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The Effectiveness of Geriatric Training on Primary Health Care Workers' Knowledge of Elderly Care

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ABSTRACT

The increasing number of older adults requires the readiness of primary health care services to provide comprehensive, age-friendly, and needs-based care for older adults. Primary health care workers play an important role in elderly care because they are at the frontline of promotive, preventive, curative, and rehabilitative services. This study aims to determine the effectiveness of geriatric training on primary health care workers' knowledge of elderly care and to describe participants' attitude-behavior during the training. This study used a quantitative approach with a pre-experimental one-group pretest-posttest design. The subjects of the study were 32 primary health care workers who participated in the Elderly and Geriatric Health Care Training. The data analyzed included participants' pre-test scores, post-test scores, and attitude-behavior assessments. Data analysis was conducted descriptively and inferentially using the Wilcoxon signed-rank test because the data were not normally distributed. The results showed that the participants' mean pre-test score was 62.50 and increased to 84.22 in the post-test. The Wilcoxon test showed a significant difference between pre-test and post-test scores, with $p < 0.001$. The mean N-Gain score was 0.55, which falls into the moderate category. Participants' attitude-behavior scores were also in the high category, with a mean score of 89.13. Thus, geriatric training was effective in improving primary health care workers' knowledge of elderly care, while participants' attitude-behavior showed a good profile during the training.

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INTRODUCTION

The changing population structure toward an increasingly older age profile is one of the important issues in health care. Globally, the number of older adults continues to increase, bringing consequences for more complex health service needs. United Nations Department of Economic and Social Affairs (2024) notes that population ageing has become one of the major demographic changes in the world, with the proportion of older adults

continuing to grow in the coming decades. This condition requires health systems to focus not only on the treatment of disease, but also on the maintenance of function, independence, and quality of life among older adults.

Older adults are a group that is vulnerable to various changes caused by the ageing process. These changes may include declines in physical function, cognitive ability, psychosocial condition, nutritional status, and the ability to perform daily activities. World Health Organization (2017) emphasizes that care for older adults should be directed toward maintaining intrinsic capacity and functional ability, rather than merely treating diseases separately. This approach is essential because health problems among older adults are often multiple, interrelated, and require integrated management.

In Indonesia, elderly health care at the primary care level holds a highly strategic position. Primary health care centers, known in Indonesia as Puskesmas, are health facilities located close to the community and play an important role in the implementation of promotive, preventive, curative, and rehabilitative services. This is in line with Minister of Health Regulation Number 67 of 2015, which specifically regulates the implementation of elderly health services at primary health care centers (Badan Pembinaan dan Pengembangan Hukum Pemeriksaan Keuangan Negara, 2015). This regulation indicates that elderly care at the primary health care level is not merely an additional activity, but part of the responsibility of primary health care.

The need for elderly care at the primary health care level is not only related to medical examination, but also to the ability of health workers to understand the characteristics of older adults comprehensively. Older adults may present with degenerative diseases, mobility problems, risk of falls, nutritional problems, mental health problems, cognitive decline, and the need for long-term care. Therefore, primary health care workers need to have sufficient knowledge of geriatric care principles so that they are able to provide services that are more appropriate, friendly, and in accordance with the needs of older adults.

The training framework used in this study also emphasizes that elderly health care at the primary health care level prioritizes promotive and preventive efforts, without neglecting curative and rehabilitative efforts. The document explains that primary health care centers serve as the front line of public health services because they can reach families and communities through networks such as Posyandu, Mobile Health Centers, Auxiliary Health Centers, and Village Midwives. Given this position, the capacity of primary health care workers becomes one of the important factors in the success of elderly health care.

Geriatric care requires an approach that differs from health care for other age groups. In older adults, a single health complaint often does not stand alone, but is related to other problems such as declining bodily function, limitations in activities, psychological conditions, family support, and the social environment. Through the Integrated Care for Older People approach, the World Health Organization (2024) emphasizes the importance of care that is centered on the needs of older adults, comprehensive assessment, and care coordination to prevent or slow the decline of physical and mental capacity.

In this situation, training becomes one way to improve the readiness of health workers. Training is not only intended to add information, but also to shape professional perspectives and attitudes in providing services. Health workers who have good knowledge of geriatrics are expected to be better able to identify problems among older adults, conduct initial assessments, provide health education, and make service-related decisions more appropriately. Meanwhile, a positive attitude toward older adults is needed so that care is not only procedurally correct, but also humane, patient, communicative, and respectful of the dignity of older adults.

The curriculum of the Elderly and Geriatric Health Care Training for Primary Health Care Workers shows that the materials provided cover various aspects of elderly care. The

specific objectives of the training include comprehensive geriatric patient assessment, management of geriatric syndromes and frailty, degenerative diseases and geripause, oral and dental health, mental health and intelligence, nutrition, medical rehabilitation, physical exercise, home care, communication-information-education, and recording and reporting of elderly health programs. This scope shows that geriatric training is not only oriented toward disease, but also toward comprehensive elderly care.

The structure of the training curriculum also shows that most of the learning allocation is given to core materials. These core materials include comprehensive geriatric patient assessment, management of geriatric syndromes, degenerative disease services, mental health and intelligence services, nutrition services, medical rehabilitation, physical exercise, home care for older adults, and health communication and education. Thus, this training has a relevant basis to be examined as an educational intervention for primary health care workers in improving the capacity of elderly care services.

Knowledge and attitudes are two important aspects of health care. Knowledge helps health workers understand the conditions, needs, and principles of managing older adults. Attitudes influence how health workers interact, respond to complaints, provide information, and treat older adults during the care process. In elderly care, inappropriate attitudes may cause older adults to feel uncomfortable, less respected, or reluctant to use health services. Conversely, good attitudes can strengthen the relationship between health workers and patients, and support the success of education and follow-up care.

Evaluation of training is important because training activities should not stop at administrative implementation. A training program needs to be assessed in terms of the extent to which it produces changes in participants, particularly in aspects that constitute the learning objectives. In the training framework, participant evaluation includes understanding through pre-test and post-test, attitudes and behavior, as well as assessment of presentations or assignments. This shows that, from the beginning, the training was designed to assess participant achievement not only in terms of knowledge, but also in terms of attitudes and behavior during the learning process.

Based on the above explanation, research on the effectiveness of geriatric training on the knowledge and attitudes of primary health care workers is important to conduct. This study can provide an overview of the role of training as an effort to strengthen health human resources in elderly care. In addition, this research can serve as input for training providers and health institutions in developing training programs that are more aligned with the needs of elderly care at the primary health care level.

Thus, the study entitled “The Effectiveness of Geriatric Training on Primary Health Care Workers’ Knowledge and Attitudes toward Elderly Care” has both academic and practical relevance. Academically, this study lies at the intersection of public health, gerontology, health education, and health psychology. Practically, this study is expected to support the improvement of elderly health care quality through strengthening the knowledge and attitudes of primary health care workers.

METHOD

Research Design

This study used a quantitative approach with a pre-experimental design, namely a one-group pretest-posttest design. This design was used because the study was conducted on one group of participants who received an intervention in the form of geriatric training, followed by measurements before and after the training. The measurement before the

training was conducted through a pre-test, while the measurement after the training was conducted through a post-test.

This design was chosen to determine changes in participants' knowledge after attending the training. In addition, this study also describes participants' attitudes in attending the training and their readiness in elderly care based on the available attitude-behavior assessment data.

The research design can be illustrated as follows:

$$O_1 — X — O_2$$

Notes:
O_1 = measurement of knowledge before the training
X = geriatric training for 7 days
O_2 = measurement of knowledge after the training

Research Location and Time

This study was conducted based on the Elderly and Geriatric Health Care Training for Primary Health Care Workers. The training was implemented using a blended learning method, namely a combination of online learning and classical classroom-based learning. The training activities lasted for seven effective days, with a total of 50 lesson hours.

Research Subjects

The subjects in this study were participants of the Elderly and Geriatric Health Care Training for Primary Health Care Workers. The participants consisted of health workers working at Puskesmas, such as doctors, nurses, midwives, and persons in charge of elderly health programs. The number of participants in this study was 32 people.

The sampling technique used was total sampling, in which all training participants who had pre-test, post-test, and attitude-behavior assessment data were included as research subjects. This technique was chosen because the number of participants was relatively limited and all participant data were available for analysis.

Research Instruments

The instrument used in this study was the training evaluation document, which contained participants' pre-test scores, post-test scores, attitude-behavior scores, attendance, and final scores. The pre-test scores were used to determine the participants' level of knowledge before attending the training. The post-test scores were used to determine the participants' level of knowledge after attending the training. The attitude-behavior scores were used to describe participants' attitudes during the training process.

Research Procedure

This study was conducted through several stages. The first stage was the collection of training documents, training curriculum, and participants' evaluation data. The second stage was the identification of data relevant to the research objectives, namely participants' pre-test scores, post-test scores, and attitude-behavior scores. The third stage was data processing by organizing participants' scores into an analysis table. The fourth stage was data analysis to determine changes in participants' knowledge before and after the training and to describe participants' attitudes during the training.

Data Analysis Technique

The data were analyzed quantitatively. Descriptive analysis was used to describe the minimum, maximum, mean, and standard deviation values of participants' pre-test, post-

test, and attitude-behavior scores. This analysis aimed to provide a general overview of participants' achievements before and after the training. To determine differences in participants' knowledge before and after the training, a normality test was conducted first. If the data were normally distributed, the analysis was continued using a paired sample t-test. If the data were not normally distributed, the analysis was conducted using the Wilcoxon signed-rank test. The test was conducted at a significance level of 0.05. The training was considered effective in improving knowledge if there was a significant difference between the pre-test and post-test scores.

In addition, the increase in knowledge could also be analyzed using gain or N-gain scores to determine the magnitude of participants' knowledge improvement after attending the training. The attitude-behavior scores were analyzed descriptively because the available data only showed assessment after the training, not a comparison before and after the training.

Research Ethics

This study used secondary data from the training evaluation results. Participants' identities needed to be kept confidential by not displaying their names directly in the research report. The data were analyzed only for academic purposes and training evaluation. The research findings were presented in aggregate form so as not to cause harm to participants personally or institutionally.

RESULT AND DISCUSSION

Result

The subjects of this study were 32 Puskesmas health workers who attended the Elderly and Geriatric Health Care Training. The data analyzed included participants' pre-test scores, post-test scores, and attitude-behavior assessments. Based on the training results document, the participants came from several provinces, namely East Java, the Special Region of Yogyakarta, Central Java, and South Kalimantan. The evaluation data showed that all participants had pre-test scores, post-test scores, attitude-behavior scores, attendance records, and final scores.

1. Description of Participants' Knowledge Before and After the Training

The results of the descriptive analysis showed an increase in participants' knowledge scores after attending the training. The mean pre-test score of the participants was 62.50, with a minimum score of 20 and a maximum score of 80. After attending the training, the mean post-test score increased to 84.22, with a minimum score of 80 and a maximum score of 90. The training document also recorded a mean pre-test score of 62.5 and a mean post-test score of 84.2.

In general, all participants experienced an increase in scores from the pre-test to the post-test. No participant showed a decrease in score after attending the training. The mean difference between the post-test and pre-test scores was 21.72 points. This indicates that, after the training, participants' knowledge of elderly and geriatric health care increased compared with before the training.

Table 1. Description of participants' knowledge scores

Measurement	N	Mean	SD	Minimum	Maximum
					80

	90
	60

This increase in scores shows that the training contributed to participants' understanding. Before the training, participants' scores were still relatively varied. After the training, participants' scores became more evenly distributed, and all participants achieved a minimum post-test score of 80.

2. Test of Differences in Knowledge Before and After the Training

Before determining the difference test technique, a normality test was conducted on the pre-test, post-test, and score difference data. The results of the normality test showed that the data were not normally distributed. Therefore, the difference test was conducted using the Wilcoxon signed-rank test.

The results of the Wilcoxon test showed a significance value of $p < 0.001$. Thus, there was a significant difference between participants' pre-test and post-test scores. This means that geriatric training was effective in improving Puskesmas health workers' knowledge of elderly care.

Table 2. Results of the Pre-test and Post-test Difference Test

Measurement	Mean	Mean Difference	Statistical Test	p-value
Pre-test	62.50			
Post-test	84.22	21.72	Wilcoxon signed-rank test	< 0.001

Based on these results, the hypothesis stating that there is a difference in Puskesmas health workers' knowledge before and after attending geriatric training can be accepted. This increase shows that the training materials could be understood by participants and played a role in strengthening their knowledge of elderly health care.

3. Magnitude of Participants' Knowledge Improvement

To examine the magnitude of participants' knowledge improvement, gain was calculated. The analysis showed a mean N-Gain of 0.55. This value falls into the moderate category. This means that the increase in participants' knowledge after attending the training was not only statistically significant, but also showed a practically meaningful improvement.

Table 3. Results of the N-Gain Calculation

Indicator	Value
Mean N-Gain	0.55
Category	Moderate
Minimum N-Gain	0.15
Maximum N-Gain	0.75

These results indicate that geriatric training was able to improve participants' knowledge at a moderate level. In other words, the training succeeded in improving participants' understanding, although there is still room to strengthen the depth of material mastery in future training.

4. Description of Participants' Attitude-Behavior

In addition to knowledge, this study also describes participants' attitude-behavior during the training. Based on the evaluation data, the mean attitude-behavior score of the participants was 89.13, with a minimum score of 89 and a maximum score of 91. The training document also recorded a mean attitude-behavior score of 89.1.

Table 4. Description of Participants' Attitude-Behavior Scores

Variable	N	Mean	SD	Minimum	Maximum
Attitude-behavior	32	89.13	0.42	89	91

The high and relatively even attitude-behavior scores indicate that participants had good attitudes during the training. However, because attitude-behavior data were available from only one assessment, these results cannot be used to conclude that there was an improvement in attitudes before and after the training. Therefore, the attitude aspect in this study is more appropriately understood as a description of participants' attitude-behavior during the training, rather than as evidence of attitude change resulting from the training.

Discussion

The research findings show that geriatric training was effective in improving Puskesmas health workers' knowledge in elderly care. The increase in post-test scores compared with pre-test scores indicates that participants gained a better understanding after attending the training. This finding shows that training can be one important strategy to strengthen the capacity of Puskesmas health workers in responding to the needs of elderly care.

This finding can be explained through Kirkpatrick's training evaluation model. In this model, training effectiveness can be viewed through four levels, namely reaction, learning, behavior, and results. This study is mainly positioned at the learning level because it measures changes in participants' knowledge through pre-test and post-test. Therefore, the increase in scores after the training indicates that the learning process in the training produced positive outcomes in the participants' knowledge aspect (Rouse, 2011; The Kirkpatrick Partners, 2024).

The increase in participants' knowledge is also in line with adult learning theory. The training participants were health workers who already had work experience at Puskesmas. In adult learning, material is easier to understand when it is directly related to the participants' work experience and needs. The geriatric training materials, which discussed elderly assessment, geriatric syndromes, frailty, degenerative diseases, mental health and intelligence, nutrition, rehabilitation, home care, and health communication, were highly relevant to the duties of Puskesmas health workers in elderly care (Mukhalalati & Taylor, 2019).

The findings of this study are also consistent with Alamri & Xiao (2017), who explained that health workers' knowledge and attitudes toward older adults are important aspects of primary care. Health workers who have a better understanding of older adults' needs will be more prepared to provide care that is appropriate to the physical, mental, and social conditions of older adults. In this context, geriatric training can be understood as an effort to strengthen health workers' understanding of the complexity of elderly care.

Elderly care does require comprehensive knowledge because older adults often experience more than one health problem. Conditions such as frailty, mobility disorders, degenerative diseases, nutritional problems, and cognitive decline require an approach that is not partial. Avgerinou et al. (2021) showed that primary health care workers need specific training to recognize and manage frailty. This strengthens the importance of geriatric training for Puskesmas health workers so that they are able to carry out early detection, education, monitoring, and referral more appropriately.

In addition, Lindner-Rabl et al. (2023) showed that multiprofessional educational interventions can support health workers' understanding of comprehensive geriatric assessment and management. This is in line with the training examined in this study because the training materials did not only focus on disease, but also covered comprehensive assessment, mental health, nutrition, rehabilitation, physical exercise, home care, and health communication. The scope of these materials supports participants' understanding of older adults as individuals with physical, psychological, social, and functional needs.

In terms of attitudes, the research findings show that participants' attitude-behavior scores were in the high category. This indicates that participants demonstrated good attitudes and behavior during the training. Good attitudes are important in elderly care because older adults need care that is patient, communicative, empathetic, and respectful of their dignity. Jeyasingam et al. (2023) explained that health workers' attitudes toward ageing can influence how they respond to and provide services to older adults.

However, the findings regarding attitudes need to be interpreted carefully. This study only had attitude-behavior data after the training, so it cannot be concluded that the training significantly improved participants' attitudes. To prove attitude change, measurements before and after the training using the same instrument are needed. This is in line with Kogan (1961), who showed that attitudes toward older adults can be measured systematically using specific instruments.

The discussion of attitudes is also supported by Ross et al. (2018), who showed that educational interventions can help improve the attitudes or behavior of prospective health workers toward older adults. Tufan et al. (2015) also found that geriatric education is associated with more positive attitudes toward older adults. Therefore, although this study has not been able to statistically prove an improvement in attitudes, geriatric training still has the potential to shape better professional attitudes in elderly care.

Overall, the findings of this study are consistent with training evaluation theory, adult learning theory, and previous studies on geriatric education. Geriatric training was proven effective in improving the knowledge of Puskesmas health workers. Meanwhile, participants' attitude-behavior showed a good description during the training, although it cannot yet be claimed as an attitude change resulting from the training. Therefore, geriatric training deserves to be maintained as a strategy to strengthen the capacity of Puskesmas health workers in elderly care.

This study has limitations because it used one group without a control group. In addition, attitudes were measured only once, so they could not be analyzed as changes before and after the training. Future studies are recommended to use a quasi-experimental design with a control group, as well as attitude instruments administered before and after the training, such as Kogan's Attitudes toward Older People Scale or the Geriatrics Attitudes Scale.

CONCLUSION

Based on the research findings, geriatric training was proven effective in improving Puskesmas health workers' knowledge in elderly care. This was shown by an increase in the mean pre-test score to the post-test score after participants attended the training. This

increase indicates that the training materials could be understood by the participants and played a role in strengthening their knowledge of elderly and geriatric health care. Thus, geriatric training can be one important strategy for improving the capacity of Puskesmas health workers, particularly in responding to the increasingly complex needs of elderly care.

In the attitude-behavior aspect, participants showed high and relatively even scores during the training. This finding illustrates that participants had good attitudes and behavior throughout the training process. However, because the attitude-behavior assessment was conducted only once, the results of this study cannot yet conclude that there was an improvement in attitudes as a result of the training. Therefore, future research is recommended to use a quasi-experimental design with a control group, as well as to measure attitudes before and after the training using standardized instruments so that changes in participants' attitudes can be analyzed more strongly.

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