

## **A Systematic Review of Risk Factor and Prevention of Dementia Patient: Gaps and Emerging Needs**

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Dementia is generally decline in thinking, memory, speech, and independence. All these factor may affect their activity of daily living. Risk factors play significant role in developing dementia. Although preventive measures can improve functioning of the dementia patient. The objective of this research study is to review risk factors, prevention and treatment approach on dementia. This comprehensive review used search strategies in Science Direct database, Scopus, and pubmed were. Keywords namely dementia, risk factor, and preventive strategies. Dementia risk factor such as ageing, cognitive decline, education, diet, social isolation, alcohol of the patient can also affect the functioning of the dementia. Therefore, it becomes important to understand the preventive measures namely, cognitive training, social skills training, physical activities, and life style that may improve patient of quality of life. Dementia is a neurodegenerative disease result of Alzheimer's disease. Though dementia risk factors that affect not only activity of daily living but also affect quality of life of dementia patient. Accordingly, preventive strategies can give way to treat dementia which need to effectively used to treat dementia patient. This current development in cognitive aging and dementia research points provide comprehensive research opportunities and challenges for future research and for potential intervention to prevent dementia condition.

**Keywords:** Dementia, risk factor, prevention, preventive strategies, cognitive decline, treatment approach.

Dementia is a neurocognitive condition characterized by significant decline from an acquired cognitive functioning includes memory, executive function and social functioning that affects person activity of daily living. Dementia is defined as a loss of cognitive function namely attention, executive functioning, memory, perceptual and motor functioning, persons suffering from dementia eventually loss their independence in term of activity of daily living. Persons with dementia generally loss the ability to learn new information, knowledge, plan for future and make decision, may also loss capacity

to perform activities (Allali2016; Morris, 2016). Dementia is categorise into many subcategories such as Alzheimer's disease is the most common form of dementia is a neurodegenerative disorder (Hebert, Scherr, Bienias, Bennett, Evans 2000; Bachman, Wolf, Linn, Knoefel, Cobb, Belanger 1990). Although, the cognitive deterioration commonly associated with AD in which dementia patient namely affected by the brain functioning result of ageing factor. underlying neuropathological process. The pre-dementia is the first stage of Alzheimer process in which mild level cognitive

impairment genelly seen memory loss in devementia. This may affect functioning of daily living (Petersen, Knopman, Boeve cognitive, Geda, Ivnik, and Smith, 2009). The psychological and behavioral symptoms of dementia include depression, loss of appetite, sleep disturbances, irritability, agitation, apathy, delusion, and hallucinations (Tampi, 2011).

According to WHO (2015) 50 million people worldwide those above the age of 60 years suffering from dementia. The occurrence rate of dementia has estimated that 34.2 per 100,000 persons in a year. It is more common in women than men (17 % women and 9% men respectively). Similarly, Indian epidemiological evidence has been reported a prevalence rate of dementia ranging from 2 per 1000 to 35 per 1000 (Ganguli, Chandra, Kamboh, Johnston, Dodge, Thelma, 2000; Kumar, Thara, 1997). The prevalence of dementia in India, a total of consisting of 86312 persons out of which a total number of 1193 persons were reported to have dementia. The recent estimate of ration ranging from 20 per 1000 persons in India. Many of the studies reported that the prevalence rates were similar in male and female both. It is also estimated that prevalence of dementia is higher in persons aged 75 years and above (Choudhary, Ranjan, Asthana, 2021).

The cognitive functioning is one of the important component to lead the meaning full life of the individuals. Person suffering from dementia is generally experiences deficit in their daily functioning (McKhann, 2011). In the last two decades, clinical and research efforts have been mapped dementia. Dementia lead burdens to their family. Medical and

therapeutic approach have determine to a decrease in dementia risk. cognitive training intervention for older adults shown benefit preventing cognitive deterioration and activity of daily living (Willis, 2006). Another study reported that non-pharmacological treatment approach can improve sleep quality, treat depression, and social participation. Early diagnosis, comprehensive care and intervention can improve cognitive functioning of persons with dementia (Mundada, 2024)

### Method/Search Strategies

#### Literature Search and Process

Science Direct database , Scopus, and pubmed were searched. Dementia related key words like cognitive decline, aging, prevetion were used. Research articles pulished between 2000 to 2025 were taken into consideration under this study. Full articles was reviwed. Data extraction followed PRISM guidelines and studies were included in this research.

### Results

In this research paper 1,139 research papers were reviewed. 1002 record research studies were eliminated as related risk factors, unavailability of full papers, English language and publications. Thus, 137 potential paere were screened. After going through full research paper 105 documents wereagain excluded on the basis of inclusion criteria, abastract mentioned other criteria than risk factors and prevention, studies were on dementia patient. Only 32 full research article examined dementia risk factors and preention. Finaly, 32 studies were included under this study.

Table-1. Inclusion and Exclusion Criteria.

Screening	Selection parameters	Inclusion	Exclusion	Number of hits/studies	Results
Prescreening	Dementia	Cardiovascular diseases and Dementia and Alzheimer	Not applied	137 hits	32
I.	Population	60 above	Older adults,	27	16

II.	Period	1995-2021	Publication before and after	12	19
III.	Type of study	Multi-domain interventions	Intervention and multimodal treatments	10	18
IV.	Comorbidity	No comorbidity	Amnesia other psychiatric illness, and chronic physical illness	17	21
V.	Study design	Randomized-controlled, case reports, review articles, and meta-analyses	Evidence based studies and theoretical and opinion based studies	18	18
VI.	Full-length papers	Full-length paper in English language	Non-English papers	26	26
VII.	Indian papers:	Reviewed	Only review paper considered	5	5
VIII.	Others	Not specified	Single case report, high cost of full papers	6	5

Available epidemiological evidence related to leading factors and major strategies that may prevent onset of dementia. Major findings focused these points are summarized below table with the emphasis on the recent research.

Table2: Major Risk Factors (n=12)

Study	Key term	Findings	Outcomes
Fratiglioni et al., 2020	Age and dementia	Age is one of leading factor to developing dementia when individual age is 60 above brain functioning gradually deteriorate and progressive neural loss may be responded to delay the onset of dementia.	Healthy life style of persons shown decrease risk factor of dementia.
Palmer, 2019	Clinical features of stroke	Study highlights the clinical features of stroke like demographic area, severity level vascular risk factors.	All factors are risk factors for the development of dementia.
Scarmeas et al., 2018	Diet and dementia	Diet play a significant role to develop dementia. Diet affects cognitive functioning.	Research reported that healthy diet associated with lowere rate of dementia.
Sindi et al., 2018	Education in dementia	Epidemiological studies have reported that the education and dementia generally associated less education or lack of education significance cause to delop dementia.	A stressful situation may affect the brain and and recognized as one of the major factor.
Grande et al., 2018	Social isolation and dementia	Study found that social isolation and social withdrawal both may be one of the leading cause of dementia. The symptoms may present even a decade before its onset (10-15 years before).	Longitudinal studies with follow-up are still highly need to be conducted.

Gopalkuma, Steven Szabo, George Alexopoulos and Anthony Zannas, 2017	Risk factor and Prevention	Studies suggest that a intervention contribute prevention of dementia. psychosocial stress	Physical activities, exercise diet, and these are most of the preventive measure to treat dementia.
Schdeva, et al., 2016	Alcohol-related dementia	Long-term use and excessive use of alcohol may lead to functional brain damage.	The cognitive deficits are most often seen in domains of perceptual processing functions, memory and executive function.
Qiu et al., 2015	Cardiovascular diseases and Dementia	Common risk factors like hypertension, obesity, smoking, and dyslipidemia lead to risk factor.	Study supported that cognitive deterioration is one of the leading factor in the ageing process.
Bansal and Parle, 2014	Depression and dementia	Psychological factor such as agitation and depression lead to dependency on others for their daily functioning.	Several primary diseases or disorders are the main cause of dementia.
Norton et al., 2014	Tobacco and dementia	Substance use generally tobacco is the major risk factor to develop dementia.	Evidence suggest that smoking and tobacco both are one of the harmful factor on cognition.
Frankenburg, 2008	Alcohol and dementia	Study reported that excessive and long-term use of alcohol both are associated with neurological conditions, like alcoholic dementia.	Study found that alcohol used disorder people that may lead to memory loss and cognitive decline.

### Risk Factors

*Clinical features of stroke and dementia*, severity level vascular risk factors, comorbidities, educational factors and basal cognitive function lead to develop dementia (Palmer, 2019). *Age and dementia*, there is a strong association between age and dementia, developing dementia consequence of damage brain and progressive neural loss are generally affects life style of the dementia patient. Life style of the individual may lead to develop dementia later on in life (Fratiglioni, 2020). *Education and dementia*, less or lack of education can affects cognition of the individual in order to understand stressful situation and release of stress (Sini, 2018). *Diet and dementia*, diet is one of the main important as risk factor

of cognitive impairment dietary that adherence to health. Healthy diet may decrease risk of dementia (Scarmeas, 2018). *Social isolation and dementia*, social withdrawal and isolation both are most leading factor to develop dementia as aging person may feel difficult to meet their friends. Due to unavailability of the friend these are making them socially isolated (Grnde, 2018). *Substance use and dementia*, excessive use of alcohol and long-term use of alcohol and tobacco may lead to cognitive decline especially memory loss, and executive function leading cause of dementia (Schdeva, 2016; Norton, 2014). *Psychological distress and dementia*, neuropsychiatric condition mainly depression gradually risk factor of dementia (Bansal, and Parle, 2014). *Cardiovascular*

*diseases and Dementia*, cardiovascular is one of the risk factors like hypertension, obesity, smoking, and dyslipidemia (Qiu, 2015).

The risk factors for dementia as discussed above need to be taken into consideration for prevention as early as possible.

### Prevention

Now days dementia is increasing, prevalence of dementia is differ depending on the geographical region and environment, research suggests substantial increases in overall prevalence of dementia population globally. According to Lancet Commissions focused on life-course model for potentially modifiable risks for dementia are as following:

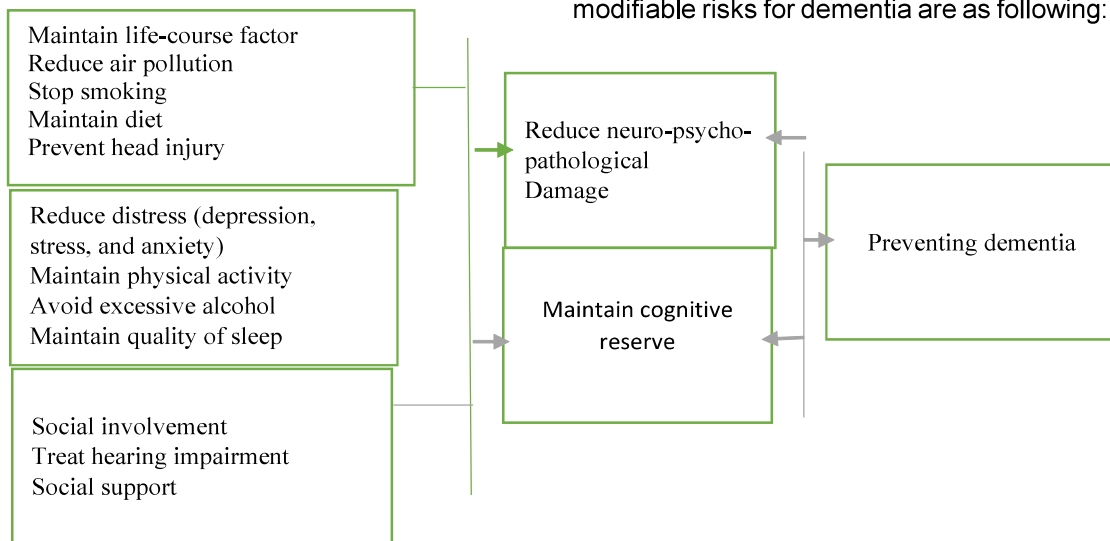


Figure-1. Road map for risk reduction factor in dementia

Prevention is generally considered as action that may includes remove, minimize the impact of an condition or disability. In rehabilitation science, this event is generally called disability. Disability is defined as “unable to perform any activity”. As we all know that prevention is affective strategies. The main goal of the prevention is to reducing the frequency of disability can be prevented. The prevention in rehabilitation can be defined as level of prevention namely primary, secondary, and tertiary. There are three level of prevention namely primary, secondary, and tertiary prevention. The details of prevention are as following:

In term of dementia, previous literature demonstrates that some of the preventive measures may show to be effective in preventing progress of dementia such as risk

factors, and physical activities (McCleery, 2018; Kim, 2015).

*Primary prevention* refers to enabling to prevent the disease or disorder occur before onset symptom this is called primary prevention. The prevention plays significant role to manage or prevent before occur disability or later in life. It The prevention can give positive result in order to prevent situation at earliest or onset (Sloane, Zimmerman, Suchindran, Reed, Wang, and Boustani, 2002). Conduct awareness program on dementia especially cause and prevention of dementia would be more affective in term of preventive phase and reduce the risk of dementia. Lifestyle of the dementia patient presently being investigation to ascertain its effectiveness at early stege of dementia onset. One

observational study reported that physically activity program based on lifestyle such as healthy diet, no any type of substance use, regular excersice found that person seems to be less chance to develop cognitive deficits, risk factors to develop dementia compared with inactive person (Gallaway, 2017; Hamer and Chida, 2009; Sofi, 2011; Stephen, 20017). Research reported that physical activities program shown significant benefit on brain functioning (Rovio, 2010). Many systematic review articalcs were identified six various physically activity such as aerobic exercise than no intervention in adults (Barha, 2017; Barreto, 2017; Northey, 2018, and Song, 2018). They concluded that the physical activity has a positive change in cognition. However, the primary prevention need to be started at very early stage of life rather than near to onset of dementia.

*Secondary prevention* commonly called reduction of symptom development once the symptoms of dementia have already been appeared through secondary prevention it can be manage degenerative dementia, the

secondary prevention phase may be applying to the phases of medication. At this stage symptom are extant but are no passably serve to found dementia. Therefore, medication treatment and non-pharmacological treatment aimed at subjects with mild cognitive decline may considered as secondary level of management. Pharmacological and non-pharmacological treatment approaches may be uses to reduce symptoms of dementia during secondary prevention. Study reported significant change in memory improving and executive functining of patients with AD (Francis, Palmer, Snape, Wilcock, 1999). Study reported that the combined both treatment approach namely pharmacological and non-pharmacological can help in reducing condition of the dementia.

*Tertiary prevention* refers to a action planned to stop the development of the dementia disorder once it has been identified. The major goal is to recover the long-term diagnosis for banch mark dementia. To prevent dementia tertiary prevention would sustain an individual.

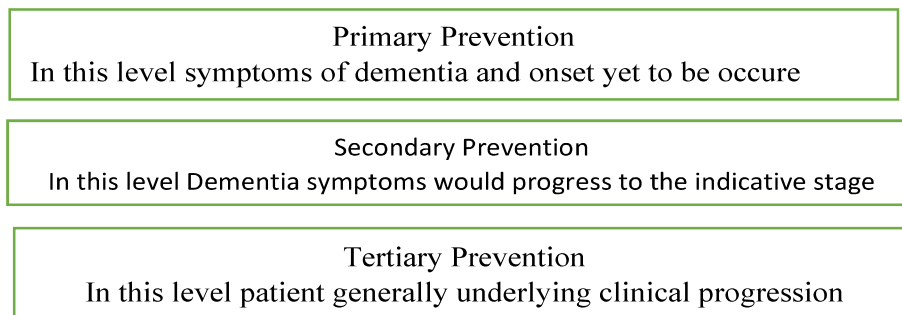


Figure: 2 level of prevention

In summary, prevention is a useful approach, intermediate targets like delaying the onset of the problem, and decelerating the progression of the diagnosis process may be more rational. Therefore, many studies have been reported at changing the course of the clinical symptoms that may found the onset of the dementia. The onset of the

dementia symptoms may have a significant impact on persons as well as their families, and community. Similarly, reducing the rate of prognosis of dementia. It is concluded that the prevention will have significant effect on improving condition and may also have significant effect in improving the quality of life of the persons.

Table 3: Prevention for Reduction of Dementia (n=11)

Studies	Type of Interventions	Outcomes Variables	Outcome Variables
Mundada, 2024	Early diagnosis and treatment	Study reported that the diagnosis during early stage and care may recover neuroplasticity cognitive decline	Regular exercise and healthy diet cognitive stimulation, and adequate sleep support brain health may improve functioning of dementia.
Fratiglioni et al., 2020	Age and dementia	The ageing factor may damage to the brain and progressive neural loss delay the onset of dementia.	A healthy lifestyle shown to decrease risk factor of dementia.
Al-Zahrani, 2019	Biological and lifestyle factors	A systematic review reported that cognitive stimulation Intervention program may reduce dementia condition.	Prevention especially lifestyle factor may reduce risk of dementia..
Chiu, 2017	Cognitive training intervention	The study reported that cognitive training has significant improvement overall cognitive functioning of old age dementia.	The effects of the intervention mainly cognitive training refer to be one of the intervention in order to reduce cognitive decline.
Strout, 2016	Cognitive intervention	The study reported cognitive training intervention proven to be effective in response to improve executive functioning, memory, attention, memory, language, and perceptual ability.	Result reported quality of evidence was low.
Chandler et al., 2016	Cognitive training	Study reported that half of the control group, whereas, none of the intervention group, developed dementia symptoms at the 8-month follow-up and 2-year follow-up.	Study found that after cognitive training program significant changes has been noticed in quality of life and activity of daily living.
Rodolfo S., Ronald, C., Petersen, 2011	Physical activity program	Literature review recommends that physical activity, cognitive activity and social visit are the most helpful factors at reducing cognitive decline in dementia and also helpful for enhancing quality of life of the persons with dementia.	Positive changes may be occurring to modifying effects that can be achieved by applying healthy nutritional, medication, as well as lifestyle modifications.
Stern and Munn, 2010	Cognitive activity	Cognitive activity shown significant improvement in reduce cognitive decline in dementia patient.	Positive improvement has been observed after cognitive therapy.
Flicker et al., 2010	Weight loss	Study found that overweight in old age	Study reported that weight

Bennett et al., 2009	Physical activity	could be more protective than normal weight.  Study found that weight reduction intervention shows positive result to prevent dementia.	loss may indirectly reduce the risk of dementia. Metabolic factors linked with cognitive impairment.  Weight loss intervention during mid-life and obesity may be presented to reduce the risk of dementia.
Fratiglioni, 2004	Social activity	Research found that social isolation has been shown in persons at risk of dementia and cognitive loss.	Social activity in response to engagement of older individuals shows significant improvement in functioning and also reduce risk factor dementia.

The number of risk factors responsible for developing dementia in persons it includes ageing, education, family history, environmental, and substance use, life related risk factors like physical inactive, use of tobacco, unhealthy diets, further medical condition is also responsible to increase risks factors for developing dementia. These may lead hypertension, diabetes, obesity, and depression, others factor includes social withdrawal and cognitive deficits. All these risk factors were taken from literature review. Furthermore, to prevent dementia, evidence based intervention can be used namely cognitive intervention, nutritional intervention, substance used rehabilitation program, social skills training, weight loss intervention, treatment for diabetes, psychological intervention for management of psychological distress like depression, stress and anxiety, and physical activity. Creating awareness about causes and prevention of dementia among public can be considered as fundamental tool.

### Conclusion

The risk factors for dementia as discussed above need to be taken into consideration for prevention as early as possible. All these

factors determine their risk for dementia development. The findings from literature of review studies concluded in this description review and also other aspect in dementia prevention all the preventive strategies, need to be taken into consideration. This review of recent developments in dementia and its risk factors research points has opportunities and challenges for future research. While going through literature reviews it has been observed that very few studies have been reported in India. WHO recommended significant preventive measures namely physical activity and healthy diet should be recommended to adults with normal cognition in order to reduce the risk of dementia. It is concluded that the elderly population grows in the decades fast, a better understanding of the risk factors and prevention that may reduce the risk for cognitive decline and dementia. However, multi-domain intervention model in order to prevention secondary and tertiary prevention need to be tested. preventive approaches need to be focused at early stage of life, will be supportable to prevent from dementia. Whereas, dementia is neurodegenerative disorder, several risk factors associated with dementia, three level

of prevention action; primary, secondary, and tertiary have already been well described, can be used to prevent dementia. On the basis of reviews we can develop structured intervention manual that can help to reduce risk factors and increase life course goal to lead quality of life.

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