced greater frequency and severity of symptoms of stress and anxiety (Table 2). However, the regression model for dependent variables (SSL, STAI and CSDD) indicated significant association only between SSL score and education level. Table 3 shows that, for each year of education, the SSL score decreases 0·466 units in AD subjects. In the control group, a significant negative correlation between age and mean scores on the SSL and STAI was observed (Table 2). The regression model indicated significant association between STAI score and education level, where the STAI score decreases 0·441 units for each year of age (Table 3).

In relation to cognitive evaluation, only the AD group showed a tendency towards a significant correlation between the MMSE and depressive symptoms. By contrast, the control group showed a positive non-statistically significant correlation between global cognitive performance and depression (Table 2). However, the regression model for the dependent variables SSL, STAI and CSDD indicated no statistical association between these variables and the MMSE.

Coping style

Regarding coping style, in the AD group, the optimistic style predominated in the 21 older people who were capable of answering the instrument questions, which means that these individuals use optimistic thoughts, mental elaboration and positive comparisons about the problem. In the control group, the confrontational style was observed, evidencing that older people without pathological cognitive alterations solve the situation in a combative way, by confronting the stressful situation. However, this difference was not statistically significant (Table 4).

As the frequency of several coping styles was low in both groups, we decided to regroup the eight different coping types and classify them on the basis of the characterisation of the coping action focus (emotion and problem). This new division allowed for appropriate statistical handling for comparative analysis with the other variables. Regarding this regrouping, a predominance of emotion-oriented coping in the AD group (61·9%) and problem-oriented coping in the control group (40%) was evidenced. However, this difference did not reach statistical significance ($p = 0·124$).

Correlation between demographic data, cognitive performance and coping style

When comparing coping styles employed by individuals in relation to their educational level, both groups revealed no statistical correlation between these variables. In addition,

Table 2 Spearman's coefficients between stress indicators and age, education level and cognition in controls and AD subjects

	Age		Education		Cognition	
	AD	Control	AD	Control	AD	Control
Indicator	*r* (*p*)*	*r* (*p*)*	*r* (*p*)*	*r* (*p*)*	*r* (*p*)*	*r* (*p*)*
SSL	0·179 (0·343)	**−0·364 (0·047)**	**−0·532 (0·002)**	−0·120 (0·527)	−0·137 (0·468)	−0·030 (0·871)
STAI	0·070 (0·716)	**−0·402 (0·027)**	**−0·437 (0·017)**	−0·129 (0·496)	−0·196 (0·307)	−0·115 (0·543)
CSDD	−0·121 (0·521)	−0·324 (0·080)	0·078 (0·681)	−0·241 (0·198)	−0·323 (0·081)	0·039 (0·836)

*Spearman's correlation coefficient and profile analysis. Bold print indicates significant correlation.

Table 3 Independent variables, β coefficient, β confidence interval and *p*-values obtained through simple linear regression model in relation to dependent variable SSL, STAI, CSDD scores and coping style in control and AD subjects

Group	Dependent variable	Independent variable	Beta (β)	*p*-value	$IC_{95\%}$ β [min./max.]
Control	SSL	Intercepto	47·709	0·000	[35·229/60·189]
		Education	−0·227	0·228	[−2·508/0·624]
		Intercepto	90·340	0·019	[15·779/164·901]
		Age	−0·247	0·187	[−1·697/0·348]
	STAI	Intercepto	37·211	0·000	[31·205/43·217]
		Education	−0·230	0·222	[−1·213/0·294]
		Intercepto	76·182	0·000	[42·922/109·441]
		Age	−0·441	0·015*	[−1·035/−0·123]
	CSDD	Intercepto	2·386	0·000	[1·212/3·560]
		Education	−0·234	0·214	[−0·239/0·056]
		Intercepto	6·200	0·082	[−0·841/13·242]
		Age	−0·238	0·206	[−0·158/0·036]
	Coping	Intercepto	0·373	0·029	[0·040/0·706]
		Education	0·336	0·070	[−0·003/0·080]
		Intercepto	0·202	0·000	[−1·913/2·316]
		Age	0·079	0·846	[−0·023/0·035]
AD	SSL	Intercepto	55·964	0·000	[39·762/72·165]
		Education	−0·466	0·009*	[−6·997/−1·071]
		Intercepto	−27·255	0·624	[−139·800/85·290]
		Age	0·216	0·253	[−0·610/2·230]
	STAI	Intercepto	39·155	0·000	[34·283/44·027]
		Education	−0·362	0·060	[−1·762/0·015]
		Intercepto	28·030	0·103	[−6·049/62·109]
		Age	0·081	0·677	[−0·341/0·516]
	CSDD	Intercepto	4·459	0·009	[1·219/7·699]
		Education	−0·017	0·928	[−0·619/0·566]
		Intercepto	11·251	0·264	[−8·963/31·465]
		Age	−0·132	0·488	[−0·343/0·168]
	Coping	Intercepto	0·361	0·105	[−0·083/0·806]
		Education	0·219	0·328	[−0·044/0·125]
		Intercepto	−2·025	0·127	[−4·676/0·626]
		Age	0·413	0·060	[−0·001/0·066]

*Value of less than 0·05 indicates significance.

the regression model for dependent variable coping style indicated no association between this variable and the demographic variables age and education level (Table 3). Considering the involvement of cognition in the devising of adjustment strategies and the definition of coping styles, a significant difference between coping styles was observed within the AD group, but not in controls (Table 5). Hence, less cognitively impaired AD patients had a tendency to elect the stress situation itself as the focus of action in confronting strategies.

Discussion

In this study, with respect to stress symptoms, both the AD and the control groups presented statistically similar means for SSL score. Thus, it seems that the presence of cognitive impairment in older individuals does not imply the absence of stress or a less intense stress experience. However, statistical analysis revealed a predominance of symptoms related to the sensorial perception of stress in AD patients compared with the control group. Therefore, it is possible that the perception of the threat of a stress event induces a redistribution of the information to distinct neuroregulatory centres of stress within the central nervous system, favouring the sympathetic pathway as a mediator of the stress reaction, as opposed to other regulatory centres such as the amygdala and the hippocampus, which are responsible for anxiety behaviour and information storage/recuperation (Sapolsky 1994). Furthermore, as AD patients present compromised associative functions, it maybe easier to perceive the threat only through a sensory approach, without combining the information with cognitive and motor centres responsible for evaluating the situation, elaborating a reaction and executing a response.

Among the latter, it was observed that the majority of symptoms of stress and the predominant 'anxiety' component of depression represent challenging dispositions in both

Table 4 Distribution of groups according to coping styles

	Group			
	AD		Control	
Coping style	*n*	%	*n*	%
Confrontive	4	19·2	12	40·0
Evasive	0	0·0	1	3·3
Optimistic	7	33·4	7	23·4
Fatalistic	0	0·0	1	3·3
Emotive	1	4·8	3	10·0
Palliative	1	4·8	0	0·0
Supportive	2	9·3	1	3·3
Self-reliant	4	19·2	1	3·3
Self-reliant and palliative	0	0·0	1	3·3
Confrontive, emotive and supportive	0	0·0	1	3·3
Confrontive and supportive	2	9·3	2	6·8
Total	21*	100·0	30	100·0

*Nine out of 30 individuals in this group presented difficulties to understand the questions they were asked, which made it impossible to continue applying the inventory during the interview.
Fischer's exact test, $p = 0{\cdot}341$.

Table 5 Performance in the MMSE and coping style in AD and control groups

	Coping style (AD group)*		Coping style (control group)*	
MMSE	Emotion	Problem	Emotion	Problem
Frequency	13·0	8·0	12·0	18·0
Mean	19·4	23·5	26·7	27·8
Standard deviation	3·0	2·7	2·0	1·4
Median	20·0	23·0	27·0	28·0

*The Mann–Whitney non-parametric test, $p = 0{\cdot}0074$ AD group; $p = 0{\cdot}1602$ control group.

groups, which can be interpreted as an attempt to resolve or to control the problem. The organic reaction (biological or psychosocial) predominant in this group characterises an individual preparation to react to a stress event. Thus, it is possible that these older people place themselves as active subjects through 'cognitive appraisal' of the event. In this regard, these subjects are more likely to react to stress in a positive manner, feeling capable of controlling stressful situations. In contrast, the AD group presents stress symptoms that predominantly reflect a defensive disposition and resignation when faced with a conflictive situation. Sensations of pessimism and disinterest, which predominate in the depression symptomatology of the AD group, represent a clear component of immobility and resignation that can be attributed to the manifestation of impotence and limitation in reacting to the problem. Another interpretation for the AD results is related to an emotional adaptation effort to cope with daily challenges resulting from disease progression. Regarding their cognitive impairment, these individuals probably have difficulty in selecting strategies to control or solve the problem. Thus, they try to control the emotion which arises from the stressful situation as a form of adaptation strategy. This can explain why these individuals experience higher fear and emotional fatigue than control subjects.

In relation to demographic characteristics, although groups presented different means for age, this variable showed association only with the STAI score in control subjects, indicating that higher age is associated with lower levels of anxiety traits. A significant negative correlation was observed between educational level and stress symptoms in the AD group. Hence, this suggests that the greater the individual's formal education, the lower the intensity of stress symptoms. Considering the qualitative character attributed to the period of formal education, more advanced educational level seems to contribute to the perception and evaluation of stress events. Moreover, a higher degree of education may further contribute to the modulation of stress and of the emotions involved, despite the presence of AD. It is possible that the presence of neural substrate capable of allowing access to the semantic memory in the mild phase of the disease (Desgranges *et al.* 2002) explains the influence of education level only in the AD group. These individuals most likely used interpretations previously consolidated in the semantic memory to provide meaning to the relevance of the event, instead of providing new meaning to a particular event to understand it and store it in the episodic memory, where this constitutes one of the earliest cognitive deficits of the disease (Petersen *et al.* 1994). In contrast, educational level did not exert the same effect in normal older people, probably because they were able to benefit directly from new experiences in the construction of their resources and mnemonic repertoires.

The adjustment strategies chosen by individuals to manage situations perceived as conflictive were distinct in the two groups: there was a predominance of emotion-oriented coping in individuals with AD, and problem-oriented coping in the control group. However, these differences did not reach statistical significance. With respect to cognitive performance, AD patients presenting better MMSE scores elected problem-oriented coping strategies significantly more frequently than emotion-oriented strategies, compared with

more cognitively impaired individuals. These data again seem to indicate that these less impaired individuals make use of acquired knowledge stored in the semantic memory as an attempt to deal with the problem. Although the predominant coping style in this group was emotion-oriented, these data showed that, in individuals with better cognitive performance, some neuropsychological, anatomic-functional and neurophysiologic resources, especially those related to executive functions, remain available, allowing confrontational coping of adverse situations.

It should be noted that a given adopted coping style is neither inherently good nor bad. On the contrary, the evaluation of the efficacy of a coping style chosen by an individual requires analysis of the context in which the stress event occurs, because a given way to cope with a stressful event can be efficient in one situation, yet not in another. While preparing for an exam, for example, focusing the action on confronting the problem is adaptive; however, while awaiting the results it would be more important to direct the actions of coping towards controlling the emotional impact resulting from waiting. Furthermore, in the evaluation of coping efficacy, it is necessary to verify the possibility of not only resolving the problem, but also of controlling it (Folkman & Moskowitz 2004).

Thus, based on the theoretical supposition presented, the predominance of emotion-oriented coping in the AD group may be considered an adaptive and defensive strategy of these individuals. This strategy is used with the aim of minimising the emotional impact resulting from the perception of their limitations and losses, since when faced with the event, confronting the situation could result in more threatening emotions than those originating from the stress event itself. The devising of coping strategies in these individuals is possible because they retain cognitive resources to select a defensive style to confront the stress event. However, in individuals with moderate AD, who presented a severe form of cognitive impairment and sometimes present anosognosia, the perception of their real difficulties and the ability to devise an adaptive coping strategy is compromised, which in turn could protect them from frustrations and negative sensations and consequently from the sensations of stress.

Limitations

Our sample was a convenient sample of 30 older people with mild AD drawn from a specific dementia community. Thus, the findings should only be generalised to other populations with caution. Furthermore, because the measures relied on self-reporting, the findings may not reflect true behaviours.

Conclusions and nursing implication

Cognitively healthy older people and those with dementia presented the same intensity of stress from a statistical standpoint. Nevertheless, the qualitative characteristics regarding the symptomatology of this syndrome reflect a posture of escape and resignation in the AD group, with a predominance of manifestations originating from the primary cortical regions, as opposed to those responsible for the processes of cognitive appraisal. Moreover, among the individuals with AD, those that presented less intense cognitive impairment tended to deal with stress situations by selecting confrontational coping strategies in an attempt to resolve the problem or minimise its consequences. Further, as cognitive performance is correlated with coping style, it is not expected that individuals with AD have not ability to deal with the stress situation, because of their cognitive impairment. Thus, nursing intervention for older people with AD should consider the cognitive performance of these individuals before planning support care.

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Contributions

Study design: JNST, PC, RN, ECC; data collection and analysis: JNST, PC, RN, ECC and manuscript preparation: JNST, PC, RNN, ECC.

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