Strategies for Caregivers to Combat Neuropsychological Hardships that Alzheimer’s’ Patients Face from Day to Day

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Summary: Alzheimer’s disease (AD) is a very severe illness that brings with it all sorts of neuropsychological issues. AD can affect individuals of every age. Whether its memory loss, inability to concentrate, or language barriers, these sorts of intellectual problems make the daily lives of the patients difficult and challenging. However, there are actions family members and care givers can take to ease the constant suffering of their loved ones affected by the condition. An action plan with some guidelines and recommendations is presented that will hopefully improve the lives of both AD patients and family members alike.

Video Link: https://youtu.be/N__sAtyFjak

The Issue: Neuropsychological Deficits AD patients Suffer From

When reflecting on Alzheimer’s disease, it’s important to keep in mind that there are many neuropsychological deficits Alzheimer's patients face in their lives and how difficult it is for them to live in that condition, as their brain health is severely damaged. Ultimately, the disease leads to severe memory loss, complete incomprehension, with added deficits in language, attention, executive functions, and constructional abilities. Family members or care partners can help the patients deal with the mental and social problems and the social withdrawal and loss of individuality they go through. Developing strategies to contend with and manage their deteriorating condition is important for improving the lives of both the AD patient and their care partners.

Alzheimer’s disease

Nearly 44 million people in the world have Alzheimer’s or a similar dementia, according to the Alzheimer’s disease International report (1). Alzheimer’s disease is the 6th leading cause of death in America, and unless a cure is found, more than 16 million Americans will have the disease by 2050 (Alzheimer's Statistics). Alzheimer's disease is the most common type of dementia; it is an advanced brain condition that ultimately destroys brain cells, leading to a loss in memory, significant changes in thinking and other impaired brain tasks (1). It generally develops gradually, gets poorer as brain function declines, and eventually causes brain cells to deteriorate and expire. Early pointers of the condition include forgetfulness, impaired ability to focus, and changes in mood and personality. As the disease progresses, there is a loss of computational ability, in addition to word-finding problems, and difficulty with ordinary day-to-day activities as well. Problems like severe amnesia with added deficits in language, attention, executive functions, and constructional abilities, are social issues that require special attention. Ultimately, the disease leads to severe memory loss, complete incomprehension, social withdrawal, and loss of individuality. Alzheimer's disease accounts for 50 to 80 percent of dementia cases (1). This condition is very lethal, and as of today, there is unfortunately no cure. However, there are ongoing neuroscience research efforts by professionals, who seek to develop
effective treatments and ways to avert the illness (2). Researchers are working to develop better ways to care for affected people and better ways to support their families, friends and caregivers.

Neuropsychological Issues

A. Memory
During the early stages of Alzheimer’s disease, the most noticeable feature is memory loss in the short-term. Consequently, a great amount of the neuropsychological research regarding the prompt discovery of Alzheimer’s disease focuses mainly on memory. When it comes to distinguishing between slightly demented patients who have been clinically identified with Alzheimer’s and older adults who are more normal, so many studies have shown that the capability to absorb new information and preserve it over long periods of time is fairly complex.

1. Explicit Memory
Explicit memory deals with the mindful recall of formerly learned information, and it is the type of memory that’s measured through typical, clinical tests of recollection. Explicit memory can be classified into different categories, including variations in semantic memory and episodic memory. On one hand, semantic memory focuses on the kind of material that is stored in the mind of an individual. Episodic memory comprises context and perspective linked material in which recovery relies on spatial and temporal signs (2). For instance, if a person wants to remember whether he or she took his or her former dose of medication, then the person will be using episodic memory (specifically, when and where the person took the medicine). Semantic memory, on the other hand, does not include information that contains context; it is generally overlearned (2). So, calling to mind that three times two is six, that France is in Europe, and that the American flag contain red, white, and blue colors, can be figured out without recollecting when how or where the information was learned (2). The use of semantic and episodic memories and their differences is considered more challenging when applied to retrograde amnesia, which is memory loss see before damage to the cerebrum.

2. Remote Memory
When it comes to retrograde amnesia in early Alzheimer’s disease, events from a patient’s distant past, like his or her childhood, are a lot easier to recollect compared to happenings that are more recent in his or her adult life (3). As the patient begins to step into the more advanced phases of the illness later in his or her life, there tend to be problems in recovery of majority of the obvious or explicit memories, regardless of how, where or when that information was fixed within the individual.

3. Episodic Memory
Episodic memory includes recollecting and storing real-life, narrative events that rely on temporal and spatial background clues for their repossession. Complications with memory become fairly obvious in the initial periods of Alzheimer’s, as patients have to tackle normal daily jobs that require utilizing episodic memory (3). Some examples include being well-informed of current news, following medication routines, and paying bills on time. Due to its occurrence in the initial phases of Alzheimer’s disease, episodic memory trouble seems to be thought of as an essential, but not adequate characteristic when it comes to clinical diagnosis (3).
Memory deficiencies in patients, even in the initial phases of the illness, are obvious on experimental and clinical jobs dealing with memory, which demand one to learn and retain both nonverbal and verbal material over many trials. One experiences anterograde amnesia, which is due to a failure in unification and it is increased by injury to the hippocampus and cortex, and changes in neurotransmitter. The incapability of patients suffering from Alzheimer’s, to transform information that needs to be recognized into a form appropriate for long-standing retaining can’t be avoided by elaborative or effortful processing during the time of attainment (3). This is not the case in normal aging; they have revealed benefiting from taking part in semantic processing of material during the experimental point of free recollection jobs(4).

Additional proof of patients’ shortages in storing material is revealed by their strong losses on recall and recognition on tasks and through their limited progress in achievement over repeated learning trials. The many observations which Alzheimer’s patients usually remember is only the most freshly presented stimuli, known as heightened regency effects. They provide evidence to the idea that such patients have a really hard time in transmitting material from short term to long term storage.

Along with the many problems in absorbing new information, AD patients even show rapid forgetting of the little material that they learn earlier on. This is true for both nonverbal and verbal information and has been presented to be even faster in Alzheimer’s disease, when compared to amnesia. Recent discoveries suggest that this trait of loss in memory loss is quite essential for right away detection of Alzheimer’s disease and it can be attained through procedures like remembering a set of numbers after only a few minutes delay, and determining percent retained over a specific period of time (4).

Intrusion errors are errors demonstrating the intrusion of formerly learned information into the attempted recollection of new material; they represent a consistent behavioral sign of dementia in Alzheimer’s disease and are evident on tests of memory for verbal and figural information. However, caution should be taken when using such errors in a clinical setting. Intrusion errors in isolation don’t show an exclusive finding in AD since they occur in patients with other forms of dementia, as well (e.g., Huntington’s disease) and even in a few patients with circumscribed amnesia, also known as Korsakoff’s syndrome. Furthermore, methods of error types have not confirmed to be the most sensitive cognitive guides for detecting dementia. Thus, the happening of interruption errors on episodic memory tests should be considered an indicator of a quite important memory disturbance and should help to start a thorough search for the procedures causing the patient’s impairments.

4. Semantic Memory
Although the episodic memory deficiency in Alzheimer’s disease has been studied in a lot of detail, the semantic memory deficits associated with AD have only recently been comprehensively investigated. Clinical investigations of Alzheimer’s disease reveal that language deficits, like word-finding problems in impulsive speech, frequently occur during the course of the disease (5). Likewise, decrements in patients’ general knowledge concerning common facts in history, geography, and science have been observed. In spite of these observations, regular study of patients’ semantic knowledge was missing. Investigators are now examining the knowledge and language deficits in Alzheimer’s disease within the context of
current models of representation of semantic knowledge that were established in the area of investigational cognitive psychology.

Often it is presumed that semantic knowledge is organized as an intricate network of related concepts, and that those concepts that have many attributes in common are more strongly associated than those that share fewer attributes. The strongly related concepts are thought to form conceptual groups made up of examples that share many attributes. The attributes help group concepts into categories, as well as help in distinguishing among the many standards that create a certain category (5). Therefore, a lion and dog are both categorized as animals since they share attributes, like being alive, mobile, and being able to reproduce, however, they can also be distinguished from each other by attributes like domesticity, shape, and size (5). Recently, many investigations suggest that this semantic memory organization is interrupted in AD patients, perhaps due to impairment to the association cortices which are thought to store the associations and concepts that make up semantic knowledge.

There are numerous traits of the semantic memory impairment in Alzheimer’s patients. Firstly, patients exhibit an excessively severe fluency deficiency when creating examples from a semantic category, like animals, compared to producing words from a phonemic grouping (e.g., words beginning with “F”) (6). Their fluency performance shows an increased propensity to produce category labels relative to precise patterns. Secondly, the patients are impaired when it comes to object-naming tasks and make even greater semantically based errors than older, normal adults and patients who have Huntington’s disease. In particular, AD patients have a tendency to refer to objects by their specific category names, like “bird” for pelican (6). Thirdly, Alzheimer’s patients demonstrate a deficit in organizing things on the foundation of subordinate, not superordinate qualities (6). There is also communication in things AD patients miss when performing tasks intended to bring about semantic knowledge through various methods of output and input. Lastly, there is a decline in the way patients organize semantic knowledge, which is constantly confirmed by changes in intellectual maps, reflecting the various semantic relationships utilized in cataloging ideas.

Consequently, all these discoveries reveal that semantic knowledge is greatly lost in Alzheimer’s patients, and that this drop of semantic memory drop in AD is steady with the idea that specific attributes of a semantic group are lost way before more general, superordinate knowledge (7). The usual organization of semantic memory in patients is disrupted by this loss of semantic knowledge, and the results is abnormalities in their system of semantic demonstrations.

5. Implicit Memory
In order to perform exams of semantic and episodic memory, it’s required to explicitly and consciously recollect prior events, episodes, or acquired knowledge, be. However, recent research shows that there are various forms of memory and learning that occur without mindful remembrance. This is referred to implicit knowledge, which is presented in an indirect manner during the performance of precise procedures that make up the task. Perceptual learning, motor skill learning, and classical conditioning are all examples of forms that reveal memory which is implicit (7). In all of these cases, an individual’s presentations are assisted “involuntarily” by the previous experience of stimulus material.
Similar to the situation of semantic and episodic memory, distinguishing between explicit and implicit memory is aided by biological and psychological evidence seen in studies of patients with amnesia. Patients with severe amnesia don’t do too well on explicit memory testings, but carry out quite well on implicit memory exams. For instance, patients with amnesia can attain and keep hold of mechanical skills, like they may be able to play a certain amount of notes on the piano, without any remembrance of when they trained to do so in their lives (7). They also often prove a decrease in identifying words presented visually; they fail to recognize them on explicit memory trials although they were learned formerly. It is supposed that the first visual demonstration of words activates an unconscious clue which later on enables the visual recognition of that stimuli, but the conscious efforts to recall the materials is not disturbed (7).

Even though certain neurological factors of explicit memory certainly have been widely defined, brain structures that are responsible for different forms of implicit memory, have not been given much attention. It is known that damage to parts like the temporal lobes and basal forebrain result in substantial problems in explicit memory; however, not much is known regarding structures of the brain that facilitate various forms of pictorial and verbal training, and help in learning skills (8). Nevertheless, new studies on Huntington’s and Alzheimer’s patients on pictorial priming and skill-learning tasks have led to a number of new insights regarding this neuropsychological issue. The findings coming from the performed studies indicate that patients with Alzheimer’s and Huntington’s who showed the overall level of mental decline can be disconnected with implicit memory responsibilities, that involve the preparing of semantic information as well as the start of central motor programs (8). This further proposes that areas of the basal ganglia as well as the association cortex facilitate various types of implicit memory. The association cortices, that are damaged in AD, seem be necessary for implicit tasks which rely upon the reliability of semantic knowledge (8). On the other hand, we see that in Huntington’s disease, the basal ganglia are damaged, which are most significant for implicit tasks involving the generation and alteration of chief motor programs to direct behavior.

**B. Attention/Concentration**
Along with issues in memory, Alzheimer’s patients also tend to face scarcities in attention and ability to concentrate. Many have speculated that deficiency in operational memory causes difficulty retaining attention to shifting sets (8). During the initial periods of Alzheimer’s, subtle impairments might be observed on complex responsibilities dependent on divided and unstable attention. Although a few individuals in the early illness phases may not face concentration difficulties, but these kinds of issues usually appear and grow in rigorousness as the illness advances.

**C. Language**
In addition to memory and concentration deficits, shortfalls in certain features of language also rise in severity during the progression of Alzheimer’s. However, there are a couple language capabilities that do remain unharmed; patients show slight damage in speech skills. Yet, they have trouble when it comes to grammar, which is the case in other neurological conditions, like Broca’s aphasia (9). With moderately little phonetic shortfalls, the ease of patients’ natural oral and speech abilities normally do not change much. In the advanced stages of the illness, patients can have great trouble fabricating complex sentence structures in dialogue (9). Likewise, patients’
hearing skills, like understanding intricate sentences with various abstract features may become weakened as their condition gets more severe.

Alzheimer’s patients tend to have quite a difficulty with word finding in the early stages, although they face recollection deficits much earlier on. Patients go through a progressive anomia, which is apparent on tests involving intense naming, like the Boston Naming Test (9). They tend to make many semantic errors, as mentioned earlier, like blurring out names of pictures which are actually categories to which the pictures belong; an example is saying “bird” when looking at their target “pelican” (9). AD patients even display shortfalls on exams of classification fluency. This turns out to be an excessively severe deficiency influence in AD patients when making examples from a precise group compared to producing phrases or words starting with a specific letter.

D. Spatial Cognition
Damages in spatial, or three dimensional cognition are obvious in few patients who are in the earlier stages of Alzheimer’s disease and in mostly all of the patients in the more advanced points in the illness. The parietal lobe’s degeneration is the possible root of these scarcities (9). Early on in the condition, AD patients tend to face a more significant and advanced confusion in space relative to time, which leads to thenomadic, lost behavior and misunderstanding about locality, as evident in many cases of Alzheimer’s. Spatial confusion seems to be caused by impairment in both memory and visuospatial abilities.

An ongoing, strong deterioration in abilities to draw is another specific trait of patients suffering from Alzheimer’s disease. This type of early problem is frequently seen in complicated duties like when copying intricate designs dealing with geometry, like the Rey-Osterrieth Complex Figure (9). When told to make a drawing of a simple clock, AD patients are considerably impaired when compared to fit older adults. In their geometric drawings, the patients make more obvious, confabulatory mistakes, and when sketching a clock, they usually make conceptual errors (10). Lastly, qualitative variances in the kinds of mistakes made on examinations of visual and observant capability may aid in differentiating normal or customary aging from patients in the initial phases of Alzheimer’s disease.

E. Executive Function
Even though most people suffering from Alzheimer’s are normally conscious of their original symptoms, such as issues with memory, there tends to be a significant amount of loss of insight as AD progresses. Gradually, patients are incapable of recognizing their intellectual impairments, and judging the quality of their personal behaviors (10). Furthermore, conservations and interferences are apparent in patients’ day to day actions and behaviors earlier on in the disease. A steady decay in patients’ executive roles is further viewed in their skills to make decisions, think abstractly or ‘out of the box,’ and to solve various problems, with failures happening quickly during the sequence of their disease (10).

Community Action: Strategies to help combat everyday cognitive struggles of Alzheimer’s patients
The Alzheimer’s Association recommends patients with Alzheimer’s disease, their family members, and caregivers to consider the goals of different kinds of therapies, especially as modern, new treatments and clinical procedures are being tested and established. They should consider whether the medications being taken by the patient are effective in improving the quality of life, and cognitive abilities, for the person suffering with Alzheimer’s disease, whether it is making the responsibility of providing care easier and less stressful, and if they should be applied in all stages of the illness. Physicians and care providers should pay special attention to concerns regarding therapeutic goals and suggest treatments that not only involve drugs, but ones that involve physical activities and participations of family members and caregivers, which would ultimately help to cope with the significant neuropsychological deficits AD patients face on a daily basis, and make their life somewhat easier. It’s vital to make interventions to possibly decrease the symptoms and increase pleasant events in the life of an Alzheimer’s patient.

The first imperative step to be taken to help AD patients is to provide them with Cognitive Stimulation Therapy (CST) as much as possible. Many caregivers tend to not realize the importance and benefits of this type of therapy. Basically, CST is a brief treatment for patients who have a mild to moderate dementia. CST was originally designed after extensive evaluation of research evidence, therefore, is an evidence-based therapy (10). Many professionals support Cognitive Stimulation for people with mild to moderate dementia, regardless of the drug treatments they are receiving. The main purpose is to improve memory, attention span, concentration, and overall cognitive function in persons with Alzheimer’s. Programs can include a variety of training strategies that would help the patients with mental functions, that include specific memory activities, multi-sensory stimulation, general problem solving, word games and puzzles, use of mnemonic devices, engaging in social activities, and usage of external memory utilities, like notebooks or calendars (10). If the individuals suffering from AD were to do so in a daily routine, then that would bring hope that the patients will be able to combat their damages in special cognition and inability to perform executive function. They would further improve their speech and language issues, and possibly attain a better attention span and concentration ability. CST treatment usually involves 14 or more sessions of activities that have specific themes, which mainly run twice a week. Meetings aim to enthusiastically motivate and engage people with Alzheimer’s, while providing them with an ideal learning environment and social benefits of a group. This special treatment can be administered by any individual working with people with Alzheimer’s, such as Occupational Therapists, care workers, or nurses (11). The sessions take place in settings including day centers, residential homes, or hospitals. Family members, care givers, and any person taking care of AD patients should be encouraged to take the patients to the CST sessions, as they will greatly help the patients fight some of the neuropsychological deficits that come with the illness.

In addition to providing AD patients with cognitive stimulation treatment, there are lifestyle behaviors and practices that the patient should consider to prevent deterioration of their health as they get older or reach a more advanced stage in the illness. They must carry out habits, dealing with exercise and bodily health, cerebral activity, well-maintained nutrition, and just being more socially engaged in groups, which would all help keep their brain and physique fit and possibly lessen the danger of cognitive decay. All the categories mentioned correlate with brain health, which is a crucial part of Alzheimer’s disease. As research shows, combining a healthy nutritious meal with intellectual, social and physical activities may have a greater advantage in improving
or maintaining an individual’s brain health than just doing one particular activity (11). The care
givers must encourage their Alzheimer’s patient to embrace lifestyle habits which improve his or
her overall well-being and health, such as exercising regularly, consuming a good, nutritious
diet, and staying socially and mentally active; science proposes doing so might greatly help
cerebral health also, so in order to see potential progress in the individual’s condition, it’s vital to
follow these steps.

Last summer, a close family member of SA was diagnosed with Alzheimer’s disease. Although
he was in the early stage, SA took the initiative to help and support him in every way possible.
He began to face many of the neurological symptoms mentioned earlier, like memory loss,
inability to concentrate or focus, and a decline in linguistic skills. SA first introduced his parents
to Cognitive Stimulation Therapy, gave them the important information regarding the benefits
and effectiveness of it, and encouraged them to take him for the therapy as much as they can. SA
chose to perform little steps, that can somewhat improve his condition or at least, prevent it from
going worse. SA was motivated by a cousin to adopt the various lifestyle habits SA mentioned
earlier. Every other weekend, SA would visit him and ask him to perform physical exercises and
all sorts of mental activities. SA would usually focus on specific memory activities that involve
general problem solving, word games, and puzzles to combat his memory loss issues. Further,
SA started using of mnemonic devices with him, which did seem to help significantly. SA also
provided him with a very simple notebook and calendar, designed according to his preference
and ease, which would help him with remembering dates, times, and events. SA worked with his
family members and care givers to motivate and encourage patient to follow the lifestyle habits
on a daily basis, which would improve his overall wellbeing. Things like exercising regularly or
playing a sport, consuming a good, nutritious diet, and staying socially and mentally active by
being around groups of people are some of the many tactics I encouraged. With time, SA has
become a mentor for him and still continues to follow her strategies, in the hope to see
improvement bit by bit. Below are some recommendations and an action plan that SA would like
to share with other care givers and family members of Alzheimer’s patients.

**Recommendations for Care Givers: Choosing Activities**

- Keep the person's abilities and skills in mind.
- Pay a lot of attention to things the person enjoys doing.
- Figure out if the person starts activities without direction.
- Be aware and cautious of physical problems.
- Focus on simple enjoyment, not really achievement.
- Encourage participation in their daily life.
- Relate activities to patient’s past work life
- Look for hobbies, favorites, likes or dislikes.
- Consider specific times of the day, which will be more successful
- Adjust the activities according to the patient’s disease stages.
- If patient is having issues, help get the movement started.
- Offer care, supervision, and support.
- Concentrate on the procedure or method, not the result.
- Show flexibility
- Assist with challenging parts of the job.
- Don't correct or criticize the person too often.
- Encourage creativity and self-expression.
- Engage the person through discussion or conversation.

A Strategic Action Plan to Combat One Issue at a Time

1. Goals/Objectives
   The question here is what specific thing does one want to achieve and for what reason. A goal is something that can be measured; objectives are supposed to be more realistic. A big issue when SA was first a caregiver to her cousin, who has Alzheimer's, was incontinence. When being a caregiver, taking care of incontinence is sometimes a big goal, so an example for executing a strategic action plan may be as follows: during the day time, SA’s cousin, Billy will avoid incontinence.

2. Success Methods
   Measuring success or an achievement is very important. It can be measured based on the accomplishment’s benefit, cost, quality, and other factors. Once one knows how the achievement will be measured, than the caregiver can figure out if the route to a finished objective needs to change, or if it was effective. So in SA’s case, the patient using the bathroom voluntarily throughout extended times of the day is how success will be identified or measured, which will also make the patient more happy and less anxious as he will constantly be reminded when to go to the bathroom. This would also reduce feelings of awkwardness or embarrassment.

3. Responsibilities or Tasks
   In order to accomplish one’s goals or objectives, one must perform certain tasks to get there, which can require many resources or materials that will assist one in the process. In SA’s case, she needed to create bathroom signs that were easily readable by Billy, use timers, large visual reminders, and make incontinence preparations.

4. Execution
   During this stage of the plan, the caregivers do the implementing or acting out. They must combine their objectives, goals, methods, and expectations all into an organized action. This is the part that requires one to physically carry out the actions. So a list of things SA would do are as follows:
   - Move any furniture out of the way to clear paths for the patient
   - Tell Billy to let me know when he has to use the bathroom
   - Make the toilet visible to him by keeping the restroom’s door fully open
   - Put pictures up of a toilet with arrows pointing the direction towards the bathroom and post various signs throughout
   - To remind patient to use the toilet during the day, set an alarm clock or timer that goes off every 2-3 hours
   - Pay special attention to any form of message, behavior, or communication which hint that patient needs to use the toilet.

5. Evaluating Results
   Now would be the time to determine what the results were after all of the, objectives, assumptions, actions, and proceedings were followed in a successful manner. Caregivers would
want to ask themselves questions like if they obtained outcomes that were expected, or if they need to make any modifications when it comes to goals and methods. One must assess how fruitful or effective the plan was. Sa’s conclusion after the action plan was that her cousin did a fairly decent job when it came to following the 2-3 hour reminders to use the bathroom. SA realized that using visual indicators and big signs which clearly told him to go the toilet gave her more success, than simply verbally reminding him, as that didn’t seem to be as helpful. The agenda SA prepared worked very well.

In summary, the strategic action plan will help care providers assist in making the lives of the AD patients, family members and care providers more bearable. Care givers will be more aware that they are heading in the right direction. If something doesn’t work out the first time, one can make modifications accordingly as they shouldn’t give up on their goals. The plan will help deliver a strategy to combat hardships experienced by family members and the Alzheimer’s patient’s alike.

References


Letter to the Editor

Sent to The Star-Ledger via email on 07/26/15.

To Whom It May Concern:

Please consider publishing my letter to the editor – see submission below and attached. This issue is quite significant for me and it is my wish to present the topic to my community as there are quite a few families who are taking care of Alzheimer's patients, and are unaware of the deep, underlying issues that AD patients face on a day to day basis. I seek to provide them with the knowledge necessary to help AD individuals, and the strategies they can take to make their journey less difficult. Thanks for your consideration.

I am writing this letter to you regarding a very significant issue in my point of view. My purpose is to inform the general public about the many neuropsychological deficits Alzheimer's patients face, and how family members or care partners can help them in dealing with the problems they go through in their daily lives. Problems like severe memory loss, with added deficits in language, attention, executive functions, and constructional abilities, are social issues that require special attention. Ultimately, the disease leads to severe memory loss, complete incomprehension, social withdrawal, and loss of individuality. Treatments should not only involve drugs, but include physical activities and participations of family members and caregivers. In addition to providing AD patients with cognitive stimulation treatment, there are lifestyle habits that the patient should adopt to maintain or potentially improve their health as they age. They must carry out habits, dealing with physical health and exercise, cognitive activity, diet and nutrition, and social engagement, which would all help keep their body and brain healthy and potentially reduce the risk of cognitive decline. The AD patients should definitely be encouraged to follow these procedures, not only by family members, but by all communities in our society to bring some positive change. Even the smallest efforts can bring a big difference.

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