# ORIGINAL ARTICLE

# Differences in the Risk of Dementia Level in Home-dwelling Elderly and Nursing Home Residents: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Memory loss, difficulty concentrating, difficulty to carry out familiar daily tasks, delay in communication, disorientation of time and place, and mood changes are the common symptoms of dementia that tolerable in the society. Social life among elderly living in nursing home and home-dwelling is quite different. The interaction, the residents, the activities, the situation, and the environment are different. Furthermore, the study aimed to determine the differences in risk of dementia level between home-dwelling elderly and nursing home residents. **Methods:** The study used descriptive analytic with cross-sectional approach. The study was conducted at the Cepiring nursing home, Salakbrojo Village, and Proto Village. The samples size was determined using the role of thumb. The Hopkins Verbal Learning Test (HVLT) consists of 12 items then multiply by 5. 60 respondents from each group were recruited using convenience sampling technique. The demographic questionnaire and the HVLT questionnaire DEPKES version were used to assess the respondents' demographic data and the dementia levels. T-tests were used to examine the mean different between dementia among elderly who live in nursing home and home-dwelling. **Results:** There are 102 elderlies (49 home-dwelling and 53 nursing home) participated in this study. Seventy-two of the respondents (70.59%) were female, age was 70 years ± 9.53. The average HVLT value was 14 (SD = 7.72). There is no difference in the risk of dementia in the elderly from both groups, living in nursing homes and in the home-dwelling (p = 0.204). In compare, the mean HVLT value of the elderly living in the home-dwelling was higher (15.00 ± 7.58) than the elderly living in the nursing homes (13.36 ± 7.80). **Conclusion:** Memory loss, difficulty concentrating, difficulty to carry out familiar daily tasks, delay in communication, disorientation of time and place, and mood changes among elderly were permissible in society due to aging process. In fact, these are sign of dementia. The risk of dementia was highest among elderly who lives in nursing home rather than home-dwelling.

**Keywords:** Dementia, Elderly, Home-Dwelling, HVLT, Nursing Home

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## INTRODUCTION

Chronic diseases that are found in the elderly as a result of the aging process of functions and body systems are such as diabetes mellitus, arthritis, loss of hearing, dementia, heart disease and hypertension. Dementia is one of elderly's disorders, where the symptoms are cognitive setbacks that can interfere with other activities and social activities. Data from the World Health Organization (WHO) and Alzheimer's Disease International Organization explained the total number

of people with dementia worldwide was 47.5 million in 2015 and as many as 22 million people were mostly found in Asia. This number will increase almost four times in 2050. The total new dementia cases every year was 7.7 million worldwide. The population of dementia was projected to be 75.6 million in 2030 and 135.5 million in 2050 (1).

Dementia is a collection of progressive symptoms characterized by changes in behavior, decreasing memory, orientation, difficulties in communicating and making decisions resulting in daily activities disrupted (2). Dementia in the elderly will have an impact on the decline of intellectual capacity, emotional disorders, cognitive disorders and psychomotor disorders, and will affect work, social activities and relations with

others (3). The total sufferer of dementia in Indonesia in 2013 was one million (4). Dementia affects the physical, psychosocial, spiritual, and cognitive. Dementia sufferers can experience a memory decline, the ability to remember time, recognize people, places and objects. These conditions can affect psychological patients with dementia such as stress and anxiety. Stress and anxiety also can be as a result of the elderly feeling helpless, cannot do any activities, and feel they are always considered as troublesome for others, especially families (5). If this condition continues without proper intervention, it can continue to depression in the elderly.

Social support for the elderly with dementia is needed. This support can be obtained from husband, wife or significant others; families such as children and grandchildren; or from the environment. For the elderly who live in the community, it is likely to interact with family and the surrounding environment may be more intense than the elderly who lives in the nursing home. For the elderly who lives in the nursing home, meet family is an awaited moment and missed. However, in fact, this is rarely done. Many of the elderly felt missed and lonely because it had not been shown by the child and his grandson. These social life activities could influence the accident of dementia (6). The number of dementia among nursing home residents is high compare to home-dwelling residents (7). Furthermore, the study aims to describe the differences in dementia events in the elderly who live in the nursing home and in the home-dwelling.

## MATERIALS AND METHODS

### Design
This research is a descriptive analytic study with cross-sectional approach. The study was approved by LPPM University of Muhammadiyah Pekajangan Pekalongan (076/KEPK-UMPP/X/2021). The study applied the ethical principal of research by Polit & Beck (8) involved beneficence, respect for human dignity, and justice.

### Sample
This study was conducted at the Cepiring nursing home, Salakbrojo Village, and Proto Village. The study was used convenience sampling technique. The samples size was determined using the role of thumb. The Hopkins Verbal Learning Test (HVLT) consists of 12 items then multiply by 5, 60 respondents from each group. The inclusion criteria were: 1) Elderly that can still be communicate actively; 2) Elderly with a full level of awareness, and 3) Agree as participants as outlined in informed consent. While the exclusive criteria were: 1) Elderly who has experienced severe senility; 2) Elderly with a diagnosis of severe mental disorders; 3) The elderly

who has a physical disorder, unable to move; and 4) Elderly with full/high dependence.

### Instrument
The demographic questionnaire and the Hopkins Verbal Learning Test (HVLT) questionnaire Indonesia version were used to assess the respondents' demographic data and the dementia levels. The HVLT questionnaire Indonesia version was approved by ministry of health of republic of Indonesia (DEPKES RI) as a standard instrument to assess dementia in elderly.

### Data Analysis
The data were analyzed using SPSS version 23.0. The numeric data were analyzed using mean and standard deviation. While, categorized data were analyzed using percentage. T-tests were used to examine the mean different between dementia among elderly who live in nursing home and home-dwelling.

## RESULTS

Over all, seventy-two of 102 respondents (70.59%) were female. The mean age of all the respondents was 70 years old (SD = 9.53). While the mean HVLT value was 14 (SD = 7.72). According to the group analysis, in home-dwelling respondents were majority female (65.31%), the mean age was 69 years old (SD = 7.44), and the mean HVLT was 15 (SD = 7.58). Among the nursing home residents, majority were female (75.47%), the mean age was 71 (DS = 11.17), and the mean HVLT was 13.36 (SD = 7.80). To compare the risk of dementia between home-dwelling residents and nursing home residents, the t-test analysis result was $p = 0.204$. It means that there is no difference in the risk of dementia in the elderly, both living in nursing homes and in the home-dwelling. However, based on the group analysis, the mean HVLT value of the elderly living in the home-dwelling was higher (15.00 ± 7.58) compared to the elderly living in the nursing homes (13.36 ± 7.80) (Table I).

## DISCUSSION

The elderly population in Indonesia is increasing every year. It is common that elderly experience loss of short-memory, which is permissible in our society. In fact, forgetfulness is one of the early symptoms of dementia. Several factors influence the occurrence of the elderly such as gender (9), age, education, (10), social relationships, physical activity, depression (11), lifestyle (12), diet (13), and comorbidities (14).

The results of this study indicate that women are more at risk of experiencing dementia as much as 71%. The result was concordance with (9) study that more women experience dementia (71%).

**Table I : Characteristics of the Respondent and Dementia Level**

| Variabel | Nursing Home (n = 53) | Home-dwelling (n = 49) | Total (n = 102) |
|---|---|---|---|
| Gender | | | |
| - male (n, %) | 13 (24.53%) | 17 (34.69%) | 30 (29.41%) |
| - female (n, %) | 40 (75.47%) | 32 (65.31%) | 72 (70.59%) |
| Age (m ± SD) | 71 ± 11.17 | 69 ± 7.44 | 70 ± 9.53 |
| HVLT (m ± SD) | 13.36 ± 7.80 | 15.00 ± 7.58 | 14 ± 7.72 |

Hormones and inflammation in women play a role in the incidence of dementia such as uterine infections and urinary tract infections (9). Moreover, age also plays a role in the incidence of dementia (10). In this study the mean age of the respondents was 70 years. As explained by the wear and tear aging theory, the degenerative process experienced by the elderly affects the cognitive abilities and can have an impact on the incidence of dementia.

The results show that the HVLT values between the elderly living in the home-dwelling and nursing homes was difference. The possible reasons are the influence of social activities and physical activities carried out in both groups. For the elderly in the home-dwelling, they still actively participate with social activities such as recitation, PKK, dasawisma, etc. In addition, the elderly can also continue to mingle with family, children, and grandchildren so that there is perceived social support. Social involvement (13) and family support (15) are the factors that can reduce the risk of dementia. Social involvement among the respondents is such as religion activities i.e., Reciting Al-Qur'an, POSYANDU LANSIA, community services. All of the respondent are independent. Additionally, majority of the respondents live with their extended family. It gives elderly more paid attention from their big family. Another Indonesian culture is we call it "paseduluran" that means neighborhood support. So, we pay attention and treat our neighbor like our family. Furthermore, (13) also emphasizes that physical activity carried out by the elderly can reduce the risk of dementia. Elderly people who live in the home-dwelling can still do more physical activities such as doing housework, working, or even walking as they usually do after the morning prayers. The lack of physical activities and the accident of the dementia among elderly living in the nursing home was reported by (15).

**CONCLUSION**

Forgetfulness among elderly was permissible in society due to aging process. In fact, forgetting is a sign of dementia. The risk of dementia was highest among elderly who lives in nursing home rather than home-dwelling. The primary intervention that can delay loss of short-memory and maintenance the cognitive status is cognitive stimulus. Be an active aging is fully recommended.

**Limitations**
Several limitations were existed in this study i.e., did not fully examine the demographic data of the respondents such as educational background, previous and current employment, income, marital status, number of children, and social support. So that researchers cannot examine more deeply what is the determinant factor in the incidence of dementia. Researchers suggest to do further research on explore more these factors.

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