

Knowledge, Attitude, and Practice towards Thalassemia Prevention among College Students in Universitas Padjadjaran, Indonesia

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Abstract

Background: Thalassemia is the most common hereditary anemia disease. Sixty thousand thalassemia major patients are born each year and require continuous blood transfusion to survive. Meanwhile, 12% die in the perinatal period due to anaemic conditions. Specifically in Indonesia, 10% of the societies are deemed to be carriers, but the studies on thalassemia prevention are still limited. This study aimed to explore the correlations between knowledge, attitude, and practice (KAP) of college students toward thalassemia prevention.

Methods: This study was a cross-sectional analytic study conducted in September–October 2015. A total of 536 respondents from various faculties in Universitas Padjadjaran were gathered based on purposive sampling. The data obtained from validated questionnaires was analyzed by Spearman's Rank correlation test.

Results: The correlation between knowledge and attitude was weak, but the p-value was significant ($r_s = +0.388$, $\rho = 0.041$). Yet, there was no correlation between knowledge and practice ($r_s = +0.280$, $\rho = 0.063$), nor between attitude and practice ($r_s = +0.012$, $\rho = 0.786$).

Conclusions: Knowledge positively affects college students' attitude to thalassemia prevention; however, it does not have the same effect on its practice. It is consistent with the attitude, which also does not correlate with the practice of college students toward thalassemia prevention. Therefore, other affirmative actions or direct interventions and programs are still needed to maximize thalassemia prevention.

Keywords: Attitude, college students, knowledge, practice, thalassemia

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Introduction

Thalassemia is an inherited hemoglobin disorder associated with the defective synthesis of α - or β -globin due to mutations or deletions happened in chromosome 16 (α) and 11 (β).^{1,2} The types depend on what globin chain is affected, that is α -thalassemia and β -thalassemia and the clinical impact.^{1,2} Twenty percent of the world's population are thalassemia carriers, and 56,000 new thalassemia major patients are born every year, of which 30,000 need regular blood transfusions in order to survive, and 5,500 of them die perinatally due to anemic conditions.³

About 12% of children born with transfusion-dependent β -thalassemia, of which 3,000 die in their teens or early twenties due to uncontrolled iron overload each year.³

There are many new innovative thalassemia treatment. However, most of the children with thalassemia are born in low-income countries which may result in insufficient and poor treatments which will eventually lead to several complications.⁴ The new incident of thalassemia is a consequence of the lack of knowledge of pre-marriage couples. Thalassemia prevention relies on public awareness to cooperate and be intrigued of following genetic counseling,

prenatal diagnosis, and initial screening for thalassemia.^{5,6} Thus, the correlation between knowledge, attitude, and practices of college students toward thalassemia is crucial to be examined because today's teenagers as future parents should be able to prevent undesirable effects on their matrimonial life. Since college students are concerned about marriage at this age, if they have knowledge about their genetic status, they can undertake some assessments and explore their reproductive options if they have certain genetic diseases. This study aimed to explore the correlations between knowledge, attitude, and practice (KAP) of college students toward thalassemia prevention.

Methods

This study was an analytical study with a cross-sectional approach that used primary data by collecting questionnaires directly from respondents. The subjects of the study were undergraduate students at Universitas Padjadjaran, Indonesia. The study was conducted in 2015, in the period January–December at Universitas Padjadjaran, but data was collected in September–October. Ethical clearance had been approved by the Health Research Ethics Committee of Universitas Padjadjaran. Informed consent was obtained from all participating respondents.

The sampling method was purposive sampling. The sample size was first defined through a pilot study using 50 others students from Universitas Padjadjaran. The result was a minimum sample of 340, at least 29 students from each faculty were required to fill out the questionnaire. Privacy and confidentiality

were provided and maintained during and after the end of the study.

The inclusion criteria were undergraduate students at Universitas Padjadjaran. Exclusion criteria were complex medical students, such as students from the faculty of medicine, dentistry, nursing, and pharmacy, because there was the possibility of bias due to the curriculum and were deemed to have better health awareness compared to students in general. In addition, students who had received thalassemia counseling, students whose family or close relatives had thalassemia, and those who did not sign informed consent were also excluded from the study.

The questionnaire consisted of 3 parts, 18 knowledge questions, 4 attitude questions, and 5 practice questions. The questionnaire was in Indonesian and was the result of a combination of similar research conducted in Southeastern Iran and the Faculty of Medicine, Universitas Padjadjaran. The compiled version of the questionnaire had been further validated with a pilot study and eventually with a statistical processing to test the validity of $\alpha=0.05$ less than critical value=0.244, then the questionnaire had been proven valid. In the reliability test, if $\alpha=0.6$ was smaller than Cronbach's Alpha=0.842, the questionnaire had also been proven reliable.

The variables in this study were knowledge, attitudes, and practices. Knowledge was assessed using knowledge assessment theory which divided it into 3 categories, namely good (score >75%), adequate (score=56–75), and inadequate (score <56).⁷ For correct statements, those who answered "true" were given 2 points, "wrong" were given 1 point, and "do not know" were given 0 points, whereas

Table 1 Respondent Distribution based on Faculty

Faculty	n (%)
Agriculture	38 (7.2)
Animal husbandry	43 (8.2)
Psychology	53 (10.1)
Economics and business	51 (9.7)
Law	45 (8.6)
Cultural science	55 (10.5)
Communication science	38 (7.2)
Social and political sciences	37 (7.0)
Mathematics and natural sciences	50 (9.5)
Fishery and marine science	47 (8.9)
Geological engineering	52 (9.9)
Agriculture industrial technology	30 (5.7)
Total	539 (100)

Table 2 Gender Distribution based on Knowledge Level

Gender	Knowledge Level			Total	p-value
	Good n (%)	Adequate n (%)	Inadequate n (%)		
Male	1 (0.5)	29 (15)	163 (84.5)	193	0.557
Female	4 (1.2)	43 (12.4)	299 (86.4)	346	
Total	5 (0.9)	72 (13.4)	462 (85.7)	539	

for wrong statements, those who answered “true” were given 1 point, “wrong” were given 2 points, and “do not know” was given 0 points.

Attitudes and practices were assessed using the Guttman scale with only 2 categories, namely good (score >50%) and poor (score <50%).⁸ For appropriate statements, those who answered “yes” were given 1 point and “no” were given 0 points, meanwhile for the inappropriate statements, those who answered “yes” were given 0 points and “no” were given 1 point. Statistical analysis of the data was divided into 2 presentations, namely univariate analysis and bivariate analysis. Because the data was not normally distributed, the correlation test used in the study was Spearman’s Rank.

Results

Of the 553 respondents, only 539 respondents met the requirements to participate in the study, 346 of whom were female (64.2%).

It was observed that the largest number

of respondents came from the Faculty of Cultural Science (10.5%) (Table 1). The lowest number of respondents came from the Faculty of Agriculture Industrial Technology (5.7%). All faculties had met the minimum sample requirements (29 students per faculty).

It can be observed that the majority of respondents had inadequate knowledge and only 0.9% had good knowledge (Table 2). Male students had slightly better knowledge scores (15.5% had adequate and good levels of knowledge), whilst 13.6% of female students had adequate and good levels of knowledge. Therefore the variation was not statistically significant (p-value >0.05).

Most of the respondents were classified as having a good attitude (Table 3). Female respondents showed better results compared to male respondents and the variation was almost statistically significant (p-value=0.05). Many respondents had also been classified as having good practices. Female respondents also showed better outcomes than male respondents, in contrast to the attitude

Table 3 Gender Distribution based on Attitude and Practice Classification

Gender	Attitude		Total	p-value	Practice		Total	p-value
	Good n (%)	Poor n (%)			Good n (%)	Poor n (%)		
Male	127 (65.8)	66 (34.2)	193	0.053	175 (90.7)	18 (9.3)	193	0.013
Female	255 (73.7)	91 (26.3)	346		332 (96)	14 (4)	346	
Total	382 (70.9)	157 (29.1)	539		507 (94)	32 (6)	539	

Table 4 Knowledge Distributions based on Attitude and Practice

Knowledge	Attitude		Total	Practice		Total
	Good n (%)	Poor n (%)		Good n (%)	Poor n (%)	
Good	5 (100)	0 (0.0)	5	5 (100)	0 (0.0)	5
Adequate	57 (79.2)	15 (20.8)	72	71 (98.6)	1 (1.4)	72
Inadequate	320 (69.3)	142 (30.7)	462	431 (93.3)	31 (6.7)	462
Total	382 (70.9)	157 (29.1)	539	507 (94.1)	32 (5.9)	539

Table 5 Attitude Distribution based on Practice

Attitude	Attitude		Total	P-value
	Good n (%)	Poor n (%)		
Good	360 (94.2)	22 (5.8)	382	0.023
Poor	147 (93.6)	10 (6.4)	157	
Total	507	32	539	

Table 6 Spearman Rank Correlation between Knowledge, Attitude, and Practice

Variables	Correlation Coefficient	p-value	Category
Knowledge-attitude	0.388	0.041	Weak-Significant
Knowledge-practice	0.280	0.063	Not correlating
Attitude-practice	0.012	0.786	Not correlating

distribution, this result was statistically significant for females (p-value <0.05).

There was a trend pattern in which percentage of good attitudes increased as the level of knowledge increased (Table 4). A similar trend pattern was also seen in knowledge and practice, where the percentage of good practice increased as the level of knowledge increased, even if the the increase was not as clear as that seen for knowledge and attitudes. Regarding the distribution of attitudes toward practice, it showed that the distribution of good practice was more apparent in respondents with good attitudes (Table 5).

This study used the Shapiro-Wilk test to analyze the distribution of data regarding knowledge-attitude, knowledge-practice, and attitude-practice. All results showed a p-value which of no greater than 0.05, so it could be interpreted that the data deviated significantly from the normal distribution. The Spearman's Rank correlation test was preferred to analyze the correlation of study's variables.

The correlation result showed several findings. The correlation coefficient (rs) between knowledge and attitude was +0.388, indicating that there was a positive correlation between knowledge and attitude, which indicated that when one variable (knowledge) increased, the other variable (attitude) tended to also advanced. However, +0.388 was classified as weak category (Table 6). The p-value between knowledge and attitude was compared with the significance level set by the study (0.05). Because p<0.05, the results interpretation was significant.

In the knowledge-practice correlation

test, the correlation coefficient (rs) between knowledge and practice was +0.280, indicating that there was a positive correlation between knowledge and practice. If knowledge increased, practice would tend to increase as well, even if the strength of the correlation was weak. However, the p-value of 0.063 actually showed the opposite interpretation, because p>0.05, the result was considered statistically insignificant and the null hypothesis could be accepted that there was no correlation between knowledge and practice toward thalassemia among college students. The results of the attitude-practice correlation test also showed that there was no relationship between attitude and practice towards thalassemia in students (p>0.05).

Discussion

This study shows that the level of knowledge regarding thalassemia is still lacking among students at Universitas Padjadjaran. The result of this study is similar to the result of the study in Oman,⁹ where the knowledge of students was inadequate. However, these results contrast with research conducted in Yaba, Nigeria and in Southeastern Iran.^{5,10}

The number of questions used in Yaba, Nigeria is less than in this study.¹⁰ Thus, more aspects of knowledge were explored in this study compared to in Yaba, Nigeria.¹⁰ The probability of resulting a wrong answer and being classified as having inadequate knowledge was higher in this study. Study in Oman⁹ had similar results because the subjects were also undergraduate students with the same samples size and questions.

Good knowledge might be related to several factors such as access to basic learning, ability to read books and understand media information, educational qualifications, innovative government interventions, and intensive public awareness campaigns. This means that if the level of knowledge is still inadequate, it is likely that these factors will not exist, such as a lack of educational material in public places and health care centers.^{5,10,11}

Regardless of the level of knowledge, most of respondents already have a good attitude. The majority understand the need for premarital screening and premarital counselling as a way to find out their genetic status and discuss with their physician how to deal with the certain consequences, for example if it turns out they are thalassemia carriers. Similar results were also observed in several previous studies which stated that almost every student respondent believed that premarital screening was essential and necessary. Only a small percentage of teenage respondents showed negative attitudes.^{10,12,13}

Attitudes toward premarital screening, prenatal diagnosis, and other means to prevent thalassemia are related to educational attainment, religious convictions, sociocultural, and economic factors.^{11,13} This result is similar to study conducted in Saudi Arabia¹² which is caused by the level of college students education. In study in Malaysia,¹¹ the similarity in results is most likely due to the similarity in the background of Eastern cultural society where the majority of respondents are also Muslim, so their basic value considerations when answering attitude questions may be similar. In the study in Yaba, Nigeria,¹⁰ the aspects explored in the attitude questions were almost the same as in our study, which might have affected the similarity of the results.

Female respondents showed a better attitude compared to male respondents, and this was statistically slightly significant. This is consistent with study in Oman.¹⁴ It is still unclear why such differences occur between gender groups. One hypothesis that emerges is that blood transfusion management in thalassemia and iron chelation therapy are usually applied by mothers at home. However, since the respondents of this study were mostly unmarried, and Indonesian society is a patriarchal society, the task of caring for children still relies on females as mothers. Intuitively, females might feel the urge to pay more attention to preventing possible genetic diseases in their future children.¹⁴

Ninety-four percent of respondents showed good practice. This is contrary to previous studies which found that one third of participants did not support blood screening tests even though the government covered the costs of premarital carrier screening services available at all health centers and referral hospitals. The majority of respondents did not support fetuses termination of thalassemia major which is considered an acceptable practice when dealing with thalassemia major issues.^{13,14}

Research in Malaysia¹³ and Oman¹⁴ show unfavorable results which might be caused by misunderstanding of Islamic rules, considering the cultural characteristics of the societies which are strongly rooted in conservative Islamic values. In contrast to the respondents of our study, who were less conservative.

Poor practices are most likely related to lack of awareness, lack of testing centers, being deemed unimportant, having no hereditary disease in the family and not being at risk, fear of test results, fear of discrimination, and genuine concerns about partner's reaction if they are confirmed to be a carrier.^{11,13,14} This is due to the incorrect assumption that having thalassemia is the same as mental retardation, physical abnormalities, being bedridden, and being unable to carry out daily activities or go to school.¹¹ Thus, correcting the negative stigmatization regarding thalassemia should be the first step before convincing the people to conduct screening tests.

In this study, female respondents obtained better and statistically significant scores than male respondents. In the Saudi Arabian¹² study, it has been speculated that women might bear a greater burden for disabled or chronically ill children, but since the population of this study was mostly unmarried women, these factors were still unclear. This might also be related to the patriarchal issues discussed previously.¹²

Currently, no study directly correlates knowledge, attitude, and practices toward thalassemia. Thus, to discuss the result of the correlation analysis, comparison with other KAP studies with different diseases would be assessed. The first correlation analysis showed that there was a weak positive significant correlation between knowledge and attitude. This result is similar to other studies conducted in Central Nepal, in Kerman, Iran, in Quetta, Pakistan, and in Kuala Lumpur, Malaysia.¹⁵⁻¹⁸

In all studies, it has been proven that knowledge had a significant positive

correlation with attitude.¹⁵⁻¹⁸ Regardless of the disease focus, knowledge still had a significant positive correlation with attitude. This is because when people understand more information about a particular disease, they can determine how to act or respond to these concerns appropriately.

Higher knowledge of thalassemia has been proven to raise the willingness to undergo examination of thalassemia carrier status, which will prevent thalassemia incidences.¹⁹ Therefore, to increase public attitudes toward thalassemia is to spread further understanding about thalassemia. Media such as educational films and pamphlets might be used because they can increase public awareness about thalassemia or other popular main sources such as TV, internet, newspapers, schools, or health services.²⁰

The results regarding the knowledge-practice and attitude-practice correlations were quite unexpected, and the null hypotheses were accepted. So, This implied that there was no correlation between knowledge and practice, nor a correlation between attitudes and practice toward thalassemia. This is contrary to other KAP studies conducted in Central Nepal, in Kerman, Iran, in Quetta, Pakistan, and in Kuala Lumpur, Malaysia, which proved the existence of a significant correlation between knowledge-practices and attitude-practice.¹⁵⁻¹⁸ Different results might be caused by variation in the demographics of the study population, study location, and also the study tools used for data collection.

Furthermore, specific needs for disease prevention might also contribute. In a study in Nepal¹⁵ regarding dengue fever, prevention was only related to sanitation, thus, it was easy to be implemented by people in general. Likewise, a study in Iran¹⁶ regarding genital tract infection was only related to hygiene and safe sexual behaviour. Based on a study in Pakistan¹⁷ regarding hepatitis B, prevention only required medical assistance, and in Malaysia,¹⁸ there was a study regarding the influenza A pandemic which required self-precaution and protection.

For those diseases, prevention is easy to conduct. In thalassemia, consideration is not only seeking medical assistance for screening and the pain that occurs when taking blood, but also what will happen after the results are confirmed. Overcoming the severe negative stigmatization regarding thalassemia, dealing with partner reactions, whether or not they would like to have children in the future, if they have a child with thalassemia major whether

they would abort him or not, even though abortion is still a sensitive issue for some conservative religious society. Thus, having knowledge about thalassemia, being aware of what should be done to prevent it, and how to behave accordingly would not help much unless other components are also cooperative.

However, this study still has several limitations. The study is cross-sectional, thus it only assesses the relationship based on one point in time and does not consider the dynamics of the relationship between the factors being analyzed. In this study, it was not possible to determine how all these reported practices were implemented into actual practice. Some respondents may have provided socially desirable responses to some questions or even simply answered randomly, therefore not all the results may be valid. The questionnaire used in this study was a combination of only 2 studies, so many other aspects could have been explored if the resources were more various and used qualitative approach instead of analytical approach or mixed method study.

To conclude, knowledge has a positive and significant correlation with college students' attitudes toward thalassemia, thus further educational interventions are still required to enhance public awareness about thalassemia. However, to encourage preventive practices, other strategic and comprehensive approaches need to be analyzed further. The government and society must actively participate and contribute to programs to prevent thalassemia.

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