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Effects of Alzheimer's Disease on Behavior



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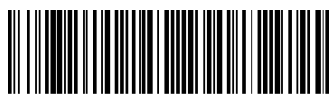
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ABSTRACT

Alzheimer's is a progressive, irreversible, degenerative neurological disease. The main objective is to identify and group factors that contribute to the development of adverse behaviors in patients suffering from cognitive decline. The factors are related to a case study of a specific patient suffering from this disorder and exhibiting these behaviors. The reader is introduced to the topic and a case study. Several scholarly research studies are analyzed for similarities and differences, which are discussed in the literature review. Important interventions for healthcare personnel working with these patients are outlined, and findings are wrapped up in the discussion and conclusion. Together, the results of the analysis suggest that several underlying factors and feelings lead to the behaviors of patients suffering from this degenerative disease.



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1. INTRODUCTION

Alzheimer's is a progressive, irreversible, degenerative neurological disease that has been the subject of much research and investigation. The behaviors of patients who are diagnosed with Alzheimer's exhibit specific patterns of behaviors, but patients can also exhibit behaviors that are uniquely their own. The US Center for Disease Control and Prevention (CDC) [1] provides information about Alzheimer's disease and some of the critical signs and symptoms that someone with this mental illness can experience. These signs and symptoms include memory loss that disrupts daily life, trouble in handling money and paying bills, difficulty completing familiar tasks at home, at work, or leisure, decreased or poor judgment, misplacing things, and being unable to retrace steps to find the item that was lost and changes in mood, personality, and behavior [1]. Many researchers have studied these behaviors and have tried to decipher exactly what could trigger a specific action, what that behavior means in the context of Alzheimer's, and if there is a way to not only predict the onset of these behaviors but even prevent them.

In this review, the background of Alzheimer's disease, which includes risk factors, pathophysiology, and complications of studying this disease, signs, symptoms, and diagnosis are addressed. This review also includes a case study and a literature review of numerous studies revolving around Alzheimer's and patients' behaviors. The review will conclude with a discussion and general overview points presented in the paper. The purpose of this review was to determine the effects of Alzheimer's disease on behavior.

2. BACKGROUND

Alzheimer's disease (AD) accounts for up to 70% of older adults with dementia [2]. AD is characterized by cognitive, functional, and behavioral changes that eventually destroy a person's ability to function. Alzheimer's is a progressive, irreversible, degenerative neurological disease. The most significant risk factor for AD is increasing age; however, environmental, dietary, and inflammatory factors can contribute to the disease process [2].

In the early stages of Alzheimer's, forgetfulness, and slight memory loss occur [2]. For example, the patient may experience forgetting where they set their keys, phone, or other essential belongings in a short period. The patient may also complain about "losing their train of thought"

often, which can be seen mostly in social settings. These changes will be subtle at first, but the patient will still have adequate cognitive function to compensate for the losses and continue functioning independently until the disease progresses further and produces more neurodegenerative effects [2]. This progresses to forgetfulness manifested in daily actions, and patients will lose their ability to recognize familiar faces and places and become lost in a familiar environment. Repetition also starts to manifest, and patients will ask the same question repeatedly or tell the same story repeatedly. Patients also show signs of disorientation, which exacerbates anxiety in the patient. Conversation can also become difficult as the patient might be at a loss for words and take several minutes to find the correct words or the next thing to say. The ability to formulate concepts and think abstractly is nearly lost [2].

Other signs and symptoms of Alzheimer's include impulsivity. Patients cannot recognize the consequences of their actions and behaviors and because of that often exhibit impulsive behavior [2]. Personality changes can also present themselves, and patients may become depressed, paranoid, and hostile, making a patient combative. The further progression of the disease means deterioration of the patient. Speaking skills deteriorate to verbal nonsense, and agitation and physical activity increase. Assistance with activities of daily living (ADL) may be required when patients need help with eating, toileting, dysphagia, and incontinence. The disease eventually progresses into the terminal stage in which patients are completely immobile and require total care, which will last until the end of their lifetime. The death of patients with Alzheimer's occurs because of complications. These complications often include respiratory and nutrition issues, such as pneumonia, malnutrition, and dehydration [2]. There are two types of Alzheimer's disease: familial or early-onset and sporadic or late-onset [2]. Early-onset is extremely rare, so this review will only be focusing on sporadic or late-onset AD.

3. CASE STUDY

The patient examined was a 67-year-old male. He was admitted to a general practice unit following a fall at his long-term care facility, which left him with a fractured tibia. When the patient was admitted, it was well known that he had Alzheimer's, and it was not a discovery. The patient had a three-year history of memory loss and repetitiveness and was only progressing

further. He was once employed as a contractor and worked at his firm for more than 30 years but had to quit because of the cognitive impairment and challenges he began to face at work.

An MRI revealed that the patient had amyloid protein growth in the brain at 64 years of age. The cognitive decline became evident shortly after that. The patient began having problems doing activities of daily living (ADLs) such as driving, going to the grocery store, and running other errands, cooking, toileting, among other things. According to the patient's spouse, verbal declines happened after problems with ADLs. Word finding was occurring, and "losing one's train of thought" was also happening. Past medical history included type 2 diabetes, hypothyroidism, chronic heart failure, acute kidney injury, and hypertension. The patient has no history of smoking or drug use. The patient has a history of drinking alcohol, but this was when he was younger and was not classified as alcoholism. The patient did have a family history of dementia on his mother's side, but it was not classified as Alzheimer's.

A thorough neuro assessment was conducted on the patient. The patient has fluid speech, but the word-finding was present. He had normal muscle tone and 5+ strength in all extremities but had a shuffling gait, often paused when walking, and had muscle rigidity. He had no evidence of depression, hallucinations, delusions, or other psychotic behaviors. His caretaker noted that the patient had severe trouble in eating and swallowing. This leads to malnutrition in the patient and puts the patient at risk for aspiration. The patient was undergoing pharmacologic and physical therapy for his AD. The patient was on a cholinesterase inhibitor called rivastigmine (Exelon), and this medication helps to reduce behavioral symptoms of AD. The patient has also been seeing a physiotherapist to help with the physical symptoms of AD.

4. LITERATURE REVIEW

Current literature and past studies have much to say about the environmental, dietary, and inflammatory factors that may cause AD. The purpose of this literature review was to locate more information on the effects of AD on behavior. The research studies that are focused on in this literature review came from the university library. Many sources concentrate on behaviors that result from this degenerative disease and why these behaviors occur.

4.1 Factors Leading to Aggressive Behaviors and Agitation

Some of the most prominent behaviors can be separated into affective behaviors, distress/tension behaviors, impulse control behaviors, and psychotic behaviors [3]. The author focuses on the specific behaviors that are seen in each of the types of behaviors and factors that may put a patient more at risk for developing abnormal behaviors. The factors being analyzed in their study were age, sex, level of education, race, marriage, parental history, history of other relatives, Mini-Mental State Exam (MMSE) score, and Functional Activity Questionnaire (FAQ) scores. Affective behaviors include depression, anxiety, and apathy are positively correlated with younger age and FAQ scores, stating the worse the function score, the higher chance the patient will develop affective behaviors [3].

Distress/tension disorders and behaviors include irritability and agitation. These behaviors do not have much to do with age and education but are positively correlated with the male gender and FAQ scores. Disinhibition, elation, and aberrant motor behaviors strongly correlate with male gender, MMSE, and FAQ scores [3]. Psychotic disorders include delusions and hallucinations in those with Alzheimer's and have a strong correlation with the male gender and FAQ scores. There is a correlation between psychotic symptoms and physically aggressive behaviors [4]. Hallucinations may increase violent and aggressive behaviors towards others because others do not understand what the patient is experiencing [4]. All categories of behaviors had a high correlation with the male gender. Younger people suffer most from distress/tension behaviors, impulse control issues, and psychotic behaviors [3]. Lower education is significantly related to distress/tension behaviors, but marriage is a protective factor for these patients. Caucasians have the highest prevalence of affective behaviors [3].

Other research studies focus more on the environmental factors that may lead the patient to risk developing aggressive and violent behaviors throughout dementia [5]. The limbic system, amygdala, and frontal lobes play a large role in arousing aggressive behaviors. Studies have shown increased activity in the brain's limbic regions in those who have dementia [5]. Frequent aggression is often associated with delusions and severe irritability in AD patients. Despite that depression is the most common emotional disorder with AD, irritability, and aggression are usually other emotions in patients with verbal or physical battery [6].

The authors assessed 196 AD patients for the presence of aggressive behaviors using a standardized psychiatric interview that included both the Overt Aggression Scale (OAS) and the Irritability Scale, as well as specific assessments for depression, anxiety, apathy, emotional lability, and personality disorders and traits [6]. The OAS measures specific aspects of aggressive behavior based on observable criteria such as verbal aggression and physical aggression against objects, against self, and others. On the OAS, 173 patients did not show aggression (88%), and there were no significant differences found in age, education, or gender distribution [6]. However, there was a significant difference in the duration of illness. It was found that patients with physical aggression had a significantly longer illness duration than patients with either verbal aggression or no aggression. Episodes of physical aggression were found in 7% of patients, and verbal aggression was found in 5% of patients. It was found that these patients have a history of delusions and severe irritability [6]. The more a patient suffers from delusions or is prone to be more irritable, the more predisposed to be aggressive and violent.

Kratz's [7] study shows similar results regarding aggression, hallucinations, and delusions stemming from the limbic system. Serotonin transporters can be affected by various genes, causing an increase in aggressive and violent behaviors. All these factors end up causing marked deficits in real-life tasks that demand judgment and the ability to assess future consequences [8]. The limbic system is the control center for emotions and satisfaction in daily life. Patients with Alzheimer's have better daily behavior outcomes and an increased positive outlook on their lives when emotional activities are incorporated into their day [9]. Satisfaction in everyday life decreases adverse behaviors (see Figure No. 1).

Deficits in sensory and neurological function may lead to delusions and hallucinations. Apostolova et al. [3] outline very similar ideas of an increased rate of psychotic behaviors in those patients with low FAQ scores. Additional similarities are between environmental and psychosocial factors leading to the development of depression and low self-esteem from the effects of dementia on everyday life [3,7]. Forgetting the date or repetitive forgetting of names can cause patients to lean towards agitation in expressing their feelings.

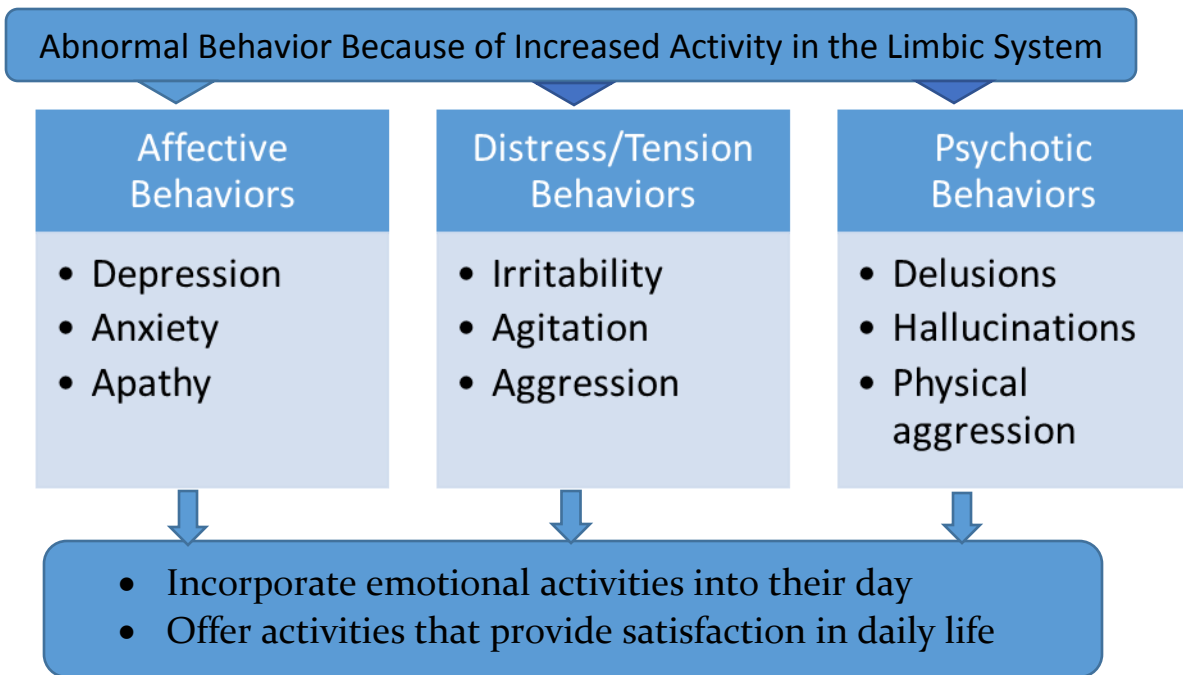


Figure No. 1. Factors leading to aggressive behavior and agitation in Alzheimer's patients.

4.2 Effects of Pain on Behaviors

Aggression and agitation can arise from underlying physiological feelings and stimuli, such as pain [7]. Those who have severe Alzheimer's may not have the ability to tell caregivers that they are in pain; therefore, this leads to aggressive and agitated behaviors. Other behaviors that may stem from painful stimuli are refusal to eat and drink and changes in the patient's sleep-wake cycle [7]. When communicating with patients who may not verbalize what they are feeling, facial expressions are the best indicators of pain and discomfort in the body [10]. Several research studies agree that pain and discomfort in elders with dementia are tough to treat because of several barriers; communication, resistance to care, limited ability to assess pain, agitation, and aggressiveness or disruptive behaviors [11]. Deficits in care may lead to the patient feeling of frustration, despair, anger, aggression, and uncontrolled suffering [11].

4.3 Relation Between Behaviors and Nutrition Habits

Nutrition and eating habits usually fall short in those who have Alzheimer's. Alteration in eating habits is one of the behavioral changes that is commonly seen in this disease [5]. The behavioral

changes commonly come from cognitive impairment in the hypothalamus, limbic system, and neurotransmitter systems that regulate food intake and nutrition requirements [5]. Nutrition habits have a strong correlation with verbal and emotional aggressiveness. These nutrition problems are associated with adverse outcomes such as rapid cognitive decline, a high rate of the need for institutionalization, and increased mortality [12]. Environmental and psychosocial factors, including older age, gender, less education, and marital status, increase the risk of adverse behaviors [3,12].

As Alzheimer's progresses, there is language, intellectual, independence, and autonomy impairment. The severe stage is characterized by loss of ability to perform the Basic Activities of Daily Living (BADL), such as eating, bathing, and walking [13]. Patients with Alzheimer's tend to have feeding issues, such as hyporexia, chewing difficulty, dysphagia, and food refusal [13]. Patients with Alzheimer's can also have body composition changes such as unintentional weight loss, rapid muscle mass loss, and sarcopenia. Eating dependency, depression, behavioral disorders, polypharmacy, and specific inflammatory responses to some chronic diseases may be due to malnutrition in older adults with Alzheimer's [13].

The European Society for Clinical Nutrition and Metabolism guidelines on nutrition in dementia recommend screening every individual with dementia for malnutrition and monitoring their body weight. Loss of body weight implies a loss of muscle mass accompanied by functional decline and frailty and has been associated with an increased risk of mortality and morbidity. Well-nourished patients with preserved muscle mass have lower risks of falls, fractures, pressure ulcers, and infections, reducing hospitalizations [13]. Nurses need to be aware of these behaviors that can occur with Alzheimer's patients and monitor their nutritional status to promote their health and well-being.

5. DISCUSSION

The literature has shown that Alzheimer's disease can alter how a person behaves as the disease progresses. Research has concluded that patients with Alzheimer's disease were more likely to experience distress/tension behaviors such as irritability and agitation if they were of the male gender, if they experienced delusions or hallucinations, and if their FAQ scores were low [3]. Lower education was also significantly related to distress/tension behaviors, but marriage was a

protective factor for these patients. Affective behaviors such as anxiety, depression, and apathy were found to have a higher prevalence in younger age, Caucasian, and low FAQ scores [3].

The studies that were evaluated also focused on environmental factors that can lead to violent behaviors with patients who have AD. The limbic system, amygdala, and frontal lobes play a large role in the arousal of aggressive behavior, and the limbic activity is increased in regions of the brain of those who have dementia [8]. Meaningful activities such as social experiences that promote emotional well-being and satisfaction should be implemented with patients diagnosed with Alzheimer's disease to improve their behaviors [9]. Nurses should allow these patients to perform familiar activities that match the patient's current level of functioning and activities that the patient enjoys performing to maximize positive affect and minimize negative affect [9]. Overall, these activities can help promote the feeling of satisfaction in daily life and decrease adverse behaviors.

The literature also found many barriers to treating pain and discomfort with patients who have AD. These barriers included communication, resistance to care, limited ability to assess pain, agitation, and aggressive and disruptive behavior [11]. Some other common behaviors in response to painful stimuli include refusal to eat, drink, and changes in sleep-wake cycles [7]. Some patients with AD may not have the ability to communicate their needs to the caregivers, which can cause a lot of frustration due to their needs not being met. Nurses need to ensure that they pay close attention to facial expressions because these objective signs are often the best indicator of pain and discomfort for patients who have a hard time communicating their feelings and can indicate that further intervention to promote comfort is needed [10].

Research has found that patients with AD commonly fall short in nutrition, and alterations in eating habits are among the most common behavioral changes with these patients [8]. As the disease progresses, many barriers affect their activities of daily living, and these patients have been found to have issues with feeding, hyporexia, chewing, dysphagia, and food refusal. Research has concluded that patients with Alzheimer's can even experience body composition changes, including unintentional weight loss, rapid muscle mass loss, and sarcopenia [13]. For this reason, nurses need to monitor the patient's nutritional status to determine whether intervention is needed. Recommendations for patients with AD include taking time with the

resident, making a regular daily schedule, giving the resident choices in their daily life, and giving simple instructions. Furthermore, the environment should be kept calm and should avoid triggers for the patient. The nurse can provide reassurance to the resident when they are feeling unsure or express feelings of agitation. Figure No. 2 illustrates the factors that increase the risk of adverse behaviors in AD.



Figure No. 2 Factors that increase the risk of adverse behaviors in Alzheimer's disease.

6. CONCLUSION

Alzheimer's disease has a significant impact on a person's behavior and affects many aspects of life. The literature revealed the many behaviors that patients with AD can present with had been directly correlated to many factors such as age, gender, education, race, FAQ scores, and environmental factors. Aggression, agitation, anxiety, depression, delusions, hallucinations, and problems related to nutrition and pain management are some of the behaviors and barriers to care that nurses have to pay attention to when taking care of patients who have this mental illness.

Communication with a person with AD requires patience, understanding, and active listening skills. Understanding this disease in its entirety is vital within nursing because it allows nurses to take care of patients with Alzheimer's disease adequately and become aware of the types of behaviors to look out for and manage them effectively. This disease is very complex, and research is still being performed to improve patients' quality of life living with Alzheimer's disease.

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