

## Original Research Article

## An Approach to Fight Alzheimer's by Finding Its Causes and Risk Factors

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## Article History

Received: 23.05.2022

Accepted: 26.06.2022

Published: 30.06.2022

## Journal homepage:

<https://www.easpublisher.com>

## Quick Response Code



**Abstract:** Alzheimer's disease presents a serious challenge to the international scientific community. There are millions of infected people around the world and the numbers are increasing dramatically because this disease has no cure and develops rapidly over time. It becomes important to detect the disease and recognize symptoms early. Prevention is more effective than treating a disease that comes through several common factors. This helps people because they are still able to make important decisions about taking care of and spending money on their health. Thus, identifying symptoms or detecting them very early, lifestyle and commonalities of patients helps prevent such a disease. Henceforward, risk factors play a major role in the development of the disease, such as genetic and vascular factors or disorders. Also psychosocial factors which may positively influence the pathogenesis and clinical manifestation of the disease. From this, we conclude that constantly activating the brain is very important, as education, learning, sports and recreation are among the busyness of life's preoccupations.

**Keywords:** Age, Memory, Alzheimer's disease, risk factors, lifestyle.

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## INTRODUCTION

Alzheimer's disease affects the elderly in particular, as brain cells gradually die day after day and affect memory and thinking skills [1]. Alzheimer's disease is a form of dementia, where dementia is a broader term for conditions caused by brain injury or diseases that negatively affect memory, thinking, and behavior and interfere with the patient's daily life [2]. Growing old may be inevitable, but Alzheimer's disease (AD) is not. And while we can't stop the aging process - which is the biggest risk factor for Alzheimer's disease - there are many other factors that can actually be controlled to reduce the risk of dementia. There may be a genetic predisposition in some people and not in all humans [3]. It appears only when there are specific factors added to the genetic predisposition such as environmental influences and some stress factors [4], etc. During human brain development, some areas of the brain grow robustly, allowing only characteristics of humans, such as language, for example, or self-awareness and memory as well [5]. When a person develops Alzheimer's disease, these areas are damaged, first with memory, then language, then cognition and self-awareness, which then permanently lost over time [5]. There was a widespread belief in the discovery of an effective treatment for Alzheimer's disease, but there is no cure for it yet, because nobody even know enough

about the areas responsible for language, memory, and consciousness damage and their relationship in even healthy people [5]. This explains the inability to find a cure. Hence, the researchers somehow directed their attention to discovering the causes of the disease and the factors that could be the cause of the occurrence of the disease in an attempt to limit the spread of the disease or perhaps prevent the occurrence of the disease at an early stage before symptoms appear. Among these factors, a group of genetic and environmental factors in addition to stress, anxiety, psychological state, sleep disorders, education, diet, lifestyle, and others [6].

Tau protein clumps accumulate in the brains of people who suffer from Alzheimer's, and this accumulation can start decades before symptoms of the disease appear [7]. The strongest genetic risk factor for Alzheimer's disease is the apolipoprotein E type 4 allele (Apo E  $\epsilon$ 4) [7, 8]. The "tau" protein may release routinely during normal waking hours, and decreases at night [8]. Therefore, sleep deprivation leads to an upset in the balance of production of this protein in the body, which contributes to its accumulation in the brain [8].

Studies found that a decrease in the number of hours of sleep causes an increase in the secretion of a specific protein associated with Alzheimer's disease [8]. Therefore, sleeping enough hours can prevent people

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from getting a serious illness [9]. Lack of sleep may cause an increase in the level of the "tau" protein. Follow-up studies that were conducted on mice showed that the inability to sleep contributes to the acceleration of the spread of toxic proteins "tau" in the brain [10]. The researchers emphasized that a good night's sleep maintains a healthy brain [11]. It helps in reduce the so-called amyloid platelets, which some scientist's link between their accumulation in the brain and the destruction of nerve cells in the body, and thus Alzheimer's disease [11]. Study revealed negative effects of sugar on the brain leading to disturbances in cognitive function of the brain by high blood sugar. Therefore, regular physical activity, good sleep and controlled diet may help people with Alzheimer's alleviate the symptoms of the disease.

This study aims to find out the various factors that can contribute to the occurrence of Alzheimer's disease symptoms in an attempt to find out the causes which help in reduce memory loss, enhance brain activity and instantly to find treatment for Alzheimer's disease. Thus, identifying symptoms, lifestyle, and commonalities between patients helps in find which factors prevent such disease.

## DESIGN AND METHODS

A hundred and twenty (n=120) patients suffer from AD were questioned by questioning their caregiver throughout a questioner that contain questions about:

- Patient data such as (age, gender, genetic, occupation, accommodation, skin color, susceptible diseases, smoking, nutrition, beverages, herbs intake, sleeping period, hobbies, any neuropsychiatric diseases).
- Patient health data such as (stroke, bleeding, head injury, emotional shock, period of symptom disease).
- Data on caregiver such as (name, address, marital status, relative relation, whether stay with the patient or not).

Patient were selected from Tripoli medical center (17 patients), Libyan Society for Alzheimer's disease (73 patients/ from "Our memory our life society"), others were found from different places such as the private clinics and the psychiatric center in Tripoli-Libya which medically diagnosed but staying at their homes (30 patients). All data were collected during one year time (2017 -2018). Data were collected and analyzed.

**Ethics:** The patient's permission was taken to present the questionnaire in this study.

## RESULTS

The results showed that AD attack females (62%) more than males (38%) as showed in Fig [1]. In

general, most patients which affected by AD is between (60 – 90 years old), and the most age population is from 70 to 79 as showed in Fig [2]. Most cases of AD (96%) were with white skin color, (4%) only is with dark skin tones (Fig 3).

The relationship between sex, age and spread of disease among patients was shown in Fig 4. The period when symptoms begin to appear in AD patients was shown in Fig 5. Only (58%) of all cases have family history of AD, and (42%) are affected by this disease with no family history (Fig 6). The prevalence of AD was found high in married people (86%) more than unmarried (14%) as showed in (Fig 7). According to male's occupation in Fig 8, employee recorded high percentage (41%), compare with other jobs. While in females the most cases were house wife (92%), and retired teachers were only 8%, (Fig 9). This study also showed that Tripoli (the capital) recorded higher percentage (71%) of AD than other cities (29%) (Fig 10).

The study also found that the percentage of patients consuming unhealthy food is the highest compared to others as showed in (Fig 11). It was also found that the percentage of people who sleep irregularly among the group was the highest (80%), as shown in the (Fig 12). When comparing the diseases associated with Alzheimer's disease, it was found that psychological stress, strokes and their causes were higher compared to those who do not have chronic diseases before (Fig 13). Eighty percent of male cases are found smoked (Fig 14). It was noted from this study that wars and instability had a great impact in increasing the spread of the disease, as cases increased by 40% comparing to that found before well-known 2011 events (Fig 15).

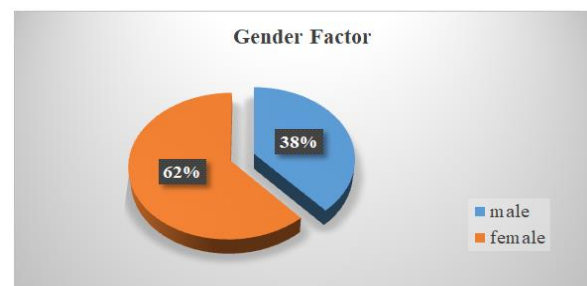


Fig 1: Shows the gender affected by AD

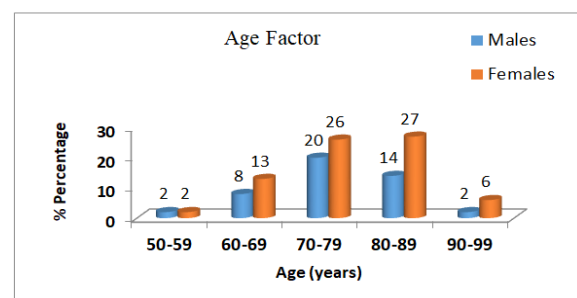
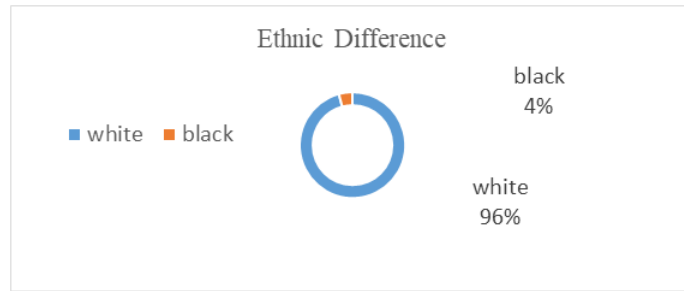
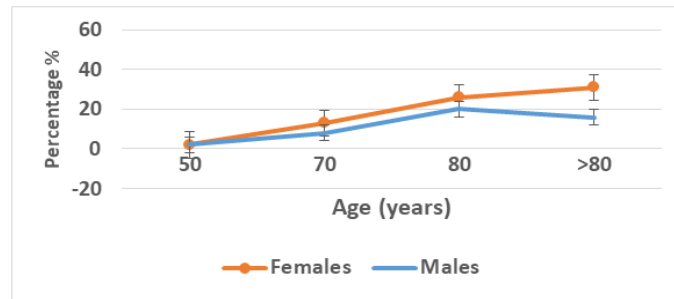


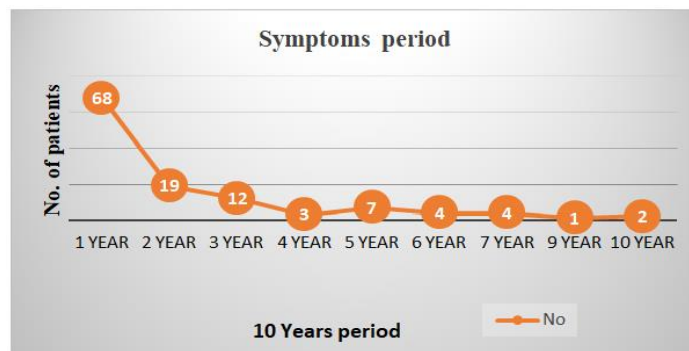
Fig 2: Shows ages that attacked by the disease



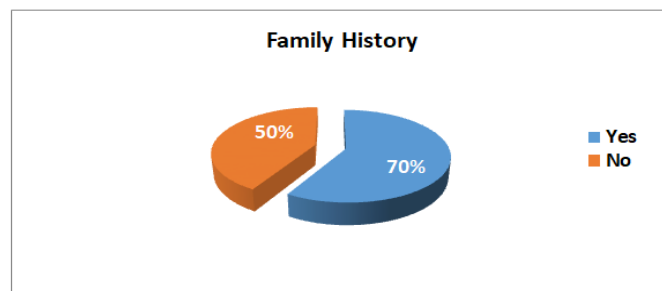
**Fig 3:** Compare the prevalence of the disease among people with different skin tones



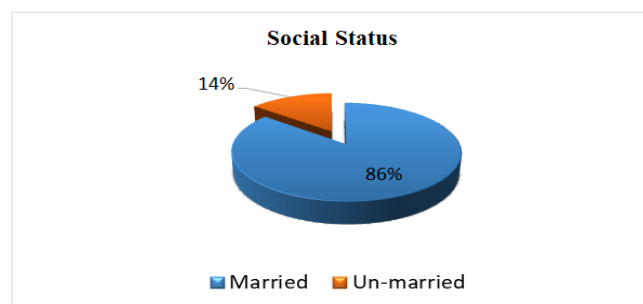
**Fig 4:** Shows the relationship between sex, age and spread of disease



**Fig 5:** Shows the period when symptoms begin to appear



**Fig 6:** A graphic showing whether the presence of a family history of Alzheimer's disease among the affected group



**Fig 7:** Showing the effect of social conditions on contracting the disease

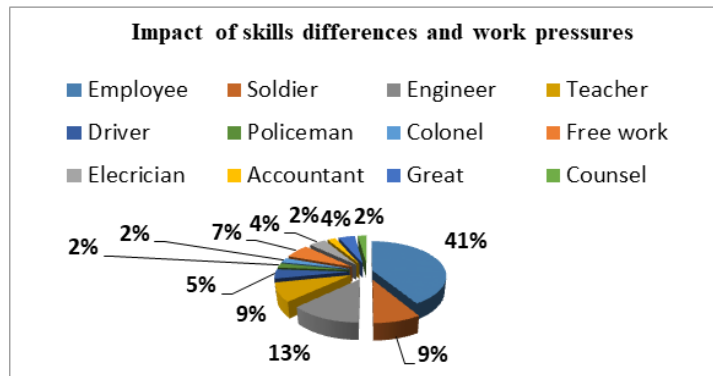


Fig 8: Shows the effect of occupations on the incidence of Alzheimer's disease in men

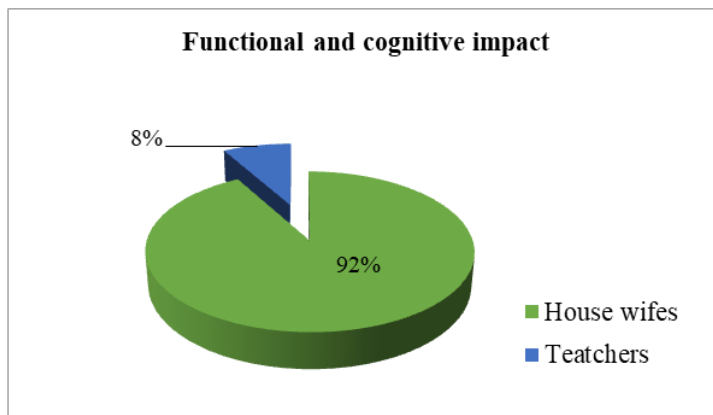


Fig 9: Shows the disease rate among housewives vs. professionals in females

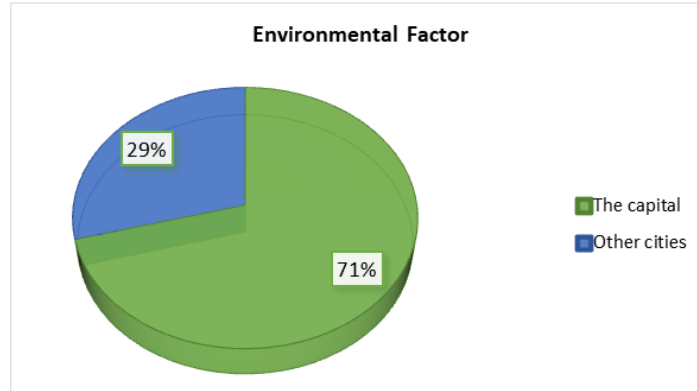


Fig 10: A graph showing the extent of the disease spread in the capital compared to other cities

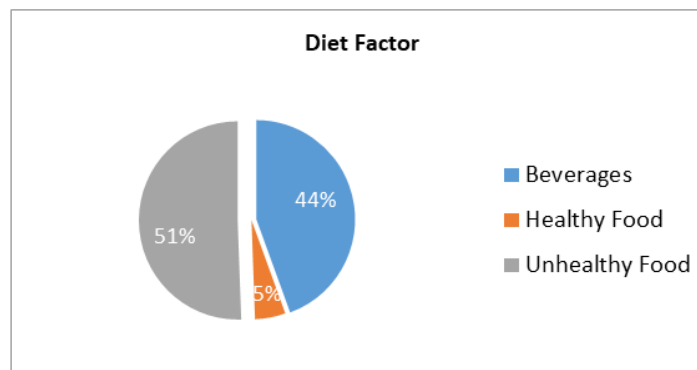


Fig 11: Shows type of diet consumed within the category; whether beverages, healthy food or unhealthy food consuming

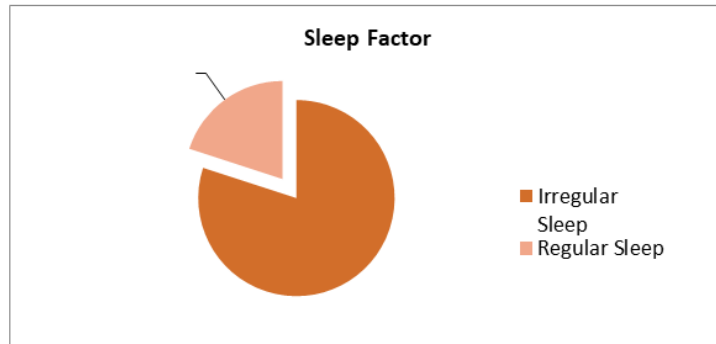


Fig12: The impact of sleep on the spread of disease among the people involved in the study

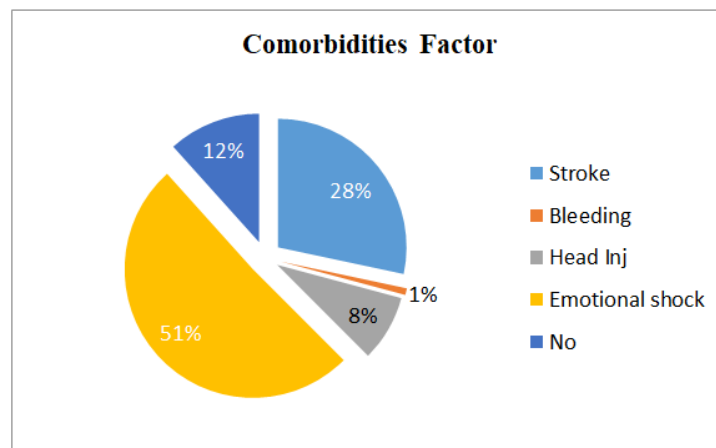


Fig 13: Shows the diseases associated before Alzheimer's disease

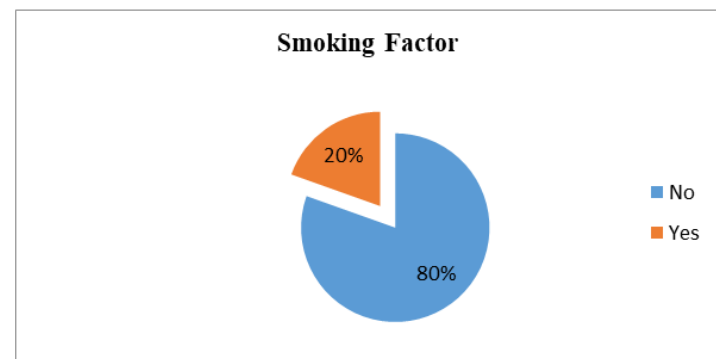


Fig 14: Shows the percentage of smokers among patients

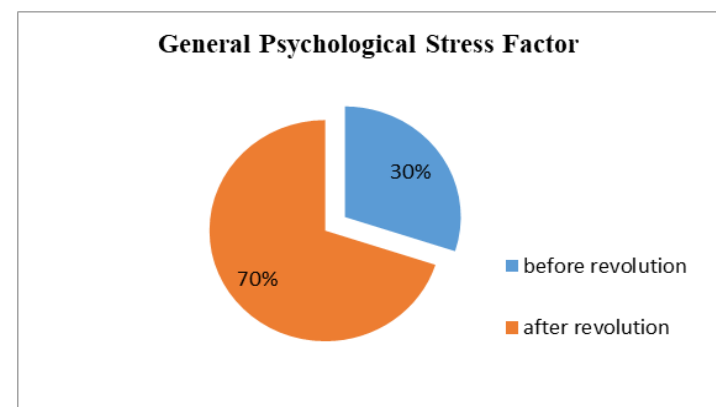


Fig 15: A graph showing the increasing prevalence of Alzheimer's disease before and after the 2011 Libyan revolution and wars (stress)

## DISCUSSION & CONCLUSION

Alzheimer's disease tends to develop slowly and get progressively worse over several years. Ultimately, Alzheimer's disease affects most areas of the brain. Memory, thinking, judgment, language, problem solving, personality and movement can all be affected by this disease [12]. The difference in the incidence of Alzheimer's disease in humans may be explained by the genetic predisposition of some individuals E4 [13]. The disease is not limited to over age people only, but also can occur at any age, even as young as 40 years, but its occurrence is much more common as the years go by [14]. Alzheimer's disease is one of the biggest concerns with age. Instead of waiting for drug treatment, the truth is more encouraging. Promising research shows that the risk of Alzheimer's disease and other types of dementia can be reduced through a combination of simple but effective lifestyle changes [15]. By adopting a brain healthy lifestyle, the ability to prevent Alzheimer's symptoms and slow or even reverse the deterioration process [16]. The results of this study make it clear that there are several factors may cause the death of brain cells (AD) in humans, and these factors differ from one person to another. This is confirmed by a previous study through the influence of genes on the reason for the difference in injury between people [17].

There is no firm conclusion yet, and in part because more far-reaching studies are needed in diverse populations, some lifestyle choices, such as physical activity and diet, may help support brain health and prevent Alzheimer's disease. Several lifestyle changes have been shown to reduce the risk of other diseases, such as heart disease and diabetes, which have been linked to Alzheimer's disease [18-20]. With few drawbacks and many known benefits, healthy lifestyle choices can improve health and possibly protect the mind. The study concluded that the disease causes of defect is still hidden especially in early ages. Although it was clear that the proportion of women is greater than the proportion of men [21]. The reason may attributed to the nature and change of hormones in women [22-25]. The disease develops over time so it is important to detect it through early symptoms. Most of cases has family history [26]. Although, the hereditary genes that cause "familial Alzheimer's" are rare, their discovery has provided important clues that help our understanding of Alzheimer's [26]. Forgotten of names, things and the nearby events are common between all people suffered. Mental activity, learning, education, and the nature of work and occupation have an important role in the development and functions of the brain and can also be a trigger for injury if it is accompanied by emotion, tension, psychological trauma and nervous tension [27]. In addition, the nature of work and lifestyle determines the vulnerability of a person to the defect of such a disease, which means that an unhealthy lifestyle can be a real risk factor for developing Alzheimer's disease [28-30]. The location

where people live also can be a causative factor. As living in the capital is different in comparison to other cities. Trauma or a disease such as stroke dramatically is a factor for AD [31]. Cholinergic agents initially improve and transiently maintain cognitive abilities in patients with mild-to-moderate AD. Cognitive abilities worsen over time, indicating treatment does not stop (but may delay) the progression of AD. New treatments that maintain cognitive ability and stop the progression of AD are needed.

## ACKNOWLEDGEMENT

The author would like to thank all the collaborators in the success of this study, including members of the Association (Our Memory Our Life), who provided us with the information they have recorded.

## LIMITATION

There is a lack of evidence about how screening and treatment of early-stage cognitive impairment and dementia affects decision-making outcomes. As there were few triage tools in how primary care was. Therapeutic data are also limited by the inconsistency in the specific outcomes reported and the short follow-up time. Furthermore, it is difficult to explain the clinical significance of the small average effects seen between treatment trials, and it is likely that many measures had a limited response in patients with less pronounced cognitive impairment, making even a broader patient pool inadequate. Consistent and standardized reporting of outcomes according to clinical studies would be useful in explaining small mean effects of significance on ongoing outcome measures, such as quality of life, physical function, and institutionalization, are consistent. Lack of support for caregivers or care coordinators which will certainly lead to good improvements for screening. The benefits are also limited by the slow efficacy of available drugs and limited training for caregivers. With the self-efforts of caregivers, little has been shown to preserve or improve patient performance in people with cognitive impairment.

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**Cite This Article:** Hanan, S. Abushwereb & Mawada, S. Abukhrees (2022). An Approach to Fight Alzheimer's by Finding Its Causes and Risk Factors. *EAS J Pharm Pharmacol*, 4(3), 56-63.