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Effect of a Dementia Care Class on Knowledge of Community-Based Dementia Care among Informal Caregivers: A Pre-Experimental Study

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ABSTRACT

Background. Dementia is developing rapidly, marked by the increasing prevalence of dementia in the world every year, in line with the growing number of the elderly population. Dementia causes dependence, reduced quality of life, and even disability. It is necessary to prevent and treat dementia by empowering informal caregivers.
Objectives.This study aimed to determine the effect of a dementia care class on knowledge of community-based dementia care.
Methods. A pre-experimental pretest-posttest design with a control group was employed. This research was conducted in the Work Area of the Kaliwungu and Dawe Health Centers, Kudus Regency. A sample of 24 informal caregivers for each intervention and control group was taken using purposive sampling. The research instrument used the Alzheimer's Disease Knowledge Scale (ADKS). The intervention dementia care class was conducted in 4 sessions on two days with a duration of 45-60 minutes per session. Wilcoxon and Man Whitney were used for data analysis.
Results. The results showed a statistically significant increase in knowledge scores among informal caregivers in the intervention group compared to the control group with p-value = 0.001 (p <0.05).
Conclusion. Dementia Care Class improves knowledge of informal caregiver. These learning models and media can be integrated into elderly posyandu and elderly health programs in healthcare facilities in community-based dementia management.

KEYWORDS
Informal caregivers; dementia care class; community-based dementia care; caregiver education; knowledge

INTRODUCTION

Dementia is a progressive neurodegenerative condition with increasing global prevalence and substantial public health implications. Dementia has a high incidence rate, develops rapidly, and is severe. Dementia causes tremendous pressure on global health and social systems, so it requires immediate attention (Wang et al., 2022). Globally, The ratio of people with dementia in the elderly population over 65 years is 5%-8%. According to the predictions of the World Health Organization (WHO), the global population with dementia will reach 82 million in 2030 and 152 million in 2050. The incidence of dementia increases significantly with increasing age (Wang et al., 2022). In line with the increasing global prevalence of dementia, population aging trends have also contributed to a rise in the number of older adults at the local level. The working area of the Dawe Health Center and the working area of the Kaliwungu Health Center are the areas with the highest number of elderly in Kudus, with a total of 7,728 elderly (8.26%) and 6,497 elderly (6.94%). In the working area of the Dawe Health Center, only 4% of older people received health screening according to standards (Kudus Health Office, 2021)

Dementia causes dependence and reduced quality of life in the elderly. Dementia is a syndrome or disease with symptoms consisting of a decreased global cognitive power not accompanied by an impaired level of consciousness. Dementia contributes

11.2% to disability cases in subjects aged 60 years and over. Research shows that up to 90% of people with dementia in long-term care have hearing loss, and >50% have visual impairment. Hearing/vision impairment among people with dementia is associated with reduced quality of life and increased agitation, hallucinations, aggression and depression, social isolation, cognitive decline, and a higher need for care (Dawes et al., 2021) Dementia patient care requires high costs. Previous global research showed that the cost of dementia care in 2010 was around $604bn or could reach nine million monthly rupiahs. Not only financial problems but the emotional and physical demands experienced by people with dementia can also become stressors for caring families, causing adverse psychological and physical outcomes (Saini & Maiti, 2018)

To overcome dementia, society must understand and be aware of the dangers of dementia and carry out appropriate management of people with dementia (Muliatie et al., 2021). Dementia Care Class (DCC) is a comprehensive training program for health cadres as caregivers to increase competence in caring for older adults with dementia. Through the DCC program, the elderly are taught to recognize dementia and its early symptoms, conduct dementia screening, carry out efforts to prevent and treat dementia, perform brain exercises as prevention of dementia, and accompany the elderly with dementia. Previous research indicates that training for health cadres is beneficial and can improve the ability of cadres to perform long-term care for older people (Nugraha, 2019)

Nurses, as providers of nursing care and educators, have a role and responsibility to be able to overcome dementia problems by providing training to health cadres to increase the knowledge, skills, attitudes, perceptions, and self-confidence of health cadres in carrying out care (Amiyati Hasan et al., 2020) Currently, limited studies have specifically evaluated the effectiveness of structured dementia care training for health cadres in improving the knowledge of informal caregivers within a community-based dementia care context. Previous studies on cadre training or caregiver education have generally focused on general elderly care, stunting, or chronic disease management, and often did not emphasize dementia-specific content, structured class-based learning, or implementation in community and primary healthcare settings. This study addresses that gap by examining the impact of a structured Dementia Care Class delivered to health cadres as informal caregivers, with a focus on community-based dementia management.

METHODS

This study employed a pre-experimental pretest–posttest design with a control group. The research variables consist of independent, dependent, and confounding variables. The Independent variable is dementia care class; the dependent variable is knowledge of community-based dementia care. This research was conducted from October 2022 to April 2023 in the working area of the Kaliwungu Health Center for the intervention group and the Dawe Health Center for the control group. The population of this study was all health cadres in the working area of the Dawe and Kaliwungu Health Center, Kudus Regency. Based on the sample calculation above, a final sample size of at least 24 respondents was obtained for each

intervention and control group. Sampling in this study used a purposive sampling technique. The inclusion criteria were active health cadres in their respective areas, aged 19–59 years (adult category), with a minimum education level of elementary school, and the ability to read, write, and communicate in Indonesian. Although this approach enabled the selection of participants who met the study criteria, the non-random sampling method may introduce selection bias and limit the generalizability of the findings.

The research instrument uses the Alzheimer's Disease Knowledge Scale (ADKS) with as many as 30 statement items with right and wrong answer choices (Guttman scale) to identify knowledge about dementia. Each correct answer was scored as 1 and each incorrect answer as 0, resulting in a total score range of 0–30. Higher scores indicate a higher level of knowledge about dementia. In this study, no specific cut-off points were used; knowledge was analyzed based on total scores. This questionnaire is divided into seven domains consisting of life impact (3 items), assessment and diagnosis (4 items), symptoms (4 items), disease progression (4 items), treatment and management (4 items), parenting (5 items), risk factors (6 items). The lowest knowledge score is 0, and the highest is 30, with a reliability value of 0.947.14. The ADKS was translated using a forward–backward translation process and reviewed by subject-matter experts to ensure content validity. Researchers provide research information to prospective respondents before research. Researchers asked prospective respondents to fill out a consent form if they would be research respondents.

Researchers provide interventions in the form of dementia care classes to the intervention group, as many as four sessions in 2 days with a duration of 45-60 minutes per session. The control group only received a community-based dementia care manual. Researchers compiled a community-based dementia care guidebook as a medium to support interventions. The stages of the intervention are as follows:

1. Session 1: getting to know dementia (lectures, discussions, and questions and answers)
2. Pre-session 2: early symptoms of dementia (interactive video)
3. Session 2: dementia screening (demonstrations, case studies)
4. Session 3: prevention and care of dementia in the community through the elderly Posyandu (discussion lectures and questions and answers)
5. Pre-session 4: Brain gym as prevention of dementia (interactive video)
6. Session 4: tips on caring for and assisting people with dementia (lectures, discussions, and questions and answers)
7. Post session 4: caregiver experiences caring for people with dementia (interactive video)

Data analysis used univariate and bivariate analysis. Univariate analysis was presented regarding frequency and proportion variables, such as gender, marital status, education, occupation, income, previous similar training experience, and experience caring for people with dementia. Data are presented in the form of mean and standard deviation on the variables age, length of time being a health worker, and knowledge of community-based dementia care. It was found that the knowledge variable was not normally distributed, with a value of $p=0.011$ ($p<0.05$) in the

intervention group and a value of p=0.005 (p<0.05) in the control group. Furthermore, the researcher conducted a homogeneity test using the ANOVA test and found that the knowledge variable had a homogeneous variant with a value of p=0.177 (p>0.05). Based on this, the researchers conducted a mean difference test of knowledge before and after the intervention in both the intervention and control groups using the Wilcoxon test because the data were not normally distributed. Whether the intervention affects knowledge and attitudes can be seen from the results of the Mann-Whitney test because the data is not normally distributed. This research has passed a research ethics review from the Health Research Ethics Commission at Universitas Muhammadiyah Kudus, number 38/Z-5/KEPK/UMKU/XII/2022, on 12 December 2022.

RESULTS AND DISCUSSION

Result

Table 1 shows that the age and length of service of informal caregivers were relatively comparable between the intervention and control groups.

Table 1. Characteristics of informal caregivers based on age and length of time as a health

Characteristics	Intervention	Control
	Mean±SD	Mean±SD
Age	38.42±8.667	45.17±10.961
I have been a health care for a long time	5.79±7.229	5.46±4.539

Table 2 describes that all health cadres in the intervention group were female (100%), married (87.5%), had high school/equivalent educational background (54.2 %), worked as housewives (54.2%), had no income (66.7%), did not have experience in dementia care training (62.5%), and did not have experience caring for people with dementia (58.3%). The majority of health cadres in the control group were female (95.8%), married (91.7%), have high school/equivalent educational background (45.8%), housewives (50%), have no income (50%), have no experience of dementia care training (62.5%), and have no experience in caring for people with dementia (54.2%).

Table 2. Characteristics of informal caregivers based on gender, marital status, education, employment, income, and training experience (n=48)

Characteristics	Intervention		Control	
	f	%	f	%
Gender				
Man	0	0	1	4.2
Woman	24	100	23	95.8
Marital status				
Not married	2	0	1	4.2
Marry	21	97	22	91.7
Widow/widower	1	3	1	4.2
Level of education				
S.D./equivalent	0	0	1	4.2

Characteristics	Intervention		Control	
	f	%	f	%
Middle school/equivalent	5	20.8	9	37.5
SMA/equivalent	13	54.2	11	45.8
College	6	25	3	12.5
Work				
Doesn't work	5	20.8	1	4.2
Housewife	13	54.2	12	50
Private officer	0	0	1	4.2
Self-employed	3	12.5	3	12.5
Trader	1	4.2	0	0
Laborer	0	0	2	8.3
Teacher/lecturer	1	4.2	2	8.3
Others	1	4.2	3	12.5
Income				
No income	16	66.7	12	50
< IDR 2,290,995,-*	5	20.8	9	37.5
≥ IDR 2,290,995,-*	3	12.5	3	12.5
Training experience				
Once	9	37.5	9	37.5
Never	15	62.5	15	62.5
Experience treating people living with dementia				
Once	10	41.7	11	45.8
Never	14	58.3	13	54.2
Total	**24**	**100**	**24**	**100**

Table 3 explains that the average knowledge of health cadres about dementia care in the intervention group was 18.58 before and 20.54 after the intervention. The intermediate knowledge of health cadres about dementia care in the control group was 17.08 before and 17.58 after the intervention.

Table 3. Knowledge of informal caregivers regarding community-based dementia care in the intervention and control groups before and after the intervention (n = 48)

Variable	Intervention		Control	
	Mean ±SD	95%CI	Mean ±SD	95%CI
Knowledge				
Before	18.58±2.653	17.46-19.70	17.08±4.652	15.12-19.05
After	20.54±1.956	19.71-21.37	17.58±3.256	16.12-18.96

Table 4 illustrates significant differences in knowledge about dementia care before and after the intervention in the intervention group with a p = 0.007 ($p < 0.05$). However, there was no significant difference in knowledge about dementia care before and after the intervention in the control group with p=0.661 ($p > 0.05$).

Table 4. Differences in the knowledge of informal caregivers about community-based dementia care before and after intervention in the intervention and control groups

Variable	Mean±SD	MD	p-value
Knowledge			
Intervention			
Before	18.58±2.653	1.98	0.007
After	20.54±1.956		
Control			
Before	17.08±4.652	0.5	0.661
After	17.58±3.256		

Table 5 demonstrates a statistically significant difference in post-intervention knowledge scores between the intervention and control groups dementia care class on knowledge of community-based dementia care with a value of p=0.001 (p<0.05).

Table 5. Influence dementia care class on the knowledge of informal caregivers about community-based dementia care

Variable	Mean±SD	p-value
Knowledge		0.001
Intervention	20.54±1.956	
Control	17.58±3.256	
Mean Difference	2.96	

Discussion

The selection of health cadres of productive age is essential. Previous research mentions older caregiver dementia has a higher burden of care when patients experience more significant impairment of functional autonomy and the presence of symptoms of apathy and irritability. There needs to be an effort to identify caregivers for at-risk elderly. More attention and support should be given to caregivers who may experience fatigue (Tsai et al., 2021)

Demographic characteristics of participants may not only describe respondent profiles but also influence learning capacity and engagement in training. The predominance of female health cadres aligns with women's common roles as informal caregivers, which may enhance their familiarity with caregiving contexts. Marital status and social support can influence psychological readiness in caregiving roles, while educational level supports the ability to understand training materials. Experience as housewives may further strengthen empathy and involvement in caregiving responsibilities. These factors can contribute to the improvement of knowledge observed after the intervention (Xiong et al., 2020; Hekmatpou et al., 2019; Cohen et al., 2019).

The experience of caring for people with dementia can have a close relationship with the knowledge, attitudes, and confidence of health workers caring for people with dementia. The majority of the cadres had no experience in managing people with dementia. The occupation and behavior of cadres are determining factors that influence their role. The study results suggest steps to increase cadres' knowledge through assistance programs and health education for cadres, especially those related to the skills needed (Ratnasari et al., 2019)

Knowledge in the intervention and control groups before the intervention had almost the same average, but there was a difference in the value of knowledge between the intervention and control groups after the intervention. The respondents'

average knowledge before the intervention was given was lower than after. The results of this study are in line with the previous research; it was found that the average knowledge of the cadres after being given the intervention was higher than before being given the intervention (Taufik A, 2018).

Previous research stated that knowledge in the intervention and control groups before the intervention had almost the same value. Still, there was a difference in the value of knowledge between the intervention and control groups after being given the intervention (Jauhar et al., 2022; Wahyuni et al., 2019). The average knowledge after the intervention in the intervention group tends to be higher than the control group.

The provision of training forms the knowledge of health cadres about the material provided. Health cadres gain new knowledge related to health through training to help improve family and community health (Tripathy et al., 2016). Dementia care classes for informal caregivers, in this case, health cadres, aim to increase cadres' knowledge of the concept of dementia, prevention of dementia, care for people with dementia, and community-based early detection of dementia. The health education background is a fundamental factor that shapes behavior or provides a reference in one's learning experience (Green, 1991). Health education and guidance greatly influence cadres' knowledge because education and guidance will shape the mindset and behavior manifested in the community's health cadres' activities.

Overall, the significant increase in knowledge observed in the intervention group can be synthesized into three main factors. First, structured and interactive learning enhanced conceptual understanding. Second, repeated exposure to the material across multiple sessions supported information retention. Third, the relevance of the content to the community context made the learning more meaningful for health cadres as informal caregivers. The combination of these three aspects explains the effectiveness of the dementia care class in improving knowledge of community-based dementia care.

Improved knowledge among health cadres is important because cadres serve as a bridge between health services and the community. Strengthening their competence in dementia care may increase community participation in early detection, prevention, and management of dementia. Community-based approaches have been shown to support sustainable health promotion and improve caregiver capacity in managing chronic conditions, including dementia (Mediani et al., 2022; Dawes et al., 2021).

The form of intervention provided in this study is by conducting health education about the definition of dementia, tips on preventing dementia, demonstrating brain exercises, dementia care that focuses on communication tips for the elderly with dementia, and early detection of cognitive impairment as an effort to prevent dementia with CFI. (Cognitive Function Instrument). This intervention is an effort to implement community health problem solving, namely deficit community health, where there are elderly who experience non-communicable diseases such as hypertension, diabetes mellitus, and stroke, which trigger dementia.

Community-based dementia management can increase community participation and efforts to treat

dementia in the community and reduce the negative impacts that arise from dementia. This intervention can be a reference for health higher education institutions, especially nursing, in developing competence and skills for students in managing dementia. Other studies have also analyzed other community-based interventions that can increase knowledge, attitudes, and confidence in community-based dementia care for informal caregivers.

Research Limitations

Several limitations were identified in this study. This study did not employ randomization in recruiting and assigning participants and involved a small sample size. Despite these limitations, the findings provide insight into the potential use of the Dementia Care Class (DCC) to enhance the role of health cadres as informal caregivers in community-based dementia care.

This study also has several methodological limitations that should be considered. First, knowledge measurement was conducted using a self-reported instrument, which may introduce response bias due to subjectivity, including the tendency to provide socially desirable answers (social desirability bias). Second, the follow-up duration in this study was relatively short, and therefore cannot fully describe the sustainability of knowledge improvement in the long term after the intervention. Third, this study did not measure behavioral outcomes, so the impact of the dementia care class on actual changes in caregiving practices in the daily lives of informal caregivers could not be evaluated.

Future research may examine the effect of dementia care classes on other variables such as perception, readiness, self-efficacy, skills, and behavior in community-based dementia care using a larger sample size and randomized methods.

CONCLUSION AND RECOMMENDATION

The dementia care class significantly improved informal caregivers' knowledge of community-based dementia care. Dementia Care Class become one of the innovative programs to increase the capacity of informal caregivers in conducting community-based dementia care. This program can be integrated into the elderly health service program and non-communicable diseases in health care facilities through a community empowerment process. Increasing informal caregivers' knowledge, attitudes, and skills in providing dementia care in the community is expected to increase public understanding and awareness about dementia.

Ethics Approval and Consent to Participate

This research has been declared to have passed ethical review from the Research Ethics Committee of the Muhammadiyah Kudus University Health Research Ethics Committee with number 38/Z-5/KEPK/UMKU/XII/2022.

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