

**LANGUAGE GAMES REDUCING THE RISK OF DEMENTIA  
IN ELDERLY ADULTS**

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**Abstract**

Similar to other largest countries, Indonesia has a huge number of elderly people that contributes significant number of elderly population in the world. This becomes the result of the significant progress of Indonesian government programs. However, this condition also creates another problem related to the increasing number of people who suffers from various degenerative diseases, such as dementia, which is now it does not exclusively affect elderly people. One solution to reduce the risk of dementia is practicing habitual activities that involve brain training, like playing crossword puzzle and *scrabble*. Those activities are not only interesting and entertaining, but can also improve memory, daily life skills, and overall mental health. Therefore, the use of language games should be well socialized to Indonesian society to prevent the risk of dementia to happen at earlier age.

**Keywords: dementia, elderly adults, language games**

**1. INTRODUCTION**

Indonesia is the world's largest island country, with more than 17,000 islands in its 735,358 square miles territory. With its vast territory, Indonesia has a big population that contributes 3.49% from the total world population that is around 269 million. It is the fourth country with the biggest population after China (1.4 billion), India (1.3 billion) and United States (328 million). With this big population, Indonesia has contributed significant number of elderly population in the world. As it counted by the 2010 Indonesian Population Census, the population has amounted to about 18 million and is estimated to grow to its highest in the first two decades of the 21<sup>st</sup> century [1].

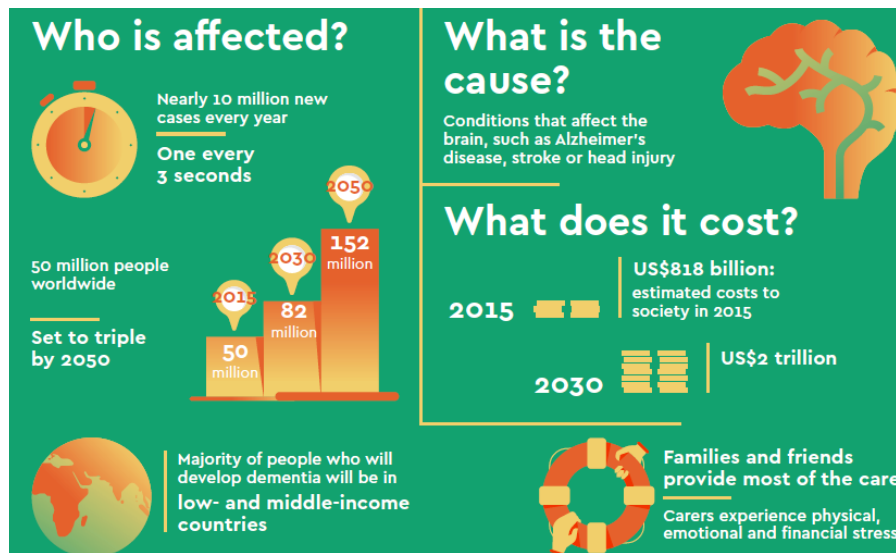
This is surely the result of the significant progress of Indonesian government programs, like family planning, nutrition, health services, sanitation, and others, which has resulted in better health conditions and longer life expectancy, which creates a growing population of the older people. Indonesian life expectancy has grown from 45 in 1970 to 69.2 for males and 71 for women in 2010 while there is a decreasing number of birth rate. As a consequence, it is estimated that by 2020 the Indonesian elderly aged 60 years and over will reach 11.34 % of the total of its population. According to the UN, the number of Indonesian over 60 years old is predicted will be more than 74 million in 2050, or about 25.5 from the total population [2].

Table 1. Indonesian population of elderly people

	2012	2050
Older people (total)	20,834,000	74,703,000
Older people as percentage of total population	8.5%	25.5%
Life expectancy (males)	68	
Life expectancy (females)	72	

Not only signifying the progress of Indonesia as a developing country, the significant growth of elderly people in Indonesia also creates challenges for the government and its society to deal with the increasing number of people who suffers from various degenerative diseases. Those diseases are related to the decreasing function of human organs that mostly suffered by the elder people following the process of ageing. Ageing creates changes of various systems in human body, in which in the elderly people there are physical changes. Physically, they have higher risk to suffer heart and coronary diseases, cancer, hypertension, osteoporosis, dementia, and other degenerative diseases.

Problems that might also happen to elderly people is related to decreasing of their cognitive functions, like losing attention, calculation, visual-spatial, language, and memory that also may cause the change in their personality. The decreasing of cognitive functions in elders, when it happens progressively, can cause what is called as dementia. In the people who suffer dementia, there are degradations in the brain cells. Though dementia is not part of normal process of ageing and can be experienced by everyone, but elders have the higher risk. In 2015, WHO reported that there were 50 millions of elders in the world suffering dementia. The total number of people with dementia is projected to reach 82 million in 2030 and around 152 million in 2050 [3].



Picture 1. WHO's infographic related to dementia [4]

The process of ageing as the strongest cause of dementia in elders will definitely affect their life quality and increase the health care cost. Indonesia has an issue of inadequate health and care services as well as welfare provisions. Elders who live in low quality of life are often regarded as burdens on the family.

There are around 2.9 million of elderly people who are being neglected and have limited access to health care and other social services. Since the global cost for dementia treatment is approximately 604 USD per year, WHO suggest all nations to raise the awareness that dementia should become a public health priority by developing good health system, providing support for the informal treatment and caregiver, and improving the awareness and advocacy of its society [2].

## 2. PREVENTING DEMENTIA IN ELDERLY ADULTS USING LANGUAGE GAMES

Health Ministry of Indonesia published a national strategy to plan accelerative efforts cross sector and program action steps with active community participation. This is to respond dementia

that over time continues to increase in the number of sufferers. It happens because of an increase in life expectancy of people that has been in the average 72.2 years [5]. Not only does dementia have no cure, it has lately appeared in adulthood, which makes it continuing to grow in number. Dementia has chronic and progressive characteristics. As the symptoms are left unchecked, the disease will be worsening along with the time. Most people will consider the symptoms as nothing to worry and they are seen as normal effect of ageing.

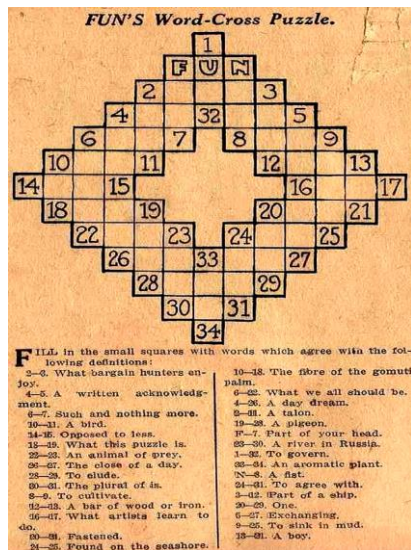
Generally, in a patient with dementia there is a degradation of cognitive functions that is commonly accompanied by the deterioration in emotional control, social behaviour, or motivation. The effects of dementia are various depending upon the impacts of the disease and the sufferer's personality before becoming ill. The signs and symptoms are categorized in the following stages:

- Early stage, which is often overlooked because the onset is gradual. The common symptoms include: forgetfulness, losing track of the time, and becoming lost in familiar places.
- Middle stage, in which the signs and symptoms become more obvious and restricting. These include: becoming forgetful of recent events and people's names, becoming lost at home, having increasing difficulty with communication, needing help with personal care, experiencing behaviour changes, including wandering and repeated questioning.
- Late stage, a near total dependence and inactivity. In this stage the memory disturbances are serious and the physical signs and symptoms become more obvious, they are: becoming unaware of the time and place, having difficulty recognizing relatives and friends, having an increasing need for assisted self-care, having difficulty walking, and experiencing behaviour changes that may escalate and include aggression [3].

Consequence of ageing is known as the strongest risk factor for dementia, but it does not exclusively affect older people. The symptoms of dementia can start to appear before the age of 65 years. There are various ways to decrease the risks of dementia. Studies show that people can reduce their risk of dementia by practicing regular exercise, not smoking, avoiding harmful use of alcohol, controlling the weight, eating a healthy diet, and maintaining the health. Those efforts can also be applied along with practicing brain stimulation activities to reduce the degradation of cognitive functions that trigger the risks of dementia, such as playing language games, such as crossword puzzle and *scrabble*.

Crossword puzzle, the most popular and widespread word game in the world, firstly started to appear during the 19th century in *The Stockton Bee* newspaper (1793 - 1795) and *Our Young Folks magazine* (1862) in United States under the name "*Cross Word Puzzle*". Decades later, a journalist named Arthur Wayne published a different format of such puzzle in *New York World* on 21 December 1913, which was then having several transformations on its format before being used as the basis of the recent crossword puzzle. Since then, he is known as the inventor of crossword puzzle and 21 December becomes National Crossword Day.

In 1930's, almost all American newspapers started to feature crossword puzzles and this had spread across the Atlantic and re-conquered Europe, and all over the world since then [6].

Picture 2. The 1<sup>st</sup> crossword puzzle

Picture 3. Scrabble

Different from crossword puzzle, which was initially popular as feature of printed media like newspaper and magazine, the concept of *scrabble* was invented in 1933 by Alfred Mosher Butts, an architect from New York. Together with a game-loving entrepreneur, James Brunot, he made the concept becoming a commercial reality. They refined the rules and design, then came up with the name *scrabble*, which means 'to grasp, collect, or hold on to something'. The remarkable concept *scrabble* as a crossword game was trademarked in 1948. This word game can involve 2-4 players that score points by placing tiles, each bearing a single letter, onto a game board which is divided into a grid of squares. The tiles must form words, which flow left to right in rows or downwards in columns [7].

Beside the popularity as fun and challenging activity, playing crossword puzzle and *scrabble* can stimulate the six cognitive areas of the brain, they are:

- Short-term memory, used when a person remember information shortly after it's been understood.
- Long-term memory, used when a person recall something from the vast store of information that's in his/her brain.
- Language, the use and form of words.
- Calculation, assessing the risks, possibilities or effects of a course of action.
- Visuospatial, referring to the visual perception of objects.
- Critical thinking, one's ability to analyze and evaluate situations.

Playing language games needs people to concentrate, think, and analyze. In crossword puzzle, the questions frequently make the brain recalling the memory on names of places, event, public figure, certain local or foreign terms, and many others. This can be good training for refreshing the brain memory. Other than that, playing crossword puzzle increases vocabularies and trains to solve problem as people get used to play various puzzles. Meanwhile, in playing *scrabble* people increases their creativity to make new words from the letters provided to them, and attempt to create different words than the ones already used on the board. The excitement increases when they start to score more points and win multiple games. This competitiveness encourages them to

think faster than their competitors and increase their strategic prowess by placing their tiles on a specific area on the board to score more points.

Crossword puzzle and *scrabble* also provides additional opportunities for socializing, since the games can involve multiple players and many game developers have already made the mobile application versions to download in mobile phone via internet. Therefore, crossword puzzle and *scrabble* help alleviate loneliness and depression that become side effects and frustrations of aging and feeling isolated. The games will help keep the aging mind sharp and give the person something to look forward to everyday. Playing language games is a great exercise for the brain, as it has various elements to keep the brain active. It requires logical thinking, anagramming, and placement decisions that can be stimulants for the brain to train the cognitive functions.

Doing any cognitive activity, like thinking, recalling for information, memorizing things, and solving problems, activates the brain cells. Moreover, as people find that playing crossword puzzle and *scrabble* is a leisure activity to do, they will also get the benefit of releasing the stress and burdens. The combination is really helpful to reduce the risk of dementia. However, playing crossword puzzle and *scrabble* should also be followed healthy like lifestyle, practicing regular exercise, not smoking, avoiding harmful use of alcohol, controlling the weight, eating a healthy diet, and maintaining the health to support the cognitive functions as the early dementia prevention. Therefore, the use of language games should be well socialized to Indonesian society to prevent the risk of dementia to happen at earlier age.

### 3. CONCLUSION

The higher life expectancy of Indonesian people that has been in the average 72.2 years, the higher number of elders experiencing degradation of cognitive functions that leads to dementia. The cure for dementia has not been found, thus as it attacks elders it would stay and worsen the patient day by day. Dementia can be prevented earlier before entering the old age because of its chronic and progressive characteristics following the aging process and the degradation of brain cognitive functions. Therefore, Indonesian society needs to be well informed about the importance of practicing leisure activities that can reduce the risk of dementia, like playing crossword puzzle and *scrabble*, instead of applying healthy lifestyle.

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