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## **The Effect of Green Tea EGCG (Epigallocatechin Gallate) Clinical Benefit Pocket Book Education on Knowledge Level of D4 Anesthesiology Nursing Students, Universitas Muhammadiyah Purwokerto**

**Rully Annisa<sup>1</sup>\*Marta Tania Gabriel Ching Cing<sup>2</sup>Nur Aini Budiyaniti<sup>3</sup>**

<sup>1</sup> Department of Anesthesiology Nursing, Faculty of Health Science, University of Muhammadiyah Purwokerto, Purwokerto – Indonesia

<sup>2</sup> Department of Anesthesiology Nursing, Faculty of Health Science, University of Muhammadiyah Purwokerto, Purwokerto – Indonesia

<sup>3</sup> Department of Pharmacy, Faculty of Pharmacy, University of Muhammadiyah Purwokerto, Purwokerto - Indonesia

\*rullyannisa20@gmail.com

Phone: +62 896 9749 9081

**Abstract:** Increased knowledge can be supported by improving education delivery methods in health education, so that the quality of health services will also increase. The pocket book method is a simple way or tool used to increase student knowledge with health education (education) methods. *Epigallocatechin Gallate* (EGCG) is the main polyphenolic constituent found in green tea and contributes 50% to 80% which represents 200 to 300 mg/cup of green tea. Design: *Quasi-Experiment with Non-Equivalent One-Group Pretest-Posttest Design*. Methods: The method used in this study is a *Quasi-Experiment with a Non-Equivalent One-Group Pretest-Posttest Design*. The number of respondents was 58 second semester students with the *Simple Random Sampling Technique*. Data collection used a Knowledge Level questionnaire which was used to measure the level of knowledge before and after the intervention. Data analysis using Paired Sample T Test. Results: The results of the statistical test showed that most of the respondents (70.7 %) had sufficient level of knowledge before being given the intervention, while 10 students had less knowledge (17.2%). Furthermore, after receiving the intervention, most of the respondents had a good level of knowledge, namely as many as 36 students (62.1 %). Conclusions: Pocket Book Education The Clinical Benefits of Green Tea *EGCG* ( *Epigallocatechin Gallate* ) in increasing the level of knowledge is very effective because the pocket book method is a simple way or tool used to increase student knowledge with health education (education) methods. This activity is also intended to be able to increase knowledge in using medicinal plants appropriately and rationally.

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**Keywords:** Education, Level of Knowledge, Pocket Book, Tea, EGCG.

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### **1. Introduction**

Education regarding the clinical benefits of plant compounds based on an evidence- *based scientific approach* can increase knowledge in using medicinal plants appropriately and rationally (Choironi, N. A., Wulandari, M., & Susilowati, 2019). Increased knowledge can be supported by improving education delivery methods in health education, so that the quality of health services will also increase (Farra Aini Putri, 2021). The pocket book method is a simple way or tool used to increase student knowledge with health education methods (Murniasih, T.

R., Hariyani, S., & Ferdiani, 2019)(Rahmawati & Dewi, 2020). The level of knowledge of members of the Volunteer Corps (KSR) after being given a pocket book related to disaster triage has increased (Saputri, S. N. D., & Fitriana, 2022)(Febiani, 2021). Nutrition education using pocket books is effective in increasing knowledge, attitudes, levels of iron adequacy and compliance with blood supplement consumption in pregnant women (Munawaroh, A., Nugraheni, S. A., & Rahfiluddin, 2019). *Epigallocatechin Gallate* (EGCG) is the main polyphenolic constituent found in green tea and accounts for 50% to 80% which represents 200 to 300 mg/cup of green tea (Liu, J., 2021). EGCG has also shown clinical benefits as an antioxidant, anti-inflammatory and anti-proliferative (Chourasia et al., 2021). Research also shows that EGCG in green tea can support heart health by reducing blood pressure, cholesterol and plaque buildup in blood vessels which are major risk factors for heart disease (Bhardwaj, P., & Khanna, 2018) . Green tea extract containing EGCG dose of 250 mg for 8 weeks resulted in a significant 4.5% reduction in LDL cholesterol, while a dose of 379 mg for 3 months showed a significant reduction in blood pressure, cholesterol and inflammation (Batista, G. D. A. P., 2019; Bogdanski, P., 2020)(Eng, Q. Y., Thanikachalam, P. V., & Ramamurthy, 2018). The results of interviews with several D4 Anesthesiology Nursing study program students found that most students did not know about *EGCG (Epigallocatechin Gallate)* Green Tea and its clinical benefits on heart health (cholesterol and blood pressure). Based on the above background, this study aims to determine the Effect of *EGCG (Epigallocatechin Gallate)* Clinical Benefit Pocketbook Education on the Level of Knowledge of D4 Anesthesiology Nursing Students at Muhammadiyah University, Purwokerto, so that it can be used as an herbal alternative to maintain heart health.

## 2. Materials and Methods

Type of research used in Pre-Experimental Design Type One Group Pretest-Posttest. This one group pretest-posttest design consists of one group which has been specified. In this design, the test is carried out twice, namely before being given treatment it is called pre-test and after treatment is called post-test (Prof. Dr. Sugiyono, 2018)(Azwar, 2018). The population in this study were all regular student classes in 2022, D4 Anesthesiology Nursing Study Program students who received MK Basic Pharmacology lectures, a total of 58 students. The sampling technique used in this study was total sampling with inclusion criteria, among others, respondents are willing to follow the research to completion, respondents are students of anesthesiology nursing study program D4 UMP.

How to measure the level of knowledge by asking questions, then scoring a value of 1 for the correct answer and a value of 0 for the wrong answer. Based on the ordinal data scale, the range of knowledge scores is 1) The level of knowledge is in the Good Category if the value is  $\geq 75\%$ . 2) Level of knowledge Category Enough if the value is 56-74%. 3) The level of knowledge is in the Less Category if the value is  $\leq 55\%$ . This research was conducted by researchers by collecting data directly through interviews and filling out questionnaires by research respondents on the Effect of *EGCG (Epigallocatechin Gallate)* Clinical Benefit Pocket Book Education on Green Tea on the Knowledge Level of D4 Anesthesiology Nursing Students from January to May 2023.

The analysis technique used is *the Paired t-Test* . At the first meeting the intervention group was given a *pre-test* , then in the second meeting education was held using the pocket book Clinical Benefits of Green Tea *EGCG ( Epigallocatechin Gallate )* as a treatment for the intervention group. And at the last meeting the intervention group was given a *post-test*.

### 3. Results and Discussion

This research was conducted by researchers by collecting data directly through interviews and filling out questionnaires by research respondents on the Effect of *EGCG ( Epigallocatechin Gallate )* Clinical Benefit Pocket Book Education on Green Tea on the Knowledge Level of D4 Anesthesiology Nursing Students from January to May 2023. (Table 1)

**Table 1. Distribution of Gender**

		Amount	(%)
<b>Gender</b>	Male	16	27.59
	Female	42	72,41
<b>Total</b>		<b>58</b>	<b>100</b>

**Table 2. Knowledge Level Before and After Educational Intervention Pocket Book of Clinical Benefits of *EGCG ( Epigallocatechin Gallate )* Green Tea**

		<i>Pre Test</i>		<i>Posttest</i>	
		Amount	(%)	Amount	(%)
<b>Knowledge level</b>	Good	7	12.1	36	62.1
	Enough	41	70.7	22	37.9
	Not enough	10	17.2	0	0
<b>Total</b>		<b>58</b>	<b>100</b>	<b>58</b>	<b>100</b>

Table 2. Shows that most of the respondents before being given the intervention had sufficient knowledge of 41 students (70.7 %) while those who experienced less knowledge were 10 students (17.2%). And most of the respondents after being given the intervention had good knowledge of 36 students (62.1%) while those who had sufficient knowledge were 22 students (37.9%).

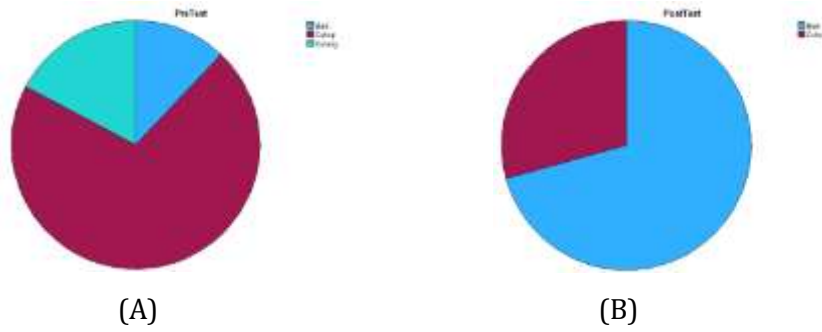


Diagram 1. Results of Knowledge Analysis. (A) Pretest (B) Posttest.

**Bivariate Analysis**

**Table 3. Pre and Post scores after receiving the intervention Pocket Book of Clinical Benefits of Green Tea EGCG ( Epigallocatechin Gallate )**

Variables	Intervention Group		Mean Differences	t	P value	95% Confidence Interval of the Difference	
	before Means (SD)	After Means (SD)				Upper	Lower
Knowledge	65.72 ± 9.96	76.83 ± 7.07	-11.103	-13.41	0.001	-9,446	-12,761

Based on table 3. The intervention group has a *mean difference* in anxiety level of -11,103 which is negative, which means there is a tendency to increase the knowledge level score after the intervention with an average increase of 11,103 . Based on the value of  $p = 0.001$ , it can be concluded that there is a significant difference in the *pre* and *post* values of the level of knowledge of the intervention group (where  $p < 0.05$ ) with a value of  $t$  count = -13.41 ( $t$  count >  $t$  table (  $df$  57 = 2.687094 ) with a negative value (-) indicating the score of the level of knowledge before the intervention is lower than the score of the level of knowledge after the intervention, so it can be concluded that the pocket book educational intervention is effective for increasing the level of knowledge.

Based on table 1. it was found that the majority of respondents were female, namely 42 respondents (72.41%). And based on table 2. shows that most of the respondents before being given the intervention had good knowledge of 7 students (12.1%), while table 3. shows that most of the respondents before being given the intervention had good knowledge of 36 students (62.1%). The results of the research above are in line with those conducted by Paul et al (2021) who stated that there was a significant relationship between gender and level of knowledge and identified that women have a higher level of knowledge than men. This is due to differences in the interest of respondents (students) in obtaining information.

Based on table 4, it was found that the intervention group had a *mean difference in anxiety level* of -11,103 which was negative, which meant that there was a tendency to increase the knowledge

level score after the intervention with an average increase of 11,103 . Based on the value of  $p = 0.001$ , it can be concluded that there is a significant difference in the *pre* and *post* values of the level of knowledge of the intervention group (where  $p < 0.05$ ) with a value of  $t$  count = -13.41 ( $t$  count >  $t$  table (  $df 57 = 2.687094$  ) with a negative value (-) indicating the score of the level of knowledge before the intervention is lower than the score of the level of knowledge after the intervention, so that it can be concluded that the pocket book education intervention is effective for increasing the level of knowledge. Based on research conducted by Ezer.P et al (2019) gender contributes to knowledge . The high level of knowledge among women is probably due to the higher level of women's interest in health.

Knowledge is the result of knowing someone about an object through the senses they have. A person's knowledge about health will affect their health behavior, this is because with education it will be easier to gain knowledge and create efforts to prevent a disease (Mulyani et al., 2019). If the level of education and knowledge is good, then the behavior that is formed will also be good (Kim et al., n.d.). Based on this can increase healthy behavior in a person, it is also necessary to increase knowledge about health. most of the respondents before being given the intervention had good knowledge of 36 students (62.1%). The results of the research above are in line with those conducted by Paul et al (2021) who stated that there was a significant relationship between gender and level of knowledge and identified that women have a higher level of knowledge than men. This is due to differences in the interest of respondents (students) in obtaining information (Fonte VRV et al, 2018).

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Knowledge is the result of knowing someone about an object through the senses they have. A person's knowledge about health will affect their health behavior, this is because with education it will be easier to gain knowledge and create efforts to prevent a disease (Notoatmodjo, 2018). If the level of education and knowledge is good, then the behavior that is formed will also be good (Gannika & Sembiring, 2020). Based on this can increase healthy behavior in a person, it is also necessary to increase knowledge about health.

#### **4. Conclusion**

Pocket Book Education The Clinical Benefits of Green Tea *EGCG (Epigallocatechin Gallate)* in increasing the level of knowledge is very effective because the pocket book method is a simple way or tool used to increase student knowledge with health education (education) methods. This activity is also intended to be able to increase knowledge in using medicinal plants appropriately

and rationally. This method can be applied to every lesson in class during lectures to increase the level of knowledge by using a pocket book or the like.

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### **Conflict of Interest**

No conflict of interest and agree with the content of the manuscript.

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