



PROCEEDINGS

The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

Universitas Muhammadiyah Yogyakarta (Indonesia)

October 13 - 14 2020

<https://icosi.umy.ac.id/>

Focal Conferences



- ✔ (ICPU) The 2nd International Conference on Pharmaceutical Updates
- ✔ (ICOMS) The 6th International Conference on Management Sciences
- ✔ (ICLAS) The 9th International Conference on Law and Society
- ✔ (ICMHS) The 4th International Conference Medical and Health Sciences
- ✔ (ICAF) The 6th International Conference for Accounting and Finance
- ✔ (ILEC) The 2nd International Language and Education Conference
- ✔ (ICONURS) The 2nd International Conference on Nursing
- ✔ (ICITAMEE) The 1st International Conference on Information Technology, Advanced Mechanical and Electrical Engineering
- ✔ (IConARD) International Conference on Agribusiness and Rural Development
- ✔ (ISHERSS) The 2nd International Symposium on Social Humanities Education and Religious Sciences
- ✔ (ICONPO) The 10th International Conference on Public Organization
- ✔ (DREAM) The 5th Dental Research and Exhibition Meeting
- ✔ (ICHA) The 5th International Conference on Hospital Administration
- ✔ (ICOSA) The 3rd International Conference on Sustainable Agriculture





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Preface by the Chairperson of the 4th ICoSI 2020



Dr. Yeni Rosilawati, S.IP. S.E., MM.

Assalamu'alaikum Wr. Wb.

All praise is due to Allah, the Almighty, on whom we depend for sustenance and guidance. Prayers and peace be upon our Prophet, Muhammad SAW, his family and all of his companions.

On behalf of the organizing committee, it is my pleasure and privilege to welcome the honourable guests, distinguished keynote & invited speakers, and all the participants.

With the main theme of “Cutting-Edge Innovations on Sustainable Development Goals (SDGs)”, the 4th International Conference on Sustainable Innovation (ICoSI) 2020 serves as a forum to facilitate scholars, policy makers, practitioners, and other interested parties at all levels from Indonesia and abroad to present their novel ideas, promote cutting-edge research, and to expand collaboration network. The conference has about 1373 participants participating from more than 8 countries 4 continents all over the world, making this conference a truly international conference in spirit.

This multidisciplinary conference was first held in 2012 and has undertaken various changes and adopted to the current technological trends of our education system. From having this conference with just 175 participants back in 2012 we have come a long way in making the conference a huge success with more than 1373 participants participating in this two-day conference.

Formerly, this conference consisted of only 9 (nine) focal conferences. This year, there are 14 focal conferences from various disciplines, namely: 1) The 2nd International Conference on Pharmaceutical Updates (ICPU), 2) The 6th International Conference on Management Sciences

(ICoMS), 3) The 9th International Conference on Law and Society (ICLAS), 4) The 4th International Conference Medical and Health Sciences (ICMHS), 5) The 6th International Conference for Accounting and Finance (ICAF), 6) The 2nd International Language and Education Conference (ILEC), 7) The 2nd International Conference on Nursing (ICONURS), 8) The International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE), 9) The 2nd International Conference of Agribusiness and Rural Development (IConARD), 10) The 10th International Conference on Public Organization (ICONPO), 11) The 2nd International Symposium on Social Humanities Education and Religious Sciences (ISHERSS), 12) The 5th Dental Research and Exhibition Meeting (DREAM), 13) The International Conference on Hospital Administration (ICHA), and 14) The 3rd International Conference on Sustainable Agriculture (ICoSA).

Accordingly, We are proud to announce that this year, the 4th ICoSI 2020 breaks the Museum Rekor-Dunia Indonesia (MURI) record as the Virtual Multidisciplinary Conference with the Largest Number of Area of Fields in Indonesia

In addition, this year, this conference holds special value since this is the first conference in the history of our university where the entire conference is taking place remotely on a digital platform through the use of advance technologies due to the Covid-19 Pandemic.

I would take this opportunity to express my highest respect to the Rector of Universitas Muhammadiyah Yogyakarta, Dr. Gunawan Budiyanto who gave approval and ensured the maximal support from all the faculty members of Universitas Muhammadiyah Yogyakarta (UMY) that made this event a big success. In addition, my appreciation goes to all the support teams who have provided their valuable support and advice from planning, designing and executing the program.

Let me conclude my speech by encouraging the delegates to participate with an increasing number in all the activities and discussions through the digital platforms for the next two days. I wish everyone a successful, safe, and fruitful conference.

Thank you!

Wassalamu'alaikum Wr. Wb.

Yogyakarta, Indonesia, 14 October 2020



Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta



Assoc. Prof. Dr. Gunawan Budiyanto

Innovation is the beginning of the development of technology, and technology is a development machine that is expected to provide benefits to humans and provide the smallest possible impact on environmental quality. In the concept of sustainable development, development must improve the quality of human life without causing ecological damage and maintain the carrying capacity of natural resources.

International Conference on Sustainable Innovation (ICoSI) is an international conference which is an annual conference held by the University of Muhammadiyah Yogyakarta (UMY), Indonesia. In 2020 this raises the issue of "Cutting-Edge Innovations on Sustainable Development Goals." Therefore, on behalf of all UMY academics, I would like to congratulate you on joining the conference, hoping that during the Covid-19 Pandemic, we can still provide suggestions and frameworks for achieving sustainable development goals.

About The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

The 2030 Agenda for Sustainable Development is enacted by the United Nations as a shared blueprint for peace and prosperity for people and the planet, now and into the future. It consists of strategies to improve health and education, reduce inequality, and spur economic growth while also conserving natures by 2030.

This year, however, at the first one-third of its timeline, the SDG Reports shows that the outbreak of COVID-19 did hinder the achievement, or at least decelerate the progress of achieving the 17 goals. In fact, according to the report, “some number of people suffering from food insecurity was on the rise and dramatic levels of inequality persisted in all regions. Change was still not happening at the speed or scale required”, accordingly.

Therefore, in this event of pandemic, the quantity and quality of research, innovation, and more importantly multi-disciplinary collaboration are indispensable. Furthermore, there needs to be clear ends of those works. That is how those research are applicable and benefits directly to the society. That is how those research is incorporated as the drivers of policy making, and used practically in the society. Hence, the stakeholders especially the triple helix of higher education institution, government, and industry must be re-comprehended and supported to reach the common goal of the SGD.

International Conference on Sustainable Innovation (ICoSI) has been essentially attempting to strengthen this regard since its first establishment. One of the goals of ICoSI is to provide primarily a platform where scholars, practitioners, and government could grasp the development and trends of research. Hopefully, meeting these actors altogether would result in stronger collaboration, sophisticated and advantageous research, and brighter ideas for further research. Based on these reasoning, this year, the 4th ICoSI 2020 UMY is themed ‘Cutting-edge Innovations for Sustainable Development Goals’.

Improving from last year conference which brought nine focal conference, this year ICoSI 2020 UMY brings 14 disciplines, from social sciences, natural sciences, and humanities. ICoSI 2020 received as much as 1005 papers. The paper works submitted in ICoSI 2020 UMY will be published in Atlantis Proceedings, IOP Proceedings, National/International Journals, and ICoSI ISBN-indexed Proceedings.

Nevertheless, ICoSI believes that publication is only the beginning of research dissemination. The publications will enhance the chance of the research known by wider audience, and then used, applied, and incorporated at either system, institutional, or personal level of human lives.



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TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES



The Effectiveness of Giving Fe Tablet in Increasing Hemoglobin Levels in Adolescent at Vocational School of Swadaya Temanggung

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ABSTRACT

Anemia is a major nutritional problem that occurs throughout the world. The number of women aged 15-49 who suffer from anemia in six countries was 409-595 million people, the highest anemia prevalence in Indonesia is found in the group of female adolescent aged 15-19 years by 38.5% [1]. The incidence of anemia in Central Java in 2013 reached 57.1%, while in the Puskesmas (Community Health Center) Temanggung area it was still a public health problem because the prevalence reached 4.21% (Puskesmas Temanggung Data, 2018). The study aims to determine the effectiveness of Fe tablets on hemoglobin level increase in female adolescents at SMK Swadaya Temanggung. The study was conducted at SMK Swadaya Temanggung with a quasi-experimental design research type. The population of this research was female adolescents with a sample of 46 students taken by purposive sampling method. The statistical test used the Independent T-Test. The results of the study conducted on 46 female students showed that 45 female students had Hb levels > 11 gr / dl and 1 female student had Hb levels < 11 gr / dl. The results of the Independent T-Test showed that the value was 0.00 < 0.05 indicating that H_a is accepted H₀ is rejected or the administration of Fe tablets was effective against Hb levels increase in which there was a statistically significant difference between the intervention group and the control group. The school is suggested to involve all parties from the school and the health department to increase promotive efforts to overcome the problem of anemia in adolescents.

Keywords: anemia, Fe tablet, female adolescent

1. INTRODUCTION

Anemia is a major nutritional problem that occurs worldwide. According to the World Health Organization (WHO) women aged 15-49 years who suffer from anemia in six countries, namely Africa, America, Asia, Europe, the East Mediterranean, and the West Pacific region amounting to 409-595 million people [1]. The prevalence of anemia in the world is very high, especially in developing countries, including Indonesia. The prevalence of anemia in the world ranges from 40-88%. According to the Basic Health Research (BHR) in 2013, the highest prevalence of anemia in Indonesia was found in the group of teenage girls aged 15-19 years at 38.5%. The incidence of anemia in Central Java in 2013 reached 57.1%. Anemia in adolescent girls in Temanggung Public Health Center is still a public health problem because its prevalence reaches 4.21% [1].

Anemia caused by lack of nutrients is characterized by a disturbance in the synthesis of hemoglobin due to a lack of nutrients that play a role in the formation of hemoglobin, either due to lack of iron consumption or due to absorption disorders. The nutrients concerned are iron, protein, pyridoxine (vitamin B6), which has a role as a catalyst in the synthesis of hem in the hemoglobin

molecule. These nutrients, especially iron (Fe), are a component of the formation of hemoglobin or forming red blood cells. Symptoms that often appear in anemia sufferers are fatigue, lack of energy or weakness, and lack of concentration. Iron deficiency can affect the health status, learning ability and brain development of adolescents. Overcoming iron nutritional anemia can be done by administering iron tablets containing 30-60 mg of iron and 400 mg of folic acid. These tablets can be given every week to meet iron needs. Giving iron tablets twice per week for two months can increase the hemoglobin level by 0.99 g / dl [2].

From the description above, it can be concluded that overcoming nutritional problems is very important, especially the problem of anemia in adolescents. The Ministry of Health issued a circular letter No HK.03.03 / V / 0595/2016 concerning the provision of blood-supplemented tablets to adolescent girls and women of childbearing age. The dynamics and factors affecting the success of the aforementioned program are very diverse, so that they become the basis for carrying out an appropriate health program, towards more effective health education efforts in the future, especially the iron supplement program. Temanggung Regency has carried out a program

of giving Fe tablets to junior and senior high school students since 2017 but in its implementation, there are several schools that have provided Fe tablets programmatically, namely every Friday and there are several schools that have not been programmed to provide Fe tablets.

Based on the results of a preliminary study through interviews that have been conducted, Swadaya Vocational High School Temanggung has carried out a program of giving Fe tablets to regular students once a week every Friday. At Swadaya Vocational High School Temanggung the number of students who have been given blood-added tablets in 2017 were 925 students, in 2018 there were 936 students, in 2019 there were 931 students.

2. RESEARCH METHODS

The research used in this study is a quasi-experimental research design. The population in this study were 270 young women who have implemented the program in one class of class XI Swadaya Vocational High School Temanggung. Samples were taken according to the calculation of the percentage of the number of students per class who have met the research requirements with a total of 46. The sampling technique used in this study is nonprobability sampling with purposive sampling method.

3. RESULTS AND DISCUSSION

Table 1 Distribution of Frequency and Percentage programmed to take Fe tablets to Hb levels in adolescent girls

Category	Hb levels	Frequency	%
Anemia	9-11.9 gr	1	2.2
Normal	≥12 gr / dL	45	97.8
Total		46	100

The results of these studies prove that the government's program to provide Fe tablets for teenagers in schools can reduce anemia in adolescents with HB levels > 11gr / dl. The prevention of anemia control is by promoting the supplementation of Fe tablets twice a week which is effective in increasing blood levels and building iron. At this school, it has been carrying out a routine program of taking Fe tablets a week only to prevent and treat anemia in its students.

Based on the results of the table in table 3.1 above, it shows that all respondents who drank Fe tablets had a hemoglobin level of > 11 g / dl, although only the characteristics of the respondents or 2.2% of the number of respondents who experienced anemia, it is possible that there are other factors that affect the elevated levels of these nutrients. the low intake of iron substances often occurs in people who often consume less variety of food ingredients. Lack of food preparation that can prevent the absorption of iron (such as coffee and tea) simultaneously on time to eat

so as to cause absorption of iron. The caffeine in coffee and tea tends to precipitate Fe so that it is soluble and less absorbed. In addition, chronic diseases, such as chronic disease and kidney disease can cause the body to be unable to produce sufficient red blood. The people with HIV/AIDS also can lead to anemia because of medicine used to treat it [3].

Table 2 Distribution of Frequency and Percentage that have not been programmed to take Fe tablets to Hb levels in adolescent girls

Category	Hb levels	F	%
Anemia	9-11.9 gr	1	2.2
Normal	≥12 gr / dL	5	11.8
Total		6	13

The data above shows that the Hb content was not only determined by the provision of blood booster tablets, even though the rate of anemia in the group that was not given blood booster tablets was higher than those given blood booster tablets. This may be caused by several factors. According to arumsari the activity factor or activity can make adolescents become anemia because the performance of the activity will decrease in relation to the decrease in hemoglobin concentration and tissue containing iron. The substances in hemoglobin, when the amount is reduced, can excessively alter work activity by decreasing transport oxygen. In addition, adolescent patterns, history of disease and menstrual cycle [4]. one of the triggers for anemia is abnormal menstrual cycle conditions. Losing a lot of blood while stretching is suspected to cause anemia. Some of the above teenagers who have normal Hb are likely to have a good and healthy diet, so that even blood intake and potassium are able to indicate normal Hb levels. some iron source can be eggs, milk, meat, fish and liver, the sources of food are soybeans, green beans, soybeans, tempeh, tofu, spinach, kale and katuk leaves.

Table 3 Comparison of HB levels in adolescents that were programmed and unprogrammed taking Fe tablet

Group	N	HB levels		Δ Mean	p - value
		Mean	SD		
Programmed	46	14,038	0.99		
Not programmed	46	11,771	1.05	2.26	0.000

Based on the results of the T-Test Independent with a p value of 0.00 < 0.05, which means that Ha is accepted Ho is rejected or also means that there is a statistically

significant difference between the intervention group and the control group. Schools that routinely provide blood booster tables for young girls, the incidence of anemia is small with Hb levels > 11 gr / dl with a percentage of 98% or 45 respondents, while schools that do not provide blood booster tablets, the incidence rate of anemia tends to be higher with the number of respondents who have Hb levels < 11 g / dl were 11 respondents or 26%, or it could also be interpreted that routine blood supplementation was effective in reducing the incidence of anemia.

Teenagers have a high risk of developing anemia due to iron deficiency. This is because in this phase adolescents experience rapid growth accompanied by various hormonal changes before the maturity phase. Adolescents need large amounts of nutrients, especially iron which is used to transport oxygen. Insufficient iron can lead to anemia. [5] In women, iron is released from the body more than men. Every month women experience menstruation, and each period of menstruation is released an average of 28 mg / period of iron. So that women have a greater risk of experiencing anemia than men [6].

The importance of giving iron to someone who is experiencing iron deficiency anemia and there is no absorption disturbance, so that within 7-10 days the hemoglobin increase can occur as much as 1.4 mg / KgBW / day [7]. The factors that influence the increase in hemoglobin levels in adolescent girls are age, frequency of menstruation, nutritional status, diet, type of food consumed, consumption of Fe tablets and physical activity. Another factor that can be known to influence the increase in hemoglobin levels is that female students consume Fe tablets which have been given by researchers for 1 month (30 days) and continue to consume them during menstruation. there may be loss of iron due to bleeding. Because the average menstrual blood discharge is 60 ml per month which is the same as 30 mg of iron, so women need a blood supplement of one milligram per day in order to maintain balance [8]

4. CONCLUSION

Based on the results of the T-Test Independent, the p-value is 0.00 < 0.05, which means that H_a is accepted and H_o is rejected or it means that the provision of blood booster tablets is effective against Hb levels where there is

a statistically significant difference between the intervention group and the control group.

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