

Telephone Intervention for Caregivers

Impacts of an Individualized Telephone Intervention Targeting the Caregiver of a Person with Alzheimer's with Nonaggressive Behavioural Symptoms

Anne-Sophie Godbout, Jean Vézina and Chantal Dubé
School of Psychology, University Laval, 2325 Allée des Bibliothèques, Québec, Canada

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Abstract: Caregiving for a person with Alzheimer's disease can have a negative impact on the individual who has to endorse this role. High levels of depressive symptoms, anxiety, caregiver burden, and desire to institutionalize have been reported in the literature. Those consequences justify the development of efficient interventions that will diminish the individual and societal repercussions of the role of caregiving for a person with Alzheimer's disease. The main objective of this study is to evaluate the impacts of a telephone intervention for caregivers of a person with Alzheimer's disease. To do so, 50 caregivers were recruited and randomly assigned to the control group ($n = 25$) or the intervention group ($n = 25$). Results show that caregivers who were assigned to the intervention group showed significant lower levels of depressive symptoms, anxiety symptoms, caregiver burden and desire to institutionalize. These results support the pertinence to develop interventions that can help caregivers cope with their role and with the management of the symptoms of the care receiver.

1 INTRODUCTION

It is now well documented that caregiving for someone with Alzheimer's disease can have major and deleterious impacts on both the mental and physical health of the person who takes that role (Alzheimer's Association, 2017; Liu, & Gallagher-Thompson, 2009; Vaingankar et al., 2016). High levels of anxiety, depressive symptoms, caregiver burden and desire to institutionalize are observed in this population (Alzheimer's Association, 2017).

Research has also shown that out of all categories of symptoms that are observed in Alzheimer's disease, behavioural symptoms are those that have the most negative impacts on the caregiver's health (Feast, Moniz-Cook, Stoner, Charlesworth, & Orrell, 2016; Shiji, George, Price & Jacob, 2009).

The main objective of this study is to evaluate the impact on anxiety symptoms, depressive symptoms, caregiver burden and desire to institutionalize a telephone intervention for caregivers of a person with Alzheimer's disease with nonaggressive behavioural symptoms.

2 METHODS

2.1 Participants

A total of 50 caregivers of a person with Alzheimer's disease were recruited. They were randomly assigned to either the intervention group (IG; $n = 25$) or the control group (CG; $n = 25$). To be eligible to participate in this study, the inclusion criteria for the caregiver were (1) to be the main caregiver of a person with Alzheimer's disease for at least 6 months before the beginning of the study (2) to have been living with this person for at least 6 months (3) to have a significant level of caregiver burden (e.g., a score higher than 6 on Zarit's caregiver burden scale), (4) not to have frequented support group in the last 3 months and (5) not to have auditive problems that are not compensated by an auditive aid. The inclusion criteria for the person with Alzheimer's disease were (1) to have received the diagnosis at least 6 months before the beginning of the study, (2) to be at least 50 years old, (3) to be living at home, (4) to show nonaggressive behavioural symptoms such as agitation, wandering, repetitive mannerism on a weekly basis

for at least 4 weeks, and (5) to have obtained a score on the Dementia Behaviour Disturbance Scale (DBDS; Baumgarten, Becker & Gauthier, 1990) that indicates a high level of disturbing behaviour demonstrations.

2.2 Assessment Measures

A sociodemographic questionnaire was used to get information on the caregiver's health state, their desire to institutionalize the care receiver, their support system and the services and resources used were collected. The caregivers also completed the Beck's Depression Inventory (BDI; Beck, 1978) to evaluate caregivers' depressive symptoms, the State-Trait Anxiety Inventory (ASTA-65+; Bouchard, Ivers, Gauthier, Pelletier, & Savard, 1998) to evaluate anxiety symptoms, and Zarit's Caregiver Burden Inventory (IFZ; Zarit, Orr, & Zarit, 1985). The measures used to evaluate the care receiver were the DBSD (Baumgarten et al., 1990), the Modified Mini-Mental State (3MS; Hébert, Bravo, & Girouard, 1992) and the Functional Autonomy Measurement System (SMAF; Hébert, Carrier & Bilodeau, 1988).

2.3 Procedure

Participants were recruited with the help of community organizations. Their contact information was given to the research team after the caregivers gave their authorization. Their eligibility was validated by phone. Each time 4 participants were eligible, they were randomly assigned to either one of the experimental situations: the intervention group (IG) or the control group (CG). Participants assigned to the CG group were then told that they were on a waiting list and that they could expect to receive the treatment in the next 6 months.

A first face-to-face interview between the caregiver and a member of the research team was used as the first time of measure. The caregiver was interviewed for a second time when the treatment was completed (T1), and three months after (T2).

2.4 Intervention

The treatment consists of 12 individual sessions. Those are by phone and have a lasting time of approximately 45 minutes. The program targets the strategies that the caregiver uses to deal with the non-aggressive behavioural symptoms of the disease.

The member of the research team that gave the

treatment was a trained nurse with a degree in psychology and who had work experience with older people. She received training during which she was also given a manual describing the themes and objectives of each 12 sessions of the treatment program.

The first sessions were randomly recorded to ensure the validity of the protocol. Supervision was given all through the experiment to make sure the treatment was followed.

The themes covered during the session were the Alzheimer's disease (sessions 1 and 2), consequences of the disease on the caregiver (session 3), communication with the care receiver (session 4), the behavioural symptoms of the care receiver and the possible solutions (sessions 5 to 10), the available resources that the caregiver could use (session 11), and the synthesis of the treatment (session 12).

2.5 Statistical Analysis

The statistical analyzes were made using the SAS-PC® software. First, *t*-tests were used to describe the participants' sociodemographic characteristics and to compare the two experimentation groups (IG and CG) on those variables. Since the desire to institutionalize is a categorical variable, a chi-square test was performed. Secondly, an analysis of variance (ANOVA) was used to compare both groups of caregivers on the measures of depressive symptoms (BDI), anxiety symptoms (STAI) and caregiver burden (ZCBI) at T0. ANOVAs were also used to compare the two care receivers group on the measure of the frequency and the severity of their behavioural symptoms (DBDS), their cognitive functions (3MS) and their functional autonomy (SMAF).

Finally, the effect of the intervention was calculated using a multivariate analysis of variance (MANOVA) with repeated measures. The dependent variables were the intervention conditions. Statistically significant results with the MANOVA were followed by contrast and tendency analysis. The same procedure was applied to evaluate the effect of the program on the caregivers' assessment of the frequency and severity of behavioural problems of their Alzheimer's relative and the measurement of their cognitive and functional. The significance level used for all the tests was a bilateral alpha threshold of 0.05 alpha.

3 RESULTS

Table 1 presents the characteristics of the participants on socio-demographic variables (i.e. health status and services received by the study group. The final sample consisted of 28 women (56%) and 22 men (44%). On average, participants in the study took care of their loved one for about 5 years and the majority of caregivers were the spouse of the relatives they cared for. Statistical analyzes revealed that there is no difference between the two groups on the different descriptive variables.

Table 1: Characteristics of caregivers in the IG and the CG on socio-demographic variables, health status and services received.

	Intervention group (IG) (n = 25) M (S-D)	Control group (CG) (n = 25) M (S-D)
Age	63,28 (12,70)	66,08 (12,72)
Years of scolarity	9,20 (2,73)	9,16 (2,43)
Annual income	33 960 (13 507,65)	34 560 (13 266,75)
Number of years of caregiving	5,48 (3,14)	4,56 (2,95)
	%	%
Civil status		
Single	8	12
Married or spouse of common-law	92	88
Relationship with the care receiver		
Spouse	68	66
Daughter/son	32	34
Employed		
Yes	0	16
No	100	84
Perceived state of physical health		
Excellent	12	8
Really good	12	12
Good	64	68
Bad	12	12
Perceived physical health		
Same	80	76
Worst	20	24
Amount of inconvenients that are due to health		
A lot	4	8
A little	36	32
Not at all	60	60
Services and resources used and received		
0-2	92	84
3 and more	8	16

Table 2 shows the results of the three different measurement time on the instruments evaluating the dependent variables for the two experimental groups. Statistical analyzes revealed that at T0 there was no significant difference between the two groups over all the variables measured. At T0, caregivers in both groups have an average IFZ score that indicates severe levels of burden.

Table 3 shows the results of the multivariate analysis that compared the scores of both groups on the dependent variables. The analysis made it possible to compare the two groups between T0 and T1 and between the T0 and the T2. Among the caregivers, significant differences were between the two groups with the results at the BDI, the ASTA-65 + and the IFZ, both between the T0 and the T1 and between the T0 and the T2.

Table 2: Scores on the dependent variables at each time of measure.

	IG (n = 25)			CG (n = 25)		
	T0	T1	T2	T0	T1	T2
	A (SD)			A (SD)		
IDB	19,24 (7,06)	9,52 (4,35)	11,20 (3,99)	17,24 (5,37)	18,44 (5,06)	18,96 (4,99)
ASTA-65+	41,68 (8,59)	31,52 (5,50)	32,36 (5,06)	40,60 (9,46)	41,44 (8,54)	42,76 (8,44)
IFZ	42,20 (8,93)	23,96 (9,52)	24,40 (6,42)	40,41 (9,30)	39,84 (8,72)	40,84 (8,56)
DBDS-Frequency	23,44 (6,24)	17,08 (5,78)	15,96 (4,84)	23,20 (8,94)	20,40 (7,52)	19,28 (8,00)
DBDS-Severity	28,48 (6,68)	12,52 (6,62)	12,48 (4,85)	27,20 (8,02)	23,64 (6,58)	21,36 (7,94)
3MS	7,56 (7,09)	7,64 (6,16)	7,60 (8,56)	9,84 (5,59)	9,28 (5,14)	8,56 (5,72)
SMAF	43,68 (7,64)	43,32 (7,69)	43,44 (7,31)	41,76 (7,76)	41,80 (7,83)	42,00 (7,50)

Table 3: Results of the multivariate analysis comparing the IG and the CG on the dependent variables.

Dependant variables		T0 to T1	T0 to T2	R ² de T0 à T1	R ² de T0 à T2
IDB	F	44,68*	36,83*	0,48	0,44
	ddl	1; 48	1; 48		
	p	0,0001	0,0001		
ASTA-65+	F	23,84*	27,94*	0,33	0,38
	ddl	1;48	1;48		
	p	0,0001	0,0001		
IFZ	F	36,48*	56,91*	0,44	0,55
	ddl	1;47	1;48		
	p	0,0001	0,0001		
DBDS (Frequency)	F	3,06	3,15*	0,05	0,06
	ddl	1;48	1;48		
	p	0,087	0,0423		
DBDS (Severity)	F	35,53*	22,77*	0,43	0,32
	ddl	1;48	1;48		
	p	0,0001	0,0001		
3MS	F	1,04	0,30	0,02	0,006
	ddl	1;48	1;48		
	p	0,311	0,588		
SMAF	F	0,48	0,40	0,009	0,008
	ddl	1;48	1;48		
	p	0,492	0,532		

The caregivers in the IG reported significantly lower scores on all the instruments evaluating their condition. As for the care receivers, those assigned to the IG showed statistically significant lower score compared to the CG group between T0 and T2 on the frequency of behavioural disorders. Their scores had decreased. No difference was observed between the 2 experimental groups between T0 and T1 on this variable. The severity of the behavioural disorders were also significantly lower for the IG between T0 to T1 and T0 to T2.

The Chi-Square test used to evaluate the desire to institutionalize indicated a significant difference between the IG and the CG, $\chi^2 (2, n = 25) = 16.96, p = 0.0002$ between T0 and T3. The caregivers

assigned to the IG had lower scores than the caregivers in the CG.

No statistically significant differences were observed between the measuring times on the instruments evaluating the cognitive functioning (3MS) and the functional autonomy of the care receiver (SMAF).

4 DISCUSSION

Caregiving for a person with Alzheimer's disease has consequences on different aspects of the caregivers' psychological and physical health. In fact, caregivers show higher levels of depressive symptoms, anxiety symptoms and caregiver burden. Those are linked to earlier institutionalization of the person they are caring for. The objective of this study was to evaluate the effectiveness of an intervention program in determining whether the caregivers who received an intervention that helps them manage the nonaggressive behavioural symptoms displayed by the person they take care of would differentiate from the caregivers who did not receive the intervention on measures of depressive symptoms, anxiety, feeling of burden and desire for institutionalization of the loved one. The following hypotheses were evaluated: caregivers in the IG would show less depressive symptoms, experience a decrease in their severity of their anxiety symptoms, have a lower sense of burden, and would have a decrease in their desire to institutionalize the person they cared for.

The results show that the importance of the depressive and anxious symptoms of the caregivers who received the intervention had decreased in a tangible way compared to caregivers who have not benefited from the intervention. In addition, the perception that the caregiver had of the severity of the behavioural symptoms of the care receiver decreased significantly at each measurement time. The hypothesis that the caregivers who received the intervention would show a lower sense of burden than those in the CG was also confirmed. The caregivers assigned to the IG also expressed a lower level of desire to institutionalize the care receiver than the caregivers assigned to the CG. This last finding could have interesting implications in reducing the economic and societal costs of Alzheimer's disease.

The results of this program seem to indicate that the intervention has improved the participants' perceptions of their caregiving skills and increased their sense of control and capacity to manage the

nonaggressive behavioural symptoms displayed by their loved one.

It has to be mentioned that even though no differences were observed on the cognitive and functional symptoms of the care receiver, the caregivers assigned to the IG showed decreased symptoms on all the variables on which they were evaluated after the treatment program was completed. As a matter of fact, only the perception that the caregivers had of the severity and frequency of the behavioural symptoms were significantly lower at T3. This finding gives support to the idea that behavioural symptoms have the most negative impacts on the caregiver's health.

Three main elements come out of the results obtained in this study. First, the program was individualized, allowing a more personalised and targeted intervention. Although group interventions have proven to be an effective treatment option, the results of this study seem to indicate that individualized interventions are an interesting and efficient alternative for caregivers that cannot attend groups. Therefore, this individualized intervention could be implemented with caregivers that express specific needs regarding the behavioural symptoms of the person they care for.

Secondly, the format of the intervention made it possible to reach a larger number of caregivers. Transport issues and busy schedules are important obstacles to treatment seeking that are often inherent to caregiving. However, this study provides evidence that the use of technologies (i.e.: telephone) are useful tools to give caregivers access to efficient treatment programs.

Finally, the focus on the behavioural disorders appears to contribute in great part to the efficacy of the intervention. As mentioned before, the treatment specifically targeted the nonaggressive behavioural symptoms of Alzheimer's disease. The improvements observed on the different measures can lead us to believe that interventions addressing specific symptoms – in this case nonaggressive behavioural symptoms – can have a positive impact on the caregiver's psychological health. In this sense, the results seem to show that it is important to address this type of behaviour more systematically with caregivers, to try to understand the consequences that they may have on them and to help them manage these behaviours in order to improve their psychological health. This finding could help improve the efficiency of the care services offered by introducing shorter and targeted treatment.

5 CONCLUSIONS

On a daily basis, the caregivers are exposed to the cognitive, functional and behavioural symptoms of the care receiver. Since it is well documented that the behavioural symptoms of Alzheimer's disease contribute in high proportions to the negative effects that caregiving can have on the caregivers' health, interventions targeting the management of this category of symptoms could contribute to diminishing the social, psychological and economic cost of this disease. The results of this study give support to the idea that these types of interventions could benefit the caregivers.

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