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Hypnosis intervention for couples confronted with Alzheimer's disease: promising results of a first exploratory study

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Abstract

Background: Dementia has a negative impact on the quality of life of the person with dementia and their spouse caregivers, as well as on the couple's relationship, which can lead to high levels of distress for both partners. Hypnosis has been shown to be effective in managing distress and increasing the quality of the relationship.

Objective: The aim was to develop a standardized hypnosis intervention for couples confronted with Alzheimer's disease and evaluate its feasibility, acceptability, and helpfulness in managing the distress of both partners and increasing the quality of the relationship.

Methods: In a single-arm study, sixteen couples received the 8-week intervention. Qualitative and quantitative assessments were conducted pre- and post-intervention as well as three months after.

Results: 88.9% of couples (n=16) of the final sample (n=18) completed the intervention. Despite the negative representations of hypnosis, several factors led couples to accept to participate in this study: positive expectations, professional endorsement, medical application, non-drug approach, home-based, free, flexible, and couple-based intervention. The results showed a significant decrease in distress for both partners. These effects were maintained three months after the intervention. Couples felt more relaxed, had fewer negative emotions, accepted difficulties more easily, were more patient, and reported better communication and more affection in the relationship.

Conclusion: Overall, this pilot study shows the feasibility and acceptability of hypnosis with couples confronted with Alzheimer's disease. Although measures of the preliminary pre- and post-intervention effects are encouraging, confirmatory testing with a randomized controlled trial is needed.

Keywords: Alzheimer, Couple, Hypnosis, Distress

Introduction

Dementia has consequences on the quality of life of both the person with disease and their relatives. Persons with dementia (PWDs) present a wide range of symptoms such as cognitive deficits, behavioral and psychological symptoms [1], which limit their sense of initiative and/or ability to perform everyday activities [2,3] and may cause apprehension and insecurity [4,5]. PWD feel a loss of freedom and autonomy [6], a decrease in self-esteem, as well as a loss of social status and roles [7–12]. They also feel stigmatized or have a feeling of “social demotion” [13,14]. These changes and losses may have negative effects on their quality of life and cause high levels of distress [15].

PWD receive daily support from their family members, especially their spouses [16], which provide emotional, psychological, physical or financial support [17]. These increased responsibilities and day-to-day tasks may cause caregivers to neglect their own health and needs [18], thus leading to situations of physical and psychological distress [19].

The progression of the disease also has consequences on the couple relationship. Both partners have difficulties accepting the diagnosis, deficits and disturbances caused by the disease [20,21]. This leads to the use of avoidant coping strategies (e.g. minimisation, normalisation, avoiding using the word 'Alzheimer' or being in contact with other people with AD or support groups) that may increase feelings of distress, hinder communication and create distance between the two partners in the long term [6,21,22]. Moreover, couples anticipate the uncertain future with anxiety and feel nostalgic about the past [6,23,24]. They describe a loss of their mutual understanding, fewer moments of sharing as well as communication and cohesion difficulties [25–27], which are a source of insecurity [28] and of decreased conjugal relationship quality and satisfaction [25,29,30]. Furthermore, the relationship evolves towards a pattern of asymmetrical dependency and previous studies showed adjustment difficulties between the two partners [6,28]. Indeed, with the evolution of the symptoms, especially

language disorders, PWD may have difficulties communicating their needs and emotions properly, while partners may have a hard time understanding and interpreting messages correctly in order to provide an appropriate response. Moreover, as PWD disengage from activities, spouse caregivers develop a vigilant and protective attitude, to the point of having a controlling behavior that may infantilize the PWD. This poor adjustment may increase tensions between the two partners and gradually lead to a deteriorated couple relationship.

Previous studies highlighted the importance of managing the distress of both partners and increasing the quality of the relationship in order to improve their quality of life and delay the moment of institutionalizing PWD [31,32]. They also underlined the importance of proposing couple-based interventions to maintain or enhance the quality of the relationship as early as possible after diagnosis, in order to promote better communication and mutual understanding, reduce conflict and support the couple's strengths and resources [20,33–35].

Previous studies have shown evidence of the efficiency of Cognitive Behavioral Therapy (CBT) on couple [36] and on distress in dementia caregivers [37,38]. However, with regard to PWD, studies are still limited (case studies, small studies) and cognitive limitations may require adaptations of the intervention protocol [39–41]. Moreover, CBT is a verbal therapy which helps become aware of cognitive distortions thanks to specific exercises, and helps locate, identify and modify erroneous behaviors and dysfunctional thoughts or negative beliefs that reactivate themselves in certain situations. Cognitive limitations (memory and language) may affect PWDs' ability to understand, learn, remember, and apply the skills learned in therapy. Caregivers thus play a crucial role as “coaches” in the implementation and success of CBT [39].

Hypnosis is interesting as it has already shown its efficiency on both physical and psychological symptoms in several clinical domains (e.g.[42–58]). Moreover, it works on dysfunctional thoughts or negative beliefs with more unconscious material, which does not

mobilize language capacities and in which implicit learning is allowed, even in the event of memory deficits [59]. This method consists in “*a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion*” [60]. This state of consciousness, known as dissociative state, is a natural phenomenon that occurs in moments of distraction, reverie, or intense absorption in an activity. Everyone experiences it several times a day [61]. It corresponds to a change in baseline mental activity owing to an induction procedure comprising verbal instructions and suggestions [61,62]. The person becomes absorbed, very focused and experiences a decrease in spontaneous thought and disattention to extraneous stimuli [62]. Neurobiological studies have shown that the state of dissociation triggered by hypnosis creates a breakdown in connectivity between the executive and monitoring processes, thereby allowing suggestions to bypass supervisory processes and act directly on the executive systems [63]. This access to unconscious resources allows changes to be made depending on the therapeutic goals set by the individual [64].

Hypnosis in the field of dementia is subject to debate given the impaired attention capacities of the patients. In our recent review, we presented neurophysiological and clinical arguments for the possible use of hypnosis with PWD [65]. They can experience a moderate-to-high state of trance and are susceptible to different types of suggestions, but adaptations to the induction procedure are required at each stage of the disease. Moreover, with hypnosis, PWD showed improved cognitive performances and reported better control of both physical and emotional symptoms, as well as an increased quality of life. Becchio [66] posited that hypnosis in PWD might lead to greater fluidity in care and a more pleasant relation with carers. Ruyschaert [67] argued that hypnosis can also be beneficial to caregivers in coping with the difficulties they meet in the caregiving situation, in keeping positively engaged, and increasing compassion satisfaction and resilience.

In a couple intervention, the therapist puts both partners in an altered state of consciousness. Couple hypnosis can be a powerful and fast way to improve interactional synchronization, verbal and non-verbal communication, and to assist both partners in creating a satisfying relational process by reducing conflicts, promoting better dyadic adjustment and better management of emotions [68–71].

While the effectiveness of hypnosis has been demonstrated by previous studies, only a few of them investigated how it is used: *with couples*, as it seems to increase conjugal satisfaction and interaction, and *with PWD*, as hypnosis is applicable and efficient with adaptations for the induction. Moreover, to date, no studies have evaluated the effectiveness of hypnosis with couples faced with the dementia of one partner. Studies are thus required to test its application and effectiveness with couples confronted with dementia. The aim of this study was (1) to develop such an intervention for couples confronted with dementia in order to manage the distress of both partners and increase the quality of their relationship, and (2) to test its feasibility, acceptability, and helpfulness using a single-arm, uncontrolled exploratory pilot study. This study is envisaged as a first step before a later randomized controlled trial (RCT).

Methods

Participants

To be included in the intervention, one of the partners had to have been diagnosed with early-stage Alzheimer's disease (AD), to be physically and cognitively able to communicate to complete questionnaires and actively participate in interviews (clinical evaluation by the doctor), and both partners had to be living together. We focused on AD to homogenize our sample as it is the most common form of dementia. Patients were diagnosed by a doctor at the centers mentioned below based on clinical criteria, neuroimaging (MRI) and neuropsychological data (evaluation of memory complaints, memory capacities, instrumental

functions, executive functions and attention). They also underwent a Mini-Mental State Examination (MMSE). Psychotropic drugs were stable during the study.

Participants were recruited at the University Hospital of Lille from the active clinical queues of the Memory Research and Resources Clinic (MRRC) in the Department of Neurology and the Memory consultation in the Department of Geriatrics.

Procedure

After ensuring that the couple was eligible for the study according to the inclusion criteria, the doctors provided oral and written information about the study to both partners. With their agreement, they were called by the intervention coordinator who explained the goals and procedures and requested their oral consent to participate and schedule the first appointment at their home. During the first appointment and before assessments began, each of the participants were required to sign the consent form.

Assessments were conducted for both partners in three waves: one week before participation (T0), one week after completion of the intervention (T1) and three months after T1 (T2). Completion was determined by at least 80% attendance, or attendance at six or more sessions during the eight-week intervention.

Hypnosis sessions were conducted at the couples' homes with both partners by one of the two hypnotherapists trained in Ericksonian hypnosis and engaged in this study. Each appointment was structured in the same way: a time to debrief the previous session and the past week, the hypnosis session in itself, and before leaving the couple's home, verification that the session had not led to any adverse effect, such as fatigue, anxiety, confusion, or resurrection of memories.

Development of the hypnosis intervention

First, we designed a standardized couple hypnosis intervention based on the existing literature. Previous studies highlighted the impact of the disease on persons with AD, spouse caregivers and the conjugal relationship. Both partners reported a high level of distress and a sense of insecurity, difficult acceptance of the disease, anxious anticipation of the future and nostalgia, as well as the use of avoidance strategies to manage difficult situations [6,20–24,28]. Spouse caregivers reported neglecting their own needs, having trouble identifying the needs of the partner with AD and adjusting to the disease [6,28]. All these factors contributed to reinforcing the distress of both partners and deteriorating the quality of the relationship.

Based on this literature, eight session scripts were developed by an expert psychologist trained in Ericksonian hypnosis from the French Association of Hypnosis. Each of the eight scripts targeted a specific objective related to the common themes of managing distress in both partners and increasing the quality of the relationship (see Table 1). The order of the sessions was not set in advance but the two first sessions were generally dedicated to the *safe place* to provide a safe base for the rest of the intervention that could be used if necessary, and the *resource pot* to identify and activate the person's resources for change. The choice of the session could then be made in line with the couple's objective or with the emotional or relational context.

-----Insert Table 1-----

As recommended by Wawrziczny et al. [65], each session of about 30 minutes was organized as follows:

- First phase: definition of the session's objective, either individual or conjugal according to the couple's wish.
- Second phase: induction of an altered state of consciousness based on the use of sensory perceptions such as eye fixation, breathing, concentration on bodily sensations (e.g. body

contact on the chair), concentration on room or environmental noises, and the practitioner's voice.

- Third phase: hypnotic work based on the activation of the two partners' imagination and during which the practitioner suggests either directly (e.g., ratification, post-hypnotic suggestion) or indirectly (e.g., metaphor) the change which they may accept or not. The practitioner may also use mobilizing words to mobilize resources and promote change.

- Fourth phase: return to a critical state of consciousness, allowing the two partners to return to the "here and now" enriched by the experience of the work done. To come out of the trance, the hypnotherapist gradually makes the two partners aware of the real world around them by making them listen to noises and take deep breaths.

After post-intervention evaluations, audiotapes of the sessions were given on a USB stick to the couples to facilitate the training. They were encouraged to practice regularly.

The sessions were designed to meet three objectives: 1/ to support resources (*safe place* and *resource pot*), 2/ to accept the diagnosis, the subsequent changes and losses and to live what is (accept and live the present moment) and 3/ to mobilize change and support the relational dimension (see the positive, overcome an obstacle, listen to their own needs, support themselves and their partner).

Ethical Issues

The study was approved by the National Ethics Committee (No 3703–RM) and complied with the tenets of the Declaration of Helsinki (1975).

Measures

Both partners first responded to questions addressing their sociodemographic status (i.e., gender, age, length of relationship, education level, year of first signs of the disease and year of diagnosis). Feasibility was measured with attendance and completion of the intervention. Acceptability was assessed with semi-structured interviews of both partners (representation, expectations, facilitators, satisfaction). Helpfulness was assessed with questionnaires and semi-structured interviews of both partners (observed changes).

Quantitative measures

The outcomes measures were selected based on previous studies. Distress is an emotional state of both partners which is directly related to the onset of the disease and its implications for their identity and quality of life [15,19]. Empathy and conjugal support were chosen because the disease induces a pattern of asymmetrical dependency, as well as communication and adjustment difficulties [6,25,27,28]. The assessment battery consisted of three standardized measures and was administered at T0, T1 and T2 to measure distress, empathy and conjugal support.

The General Health Questionnaire-12 (GHQ-12) is a self-administered questionnaire widely used to measure psychological distress. Each of its 12 items is answered on a four-point Likert scale. The GHQ-12 consists of six negative and six positive items. The total score ranges from 0 to a maximum of 36, with a higher score indicating a higher level of distress [72]. In the present study, Cronbach's alphas were 0.87 at T0, 0.82 at T1 and 0.77 at T2.

The Conjugal Support Questionnaire (CSQ) [73] assesses the support given and received in a conjugal relationship with eight items based on a five-point Likert scale. For each statement, respondents indicate whether they perceive that they give and receive support: never (1), rarely (2), sometimes (3), often (4) or always (5). This scale comprises two subscales: received conjugal support (i.e. the set of supportive actions or attitudes that the person perceives

he/she receives from the partner in order to meet his/her needs; four items) and given conjugal support (i.e. the set of supportive actions or attitudes that the person is likely to provide to the partner; four items). The score for each subscale is generated by averaging the scores for the items. A high total score indicates a high level of conjugal support. In the present study, Cronbach's alphas for received conjugal support were 0.92 at T0, 0.93 at T1 and 0.89 at T2. Cronbach's alphas for given conjugal support were 0.84 at T0, 0.84 at T1 and 0.85 at T2.

The Interpersonal Reactivity Index (IRI; [74,75]) contains 28 items based on a five-point Likert scale ranging from 1 (does not describe me well) to 5 (describes me very well). This scale comprises four subscales: "Perspective Taking" (PT), "Fantasy" (FS), "Empathic Concern" (EC) and "Personal Distress" (PD). As there are seven items per subscale, a total score of 35 could be obtained for each subscale. A higher score represents higher functioning in each aspect of empathy. In the present study, Cronbach's alphas were as follows: 0.48 at T0, 0.82 at T1 and 0.47 at T2 for Fantasy; 0.53 at T0, 0.63 at T1 and 0.78 at T2 for Personal Distress; 0.42 at T0, 0.54 at T1 and 0.38 at T2 for Perspective-Taking; and 0.54 at T0, 0.67 at T1 and 0.73 at T2 for Empathic Concern. As most alphas were <0.70, all the subscales were excluded from the analyses.

Qualitative Measures

Couples were interviewed jointly. At T0, the interview focused on the couple's expected benefits from the intervention, their representations of this type of intervention and their motivations for receiving it. At T1, the interview focused on the perceived effects during the hypnosis session, the level of satisfaction and dissatisfaction, the benefits felt and the difficulties encountered (see Table 2).

-----Insert Table 2-----

Analyses

Quantitative analyses were performed using the Statistical Package for the Social Sciences (SPSS; IBM, Armonk, NY). First, means, SDs and percentages were calculated for the sociodemographic data. Second, Wilcoxon signed-rank tests were conducted to determine differences between T0 and T1 (to evaluate the effects of the intervention) and between T1 and T2 (to assess whether the effects were maintained after three months). Effect sizes were calculated by dividing the z value by the square root of N (the number of observations over the two time points). Using Cohen's classification [76], an effect size of 0.2 was considered a small effect, 0.5 a moderate effect, and 0.8 a large effect. $p < 0.05$ (two-tailed) was considered significant. Third, a qualitative analysis was performed. The interviews were recorded and fully transcribed. During these interviews, the persons with AD had trouble expressing themselves and giving their opinion. It was thus difficult in the analyses to know whether they were really expressing their feelings or if they were repeating the words of their spouses. We therefore decided to carry out these analyses at the level of the couple rather than at the individual level, which could have given biased results. Data were analyzed thematically using QSR NVIVO 10 software (QSR International). The same steps were used for the pre-test and post-test interviews. As recommended by Wawrziczny et al. [24,77], a first analysis was performed in four interviews to produce a coding scheme with themes and sub-themes (see Tables 3 and 4). This coding scheme was then used for all 16 interviews. Double coding was performed for 20% of the interviews to calculate a κ coefficient. This calculation provided an average κ coefficient of 0.87 for pre-test and 0.81 for post-test interviews.

Results

Intervention feasibility

The intervention was proposed to 43 couples. Eight were non eligible and 17 declined participation in the study, either because they were not in the mood or did not agree with hypnosis, because one of the spouses did not want to participate, because they were too much to handle or worried about the research protocol, e.g. use of their data (see Figure 1).

Among the eligible couples, two couples dropped out. The first dropped out just after the first evaluation because one of the spouses changed his mind about hypnosis, and the second dropped out after the first session because the person with AD worried too much about her disease. In the end, 16 couples completed the intervention as defined by attendance at more than 80% of treatment sessions. Among the completers, one couple attended six sessions and all others attended eight sessions.

-----Insert Figure 1-----

Hypnosis sessions lasted about 15-20 minutes with one or more trance exits during the session, mainly due to the caregivers' hypervigilance and PWD symptoms (disorientation, attentional deficits, agitation). When this occurred, the hypnotherapist did a ratification and the persons spontaneously returned to trance state. If it occurred at the end of the session, the hypnotherapist let the final trance exit occur and then gave the final instructions. Breaks were shorter as silence was sometimes distressing for some participants.

The spouse caregivers were primarily women. Mean age was 75.38 years (SD: 6.85) for the spouse caregivers and 77.38 years (SD: 7.43) for the persons with AD. The average MMSE score was 22.77 (SD = 3.7). The average time since the earliest signs of the disease was 4.75 years (SD = 3.30) and the average time since diagnosis was 2.75 years (SD = 2.27). The average length of relationship was 51.75 years (SD = 11.50). The spouse caregivers mainly had a high education level (> High education level; N=9), unlike the persons with AD (> High education level; N=7).

Intervention acceptability

Table 3 shows the qualitative feedback to the pre-intervention assessment concerning the representations of hypnosis, the factors that facilitated participation and the expectations regarding the intervention. Among the 16 couples, eight had a previous experience of hypnosis: for four couples, it was a one-off experience (conference, show, evening event), while it was a clinical practice for four other couples (one couple: only hypnosis, two couples: sophrology, transcendental meditation, or/and ChiQong, one couple: hypnosis and sophrology). Out of these eight couples, two stated that "hypnosis did not work on them" probably because they did not indulge in the experience, although they do not doubt the usefulness of hypnosis.

-----Insert Table 3-----

Of the 16 couples, 4 considered that hypnosis provided access to a state of calm, relaxation and release. Nine couples also associated it with loss of control, amnesia and a practice that was not serious and could even harm the body. Twelve couples knew about hypnosis through its use for health field. Among them, 10 couples mentioned the therapeutic aspect of the method with some confidence in its use and effectiveness, while two couples mentioned a degree of apprehension and lack of confidence. Finally, 11 couples mentioned the image of hypnosis conveyed by the media, and five of them associated it with negative representations (manipulation, lack of credibility, lack of ethics).

Regarding the factors that encouraged participation in the study, all couples mentioned the innovative nature of the intervention, which stimulated their curiosity and enabled them to discover a different approach to accompanying the disease. Nine couples mentioned the importance of the study being proposed by a trusted person (doctor, psychologist, etc.), which

lent credibility to the proposal. The conditions of the protocol were motivating factors for 11 couples: non-drug approach, free of charge, done as a couple, appointments according to their availability and in a reassuring place such as their homes.

Regarding their expectations, 15 couples expected more well-being, relaxation, better management of their emotions and an improved quality of life. Twelve couples hoped for an improvement in symptoms, especially cognitive. Eleven couples hoped for benefits in terms of couple relationship, especially better dialogue, understanding and adaptation to each other. Finally, couples were mainly concerned about their level of hypnotizability, control of their behavior and emotions.

-----Insert Table 4-----

Table 4 shows the qualitative feedback to the post-intervention assessment concerning the factors of satisfaction and dissatisfaction. Most couples (N=15) were generally satisfied with the protocol and did not experience any major inconvenience. They appreciated the trusting relationship with the hypnotherapist and their benevolence, and felt that the sessions made sense in terms of their goals. However, the notion of goals was difficult to understand for four couples. While some may have become bored with the sessions, the program was deemed too short by nine couples. Finally, none of couples used the audiotapes after the intervention either for technical reasons (no computer, not good sound quality, not used to using a USB stick; N=3), or because they forgot (N=3), or for no apparent reason (N=4). Three couples nevertheless mentioned taking the time to fix a point, and visualising pleasant things while breathing.

Intervention helpfulness

Quantitative results between pre-intervention and post-intervention assessments

Concerning the spouse caregivers, using the Wilcoxon signed-rank test, there were a significant decrease in distress ($z=-2.23$, $p=0.03$, $d=0.38$), a significant decrease in received conjugal support ($z=-2.32$, $p=0.02$, $d=0.42$), and a trend for significant changes in given conjugal support ($z=-1.91$, $p=0.06$) (see Table 5).

Concerning the persons with AD, using the Wilcoxon signed-rank test, there was a significant decrease in distress ($z=-1.96$, $p=0.05$, $d=0.38$) as well as a trend for significant changes in received conjugal support ($z=1.71$, $p=0.09$), while changes in given conjugal support were not significant (see Table 5).

-----Insert Table 5-----

Quantitative results between post-intervention assessment and follow-up

Concerning the spouse caregivers, using the Wilcoxon signed-rank test, there was a significant increase in received conjugal support ($z=1.97$, $p=0.05$, $d=0.36$), while changes in level of distress and given conjugal support were not significant (see Table 5).

Concerning the persons with AD, using the Wilcoxon signed-rank test, there was a trend for significant changes in the level of distress ($z=-1.73$, $p=0.08$), while changes in both received and given conjugal support were not significant (see Table 5).

Qualitative results

Table 4 shows the qualitative feedback to the post-intervention assessment concerning the observed changes. For most couples ($N=15$), the sessions provided relaxation, calm and the opportunity to take time for themselves. While some felt apprehensive at the first session, which they were able to overcome afterwards, others did not manage to let go and did not feel their altered state of consciousness. For seven couples, the persons with AD did not remember the sessions. However, they said this was due to the fact that they had gone well.

Most couples felt a certain degree of psychological well-being, fewer negative emotions and less intrusive questioning. They said they were more accepting of difficulties, more patient and more focused on the essentials. Six couples felt that communication between them was better, with more tenderness and affection. Six couples mentioned the fact that the person with AD was more relaxed, more smiling and more emotionally expressive. Finally, five couples felt that the work was still in progress and that they would reuse the images evoked during the sessions when they needed them.

Among the 8 couples who had previous experience of hypnosis or similar practices, all had a positive experience of the sessions (relaxation, calmness...), and 6 identified positive personal changes, 2 positive changes in spouse and 1 positive conjugal change. Two couples said they did not perceive any significant individual or/and conjugal changes.

Of the 7 couples who said they had no memory of the sessions, all 7 nevertheless observed personal and/or conjugal changes. Among the 12 couples who have difficulty identifying the direct contributions of the intervention, 10 nevertheless mentioned personal and/or conjugal changes.

Discussion

The main objectives of this pilot study were to develop a standardized hypnosis couple intervention to manage distress in both partners and increase the quality of the relationship, and to test the feasibility, acceptability, and helpfulness of using a single-armed, uncontrolled exploratory design. The results of this study support the feasibility of such an intervention with couples confronted with AD, with a completion rate of 88.9%.

Acceptability of intervention

In view of the results, it is interesting to note that the couples who agreed to participate were predominantly composed of a caregiver wife and a PWD husband with a moderate level of distress for both partners, who were interested in a non-medicinal approach and may have had previous experience(s) of hypnosis or a related practice(s). Moreover, their negative representations of hypnosis could be offset by positive expectations for themselves or their couple and by their trust in the professional who presented the study to them.

This gender profile is consistent with many studies on dementia in which the caregivers are mainly female (i.e. [20,78–81]). Doss et al. [82,83] also showed that women are the initiators of couple therapy in 73.2% of cases and that they are more prone to seek conjugal therapy when they are distressed. This greater involvement of women may be also explained by the fact that girls are socially encouraged to verbalize their pain and discomfort [84], and that women recognize the problem, and thus seek treatment earlier than men [82].

Moreover, this study shows that the negative perceptions of hypnosis, often associated with representations in the media, picture it as a state of sleepiness with a loss of consciousness, willingness and control and submission to the hypnotist, as mentioned by Michaux [85]. This may be a source of mistrust and reluctance to use clinical hypnosis.

However, positive expectations, professional endorsement, and the feasibility of using hypnosis for medical purposes are three factors that perhaps counterbalance the negative representations of hypnosis. In recent years, studies showing the use and effectiveness of clinical hypnosis in different fields of health have given a more reassuring image of the practice [42–58]. Most of the couples in our study were reassured and took the study seriously, as it was proposed by a professional they trusted. They rerouted a set of positive expectations for themselves and their couple that contributed to their motivation to participate. In the qualitative results, couples expressed conjugal dissatisfaction associated with communication or mutual understanding difficulties and a loss of shared activities or projects. These are the reasons why

these couples accepted to benefit from this couple intervention. Indeed, conjugal therapy is most often requested when couples have interpersonal difficulties, especially communication problems and a lack of emotional affection [82]. Couple-based interventions seem more beneficial than individual approaches to manage relational difficulties, although they can be complemented by individual-based interventions.

Kinney and Sachs [86], Moldawsky [87], Witz & Kahn [88] and Gravitz [89] underlined that motivation, trust, positive expectations and attitude towards hypnosis (vs. reluctance, skepticism, anxiety, fear of losing control) are crucial factors for evaluating the level of hypnotizability of individuals and enabling them to truly benefit from it. For future research, it is essential for professionals to be better trained at talking about and explaining what hypnosis is, to take more time to work on the representations of couples by providing all the elements of understanding and reassurance to help couples experience it with more confidence, calm and efficiency [86,90].”

Finally, other factors such as the non-drug approach, home-based, free of charge, flexible, couple-based intervention and a good contact with the hypnotherapist contributed to the acceptance of the participants. Indeed, the intervention is conducted at the couples’ homes in an environment that is especially reassuring for persons with AD [65], with flexible appointments in order to minimize constraints and logistic inconvenience and to fit into the couple’s daily routine in the best way possible [20]. Finally, a good relationship with the hypnotherapist is another reassuring factor that promotes a better response to hypnosis [74].

Helpfulness of intervention

Participants filled in quantitative analysis questionnaires three times. After eight hypnosis sessions, the major result was a significant reduction in the level of distress in both partners. The negative consequences of the disease on the quality of life of caregivers and people with

AD as well as on their relationship may cause high levels of distress for both partners [6,15,19,28]. There is a real public health issue in managing this distress in order to improve their quality of life and to enable them to live together at home for as long as possible [29, 30]. This effect on the distress is in line with other studies on the use of clinical hypnosis in the field of health [45,91–97] and continued three months after the intervention. The benefits of hypnosis could certainly be maintained and reinforced over time by encouraging daily practice with the audiotapes of the sessions. To facilitate their use, it would be necessary to check the material available and to adapt the support for the audiotapes (USB or CD), to show them how to start them, to explain how to reproduce the session independently. Audiotapes could be given as the sessions progress so that couples get used to using them under the supervision of the hypnotherapist and their use after the intervention would become more natural.

In addition, the results showed that spouses caregivers perceived that they received less supportive actions or attitudes from their partners with AD in order to meet their needs, while the partners with AD didn't perceive any changes. This effect disappears three months after the intervention to return to a level close to the start of the intervention. First, the qualitative analyses didn't show any suffering related to this decrease in support, which is not mentioned, but rather positive changes in the couple's relationship (better communication, closeness, less conflict, etc.). Second, this effect at T1 could be explained by the presence of the therapist encouraging both partners to question their dyadic support. This is an opportunity for the spouse caregivers to become aware of the support provided by their partners with AD, which is probably impacted by the disease. Indeed, Gellert et al. [98] showed that perceived partner dyadic coping was lower in caregivers than in persons with early-stage dementia. This awareness could be distanced after the end of the intervention. This result needs to be confirmed with a larger sample.

We also investigated whether our chosen outcomes (distress, empathy and conjugal support) would be interesting for a future RCT. Regarding the IRI, several studies mentioned problems with the construct and criterion validity of the Personal Distress and Fantasy subscales [99–101]. In this study, Cronbach's alphas for the Perspective-Taking and Empathic Concern subscales were low, which may be explained by the difficulty to understand the various items (especially double negations), thus raising the question of the validity of the scale with an elderly population. The other outcomes showed changes with good Cronbach's alphas, which makes them very useful for further studies. However, it would be relevant to add a questionnaire evaluating marital satisfaction to the research protocol (the French validation of the Marital Satisfaction Questionnaire for Older Persons, [102]), a measure of the negative and positive impact of the caregiving situation on various dimensions of the caregiver's life (e.g. daily routine, health, self-esteem; the French validation of the Caregiver Reaction Assessment, [103]) in order to identify those that could be impacted by the intervention and a pre- and post-intervention MMSE to collect objective information directly from the PWDs on the evolution of their cognitive functioning.

Concerning the qualitative feedback, most couples felt relaxation and wellbeing from taking time for themselves. Hypnosis is a technique that stimulates the activity of the parasympathetic system and induces a state of relaxation by symmetrically decreasing the activity of the sympathetic system [104,105]. In addition to feeling fewer negative emotions and engaging in adaptive strategies such as acceptance, they identified benefits in the conjugal relationship with better communication, more affection and tenderness towards each other. However, the couples did not necessarily link these feelings to the hypnosis sessions directly. Kihlstrom [81] explained that hypnosis works on both the conscious and the unconscious, the explicit and the implicit, and that it is possible to be unaware of something that implicitly influences our experience, thoughts and actions. Moreover, although persons with AD do not

always remember the session owing to their memory problems, it is not necessarily an obstacle to benefitting from the effects of hypnosis. Indeed, spouse caregivers observed changes in their partners with AD, especially more relaxation. Furthermore, Kihlstrom [59] showed that amnesic persons are able to acquire new knowledge during hypnosis, without necessarily remembering the circumstances in which they learnt it or/and what they learnt.

Limitations

Several limitations are associated with the explorative study design of this study, one of which is the small sample size. Owing to the absence of a control group, it is not possible to attribute changes to the effects of the intervention. Results should thus be interpreted with caution. The confirmatory RCT will need a sufficient sample size to have the power to detect significant Group x Time interactions. Moreover, the definition of the individual or conjugal objective is a particular moment in the session which allows each person to define his or her needs clearly but also to listen and become aware of the partner's experience. Setting up a control group of couples benefiting from conjugal therapy would help verify whether hypnotherapy is more effective to decrease stressors and improve communication and perspective-taking comparatively in conjugal therapy. As several therapists are involved, it would also be interesting with a bigger sample, to verify that changes are not based on the therapist's effect. In this study, half of the couples had a previous experience of hypnosis or equivalent, which may influence acceptability and hypnotizability and how they benefit from it thanks to a more confident and positive attitude towards hypnosis, more positive motivation and expectations and less apprehension [86–89]. In a larger sample, it might be interesting to compare the influence of previous practice on the outcomes with the absence thereof. Finally, the interviews were performed with the two partners together. It was therefore difficult to distinguish between the feedback from the spouse caregivers and that from the persons with AD. Even at an early

stage of the disease, it is difficult for the persons with AD to express themselves and they often repeat their spouses' words. Given the level of moderate memory loss with an average score of 22 on the MMSE, it would be interesting to add a MoCA score for future studies to validate the mild stage of AD. This represents a bias because the PWDs' opinions could not be explored in an appropriate way. Although it prevents the study from providing robust results, it highlights the interest of a hypnosis intervention for a couple confronted with AD and contributes to reflection for future research.

Conclusion

With its high completion rate, this exploratory study shows that it is possible to implement a hypnosis intervention with couples confronted with AD. This is an acceptable form of support that helps to improve their distress and the quality of their relationship. Qualitative findings indicate that despite the negative representations of hypnosis, expectations are positive, and the effects felt during the session (relaxation) and after the intervention (better acceptance, better management of emotions, better communication, closeness) are considerable. These findings call for further empirical research to test the intervention in a RCT.

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Table 1. Hypnosis intervention

Consequences of the disease identified in the literature	Name of the hypnosis session	Objectives of the hypnosis session
Sense of insecurity	1 session: *Safe place	To promote feelings of safety, security and protection. To seek or create the representation of a safe place (imaginary or real, past, present, or future) where both partners are free from anxiety to reconnect to a sense of inner security. The feeling of internal security helps develop initiative, autonomy and learning and increases the ability to adapt and cope.
Difficult acceptance of the disease	1 session: *Acceptation	Acceptance of the present, of what the disease imposes in terms of constraints, acceptance of losses induced by the disease (identity, relationship, conjugal and physical well-being...).
Anxious anticipation of the future and nostalgia	2 sessions: *Live the present moment *See the positive	To encourage focusing on the present moment: first, as a resource against rumination on losses or anxious anticipations and second, as an opportunity to regenerate, to enjoy what is happening. To emphasize positive experiences in order to focus on what is and feels good, to regenerate and support resources.
Use of avoidance strategies to cope	2 sessions: *Resource pot *Passing an obstacle	To identify and promote the person's resources, to draw on resources from other situations more or less similar to the current situation or be surprised by unsuspected resources. To experience in trance how both partners have the skills, abilities, resources, and experiences necessary to successfully cope with challenging situations.
Focus on the other partner Neglect of own needs and difficulty in identifying the partner's needs Poor adjustment to the partner's needs and to one's own needs	2 sessions: *Listen to their own needs *Support themselves and their partner	Listening to one's needs, being able to sort out what is useful or not for oneself. To be able to connect to oneself while being open to the other, to be able to set limits, to think about one's own state, to adjust the response or the support taking into account both oneself and the other.

Table 2. Interview grid for T0 and T1

At T0, before the intervention:

- > Are you familiar with this type of intervention?
- > Have you ever practiced hypnosis or do you know anyone who has?
- > What are your expectations of the intervention?
- > What benefits do you expect?
- > What are your preconceptions about this type of intervention?
- > What motivated you to participate in this study?

At T1, just after the intervention:

- > Has anything changed in your emotional state as a result of the intervention?
- > Has anything changed in your relationship with your partner as a result of the intervention?
- > What benefits do you perceive from the intervention?
- > What do you see as disadvantages of the intervention?
- > How did you feel during the sessions? What did you like and what did you not like?
- > Would you recommend this type of intervention to someone close to you? For what reasons?
- > Do you have any suggestions for the intervention?

Table 3. Qualitative feedback at T0 pre-intervention assessment

Themes	Sub-themes	Verbatims	N
Overall representations	Positive overall representations	<i>"It must be when...we put ourselves in a state of comfort, of calm." "It's when we relax... if we get into a good state of relaxation, it's... we're fine, relaxed."</i>	4
	Negative overall representations	<i>"I think that when you are hypnotized, you are no longer in control of yourself." "I was under the impression that through hypnosis you could get people to do things they didn't want to do."</i>	9
Representations of hypnosis associated with the health field	Representations with positive connotations	<i>"Yes, hypnosis is used for operations. That's the therapeutic side." "Otherwise, I believe in hypnosis for tobacco, for those things, yes, I believe in it a lot. Phobias, all that, yes."</i>	10
	Representations with negative connotations	<i>"I had surgery again a couple of weeks ago, so I had my lower body put to sleep and I don't think I would dare ask someone to hypnotize me for an operation." "No, I mean I heard that you can... not put to sleep but anesthetize. I don't know if I would trust having an operation while hypnotized."</i>	2
Hypnosis as seen in the media	Representations with neutral connotations	<i>"We see it in shows from time to time."</i>	6
	Representations with negative connotations	<i>"Precisely because it's a show, it didn't seem very, very serious to me." "I had the impression that through hypnosis, we could make people do things that they didn't want to do." "Because from the moment you're asleep, you don't know what you're saying."</i>	5
Facilitators	Innovative nature of the protocol	<i>"Exactly, it's something new so it's curiosity."</i>	16
	Professional safety	<i>"It was the doctor who suggested it to us, I think it can only be positive for us." "Especially since it's done in a very official way."</i>	9
	Protocol conditions	<i>"I think hypnosis can bring something to us as a couple, it's at home, for both of us...." "That's what I liked: it's a non-drug approach"</i>	11
	Helping research	<i>"It's great if it can help research."</i>	8
Positive expectations	In relation to oneself	<i>"Manage your emotions better." "Being calmer, more patient."</i>	15
	In relation to the couple	<i>"If it makes the relationship better, that's a good thing." "Better understand each other."</i>	11
	In relation to the disease	<i>"So that it improves my memory or stabilizes my memory. Stabilizing it would already be nice."</i>	12
Negative expectations	In relation to oneself	<i>"Are we going to say anything?" "you're going too far into the feelings that we have...or things that are too personal"</i>	11
	In relation to the couple	<i>"You say things that you wouldn't have said otherwise and therefore may be unpleasant or... you have less self-control."</i>	1
	In relation to the disease	<i>"We're afraid, I'm afraid of regressing more than improving."</i>	1

Abbreviation: N; number of couples

Table 4. Qualitative feedback at T1 post-intervention assessment

Themes	Sub-themes	Verbatims	N
Points of satisfaction	Positive overall satisfaction	<i>"We liked it, we really liked it!" "I think it could bring something to people who are more advanced in the disease." "No, no disadvantages, there are none." "It wasn't negative, fortunately it was all positive!"</i>	15
	Quality of intervention	<i>"She (hypnotherapist) knew how to put us at ease, she was very caring." "I think she chose what she was telling us based on what we had proposed as objectives."</i>	15
	Quality of organization	<i>"Always on time... something I really appreciated". "We were able to choose the dates and we stuck to the schedule".</i>	4
Points of dissatisfaction	Quality of intervention	<i>"Everything was based on a goal. And I confess that I misunderstand this point which is important."</i>	4
	Quality of organization	<i>"I think it went too fast. I needed a bit more time."</i>	9
Experience of sessions	Positive experience	<i>"The sessions definitely brought a certain relaxation". "I found that it was a moment of calm, of reflection, that was good" "It was good for me, because it relaxed me, and then it got me going too, during that time I wasn't doing anything."</i>	15
	Negative experience	<i>"The anxiety of the first session". "It did not work on me, not at all". "You never let go completely" "My husband was much less receptive because in fact, I think he doesn't know how to do it, he couldn't see things." "All of a sudden I got a bit fed up"</i>	14
	No memories	<i>"It must have gone well because I don't remember." "She doesn't remember"</i>	7
Perceived changes	Positive personal changes	<i>"The benefits are that I am less afraid of the future because I have the means, I can find within myself the means to face difficulties. "I've become aware of the fact that you have to take things as they come". "Maybe a little more calm and less irritable". "To learn to forget what is not important, and keep only what is necessary. We must set aside what is superficial, and savor our moments, only what is important."</i>	15
	No perceived personal changes	<i>"But I really don't, I haven't seen any change."</i>	1
	Positive conjugal changes	<i>"It has brought more dialogue between us." "I feel a very strong evolution in our couple, at the level of tenderness, of affection, of the whole relationship." "It was more peaceful perhaps, I feel less contradiction, less rebellion" "I feel more in my relationship."</i>	6
	No perceived conjugal changes	<i>"No, we discussed it, we tried to feel if it did anything to us but no, in our relationship it didn't change anything I don't think."</i>	8
	Perceived positive changes in spouse	<i>"You were more relaxed... even the physiotherapist found he stood much straighter, he was smiling more" "Yes, you are much calmer." "I find you have much stronger emotions towards me."</i>	6
	Changes always at work	<i>"I think that in time it will still bring us together". " I try to think about what she says during the session the rest of the time it and it motivates me." "Sometimes when I'm not feeling well, I try to remember the sessions, to close my eyes..."</i>	5
	Difficulty in identifying intervention contributions	<i>"It was very pleasant, it was great but after... Maybe there were some changes that we didn't perceive". "We wondered about the usefulness of it all... it didn't feel like it was enough..."</i>	12

Abbreviation: N; number of couples

Table 5. Comparison of means between various intervention times

Outcome variables	Pre-test T0 (N=16)		Post-test T1 (N=16)		Follow-up T2 (N=10)		z T0-T1 (p values)	z T1-T2 (p values)
	M	SD	M	SD	M	SD		
For spouse caregivers								
Level of distress (GHQ-12)	24.13	6.47	20.19	3.69	21.20	3.71	-2.23(0.03)	1.25(0.21)
Received conjugal support (CSQ)	02.91	1.10	02.41	1.04	02.83	0.99	-2.32(0.02)	1.97(0.05)
Given conjugal support (CSQ)	04.11	0.76	03.84	0.77	03.85	0.84	-1.91(0.06)	1.29(0.20)
For persons with AD								
Level of distress (GHQ-12)	24.70	6.09	22.75	5.09	21.20	4.44	-1.96(0.05)	-1.73(0.08)
Received conjugal support (CSQ)	03.95	0.75	04.14	0.66	03.90	0.87	1.71(0.09)	-0.43(0.67)
Given conjugal support (CSQ)	03.89	0.66	03.89	0.71	04.20	0.60	-0.10(0.92)	1.49(0.14)

Abbreviation: M, Mean; SD, Standard Deviation; z, Wilcoxon-test; CSQ, Conjugal Support Questionnaire; GHQ-12, General Health Questionnaire-12.

Figure 1. Couple participant flow diagram