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Thalasemia Screening for Medical Faculty Students Tadulako University Palu

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***Abstract* – Thalassemia is a blood disorder that is passed down from both parents to their children and offspring (genetic disease). This disease is caused by reduced or no formation of the main human hemoglobin-forming protein. Extension activities aim to provide an understanding that prevention efforts can be maximized by knowing the status of mutant genes in individuals. Efforts to detect mutant carriers through screening for Thalassemia in healthy individuals are an important step in prevention. The ideal screening activity is carried out before someone has children, even from the beginning it is recommended that healthy individuals know the status of the Thalassemia carrier in their body. The purpose of the study was to obtain an overview of the knowledge and status of Thalassemia students of the Faculty of Medicine, Tadulako University. The method is a quasi-experimental (one group pre-test-post-test design) and blood tests to determine Thalassemia status. The results showed: 1) There was an increase in students' knowledge before and after counseling; 2) The influence of counseling on students' knowledge about Thalassemia; 3) It was found that the students of the Faculty of Medicine had results in accordance with the Beta Thalassemia carrier. Conclusion : counseling has an impact on students' knowledge about Thalassemia and found carriers of Beta Thalassemia in students of the Faculty of Medicine, Tadulako University.**

***Keywords* – Thalassemia, Counseling, Early Detection.**

I. INTRODUCTION

Thalassemia is a blood disorder that is passed down from both parents to their children and offspring (genetic disease) [1] [2]. This disease is caused by reduced or no formation of the main human hemoglobin-forming protein [3]. This causes the red blood cells to break down easily and causes the patient to turn pale due to lack of blood (anemia) [2] [4].

According to the World Health Organization (WHO), about 5% of the entire population in the world are carriers of thalassemia [5]. UNICEF estimates that about 29.7 million-thalassemia carriers (carrier/minor) are in India and about 10,000 babies are born with -thalassemia major [6]. In Indonesia alone, the prevalence of congenital or carrier thalassemia is estimated to be around 3-8%. If the percentage of thalassemia reaches 5%, with a birth rate of 23 per 1,000 of the 240 million population, it is estimated that around 3,000 babies with thalassemia are born in Indonesia every year [1][6]. In Central Sulawesi and Palu, official data on the number of people with Thalassemia major or minor has not been obtained.

Knowledge of mating patterns that can cause Thalassemia major in offspring provides an understanding that prevention efforts can be maximized by knowing the status of mutant genes in individuals. Efforts to detect mutant carriers through screening for Thalassemia in healthy individuals are an important step in prevention. The ideal screening activity is carried out before someone has children, even from the beginning it is recommended that healthy individuals know the status of the Thalassemia carrier in their body [7] [8].

In Central Sulawesi, especially the city of Palu, the government's attention to Thalassemia sufferers has not been like in big cities such as Jakarta, Bandung, Surabaya, and others. Where attention is not only from the government, but also from social organizations and from groups of people with thalassemia. In these big cities, socialization and screening of Thalassemia are carried out regularly. This research and community service activity is focused on students of the Faculty of Medicine, Tadulako University. The aim is to get an overview of student knowledge about Thalassemia, to determine the effect of counseling on student knowledge about Thalassemia and to obtain an overview of Thalassemia status in students of the Faculty of Medicine, Tadulako University.

II. METHOD

The research was conducted by the service and research Team of the Faculty of Medicine, Tadulako University, in collaboration with Tadulako General Hospital, Central Sulawesi Rotary Club and Maxima Palu Laboratory. The research population was all students of the Medical Education Study Program at the Faculty of Medicine, Tadulako University. The number of samples is 100 people, taken at random from 4 (four) existing batches. The study was conducted with a quasi-experimental approach (one group pre-test-post-test design) and blood tests on respondents to determine the status of Thalassemia.

III. RESULTS AND DISCUSSION

Respondents consisted of 100 students of the Faculty of Medicine Class 2017, 2018, 2019 and 2020. Respondents were taken randomly (simple random sampling). The characteristics of the respondents are as follows :

Table 1. Characteristics of medical faculty student respondents Class of 2017-2020.

Characteristics		**n**	**%**
Gender	Man	32	32,0
	Woman	68	68,0
	Total	**100**	**100**
Age	20 year	6	6,0
	21 year	55	55,0
	22 year	27	27,0
	23 year	3	3,0
	> 23 year	9	9,0
	Total	**100**	**100**
Batch of years	2017	11	11,0
	2018	27	27,0
	2019	41	41,0
	2020	21	21,0
	Total	**100**	**100**

Source: Primary Data, 2022.

Based on the table above, most of the students of the Faculty of Medicine who became respondents were women (68.0 %), aged 21 years (55.0%) and came from the Class of 2019 (41.0 %).

1. *Overview of Student Knowledge*

The Service and Research Team conducted counseling on Thalassemia, then measured the level of students' knowledge of Thalassemia, before and after the counseling. The results are as follows :

Table 2. Overview of the Knowledge Level of Medical Faculty Students Class of 2017- 2022 on Thalassemia.

Konwledge	**Pre-Test**		**Pos-Test**		***p****
	n	**%**	**n**	**%**	
Not Enough	0	0,0	0	0,0	
Enough	67	67,0	13	13,0	***0,02***
Good	33	33,0	87	87,0	
Total	**100**	**100,0**	**100**	**100,0**	

Source: Primary Data, 2022.

*Mannwhitney Test.

The results above indicate that there is an increase in knowledge from before being given socialization about Thalassemia screening compared to after being given socialization about Thalassemia screening. And there is a difference between before and after being given socialization (p = 0.02). Students have received information about Thalassemia during public lectures. However, knowledge and understanding of a material will be increased if specific information is given, either through counseling, socialization or other educational media.

Knowledge is the result of human sensing or the result of someone knowing about objects through the senses they have (eyes, nose, ears and so on). The intensity of attention and perception of an object greatly affects the knowledge possessed as a result of the sensing time carried out. Most of the knowledge is obtained through the sense of hearing (ears) and the sense of sight (eyes). A person's knowledge of objects has different intensities or levels.

2. *Blood Test Results*

The results of the evaluation/blood examination of 100 students are as follows :

Table 3. Thalassemia Screening Results Students of the Faculty of Medicine Untad Class of 2017-2020.

Hasil Pemeriksaan	**Nilai**	**n**	**%**
erythrocyte morphology	Normokrom Normositer	89	89,0
	Abnormal picture*	11	11,0
	Total	**100**	**100**
Screening Results (Index)	Within normal limits	89	89,0
Eritrosit and Hb	Defisiensi Fe*	8	8,0
Elektroforesis)	Etc**	3	3,0

Hasil Pemeriksaan	Nilai	n	%
	Total	**100**	**100,0**

Source: Data Primer, 2022.

*Mild to severe anisocytosis poikilocytosis.

**According to Hb E (Heterozygous Hemoglobin E) and in accordance with the carrier of Thalassemia Beta.

The table above shows that there were 11 (11.0%) respondents who had abnormal morphology (aniocytosis poikilocytosis) from mild to severe. Anisocytosis is a condition when red blood cells are not the same size. While poikilocytois is a condition where the shape of the red blood cells is abnormal (not round and concave in the middle as in general). While the results of the screening showed that of the 11 respondents who had abnormal erythrocyte morphology, there were 8 people (8.0%) who were suspected of having Iron Deficiency Anemia (Fe) and 3 people (3.0%) whose results were in accordance with Beta Thalassemia (2 people). Heterozygous Hb E and 1 Carrier).

Based on these results, the Service Team carried out counseling and education activities for respondents who had iron deficiency anemia to provide intake of foods containing high levels of Fe (such as red meat, fish and seafood, green vegetables, etc.) blood, and it is advisable to check the iron status (SI, TIBC, Ferritin). Respondents are also advised to re-screen Thalassemia if iron deficiency is resolved.

For respondents suspected of having Beta Thalassemia, it is recommended to screen other family members, carry out DNA/molecular examinations to detect gene mutations, and continue to carry out genetic counseling to experts.

IV. Conclusion

1. Counseling has an impact on students' knowledge of the Faculty of Medicine about Thalassemia.
2. There were 8 (8.0%) students of the Faculty of Medicine, Tadulako University who had results of Fe Deficiency Anemia and Beta Thalassemia) and 3 people (3.0%) who had results in accordance with the Beta Thalassemia carrier.

V. Suggestion

1. Targets that show the results of Fe Deficiency Anemia to be examined further. Meanwhile, those who have results in accordance with the Beta Thalassemia carrier should be educated and carry out further examinations;
2. So that the target of screening for Thalassemia is extended to other Tadulako University students and carried out regularly and periodically.

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