

PERSUASIVE MESSAGES THAT INDUCE FEAR IN THE PREVENTION PROCESS OR REJECTION OF PREVENTION AGAINST ANEMIA PREVENTION PROGRAMS

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Abstract

Persuasive messages are needed to influence Threat Appraisal and Efficacy Appraisal. No persuasive messages have been found for anemia. This study aims to develop persuasive messages about the impact of anemia. 4 experts were gathered according to their expertise, including 3 public health experts, and 1 psychology and culture expert, drafting persuasive messages in 6 groups, namely: 1) Anemia Impact Group - Do not believe it needs to be prevented, the message is compiled by showing various impacts of anemia followed by evidence that anemia prevention programs need to be evaluated, 2) Anemia Impact Group - Scientific Believe it needs to be prevented, the message begins with various symptoms that occur due to anemia followed by various practical steps in preventing anemia, 3) Anemia Impact Group - control, the message compiled in this group only shows various symptoms of anemia without a message to prevent anemia, 4) Non-Impact Anemia Group - No need for Prevention, the message compiled shows various impacts of anemia which are often mild and similar to the symptoms of various diseases, 5) Non-Impact Anemia Group - Need for Prevention, the message compiled shows various impacts of anemia which are often mild but this still needs to be prevented, 6) Non-Impact Anemia Group - Control, the message is compiled only to maintain general health without mentioning anemia. The addition of messages in Banjar, the language spoken by the people of South Kalimantan Province, will improve understanding. This persuasive message should be followed by a section that serves as a means of clarifying information after the study is completed to prevent misinformation from being received by participants. This research can be further developed, particularly in research based on the Extended Parallel Process Model (EPPM) for anemia prevention.

Keywords: anemia, persuasive message, fear appeals, women of reproductive age

Background

A person is considered to have anemia when laboratory blood tests show Hb levels below 13.5 grams/dL in men or below 12 grams/dL in women. Groups at risk of iron deficiency anemia include toddlers, adolescent girls, and pregnant women. (Juffrie et al., 2020; Setyobudihono et al., 2020) Based on the 2018 Basic Health Research, as many as 32% or three out of ten Indonesian teenagers suffer from anemia, while based on data in 2019, anemia among female teenagers in South Kalimantan reached 42.45%. (Risksedas, 2018; Risikesdas Kalsel, 2018) The fact that anemia symptoms are sometimes considered mild and not disruptive to life has made teenagers less worried and appear to take it lightly. This is one of the causes of failure to prevent anemia in women of reproductive age (National Institutes of Health, 2011).

The basis of the Extended Parallel Process Model (EPPM), developed by Kim Witte in 1992, is a communication psychology theory that explains how humans process messages containing elements of threat or fear (fear appeals) (Ferrara et al., 2012). This model combines emotional (fear) and cognitive (logical thinking) aspects to predict whether someone will follow the message's recommendations or ignore them. The EPPM was built by integrating previous theories, especially the Parallel Process Model by Leventhal (1970) and the Protection Motivation Theory by Rogers (1975) (Barnett et al., 2009; Witte, K., Meyer, G., Martell, 2001; Witte & Allen, 2000).

Scaring people to motivate them to change their behavior has been practiced for thousands of years. However, systematic empirical investigation of the power of fear appeals is only a little over 70 years old (Ferrara et al., 2012). Since the 1950s, several theories have been proposed to explain the processing and effects of fear appeal messages, and the extended parallel process model (EPPM) is one of the most recent developments in this field. The EPPM integrates previous research on fear appeals in an attempt to answer the long-standing question of why fear appeals sometimes fail and sometimes succeed (Popova, 2012).

According to Kim Witte in The Extended Parallel Process Model (EPPM), fear arises when a person perceives a threat as serious and feels at risk (Witte, K., Meyer, G., Martell, 2001; Witte, 1992; Witte & Allen, 2000). The Risk Behavior

Diagnosis (RBD) Scale has been shown to be useful for predicting attitudes about behaviors that govern change, and informing the development of targeted messages and interventions. (Witte & Allen, 2000)

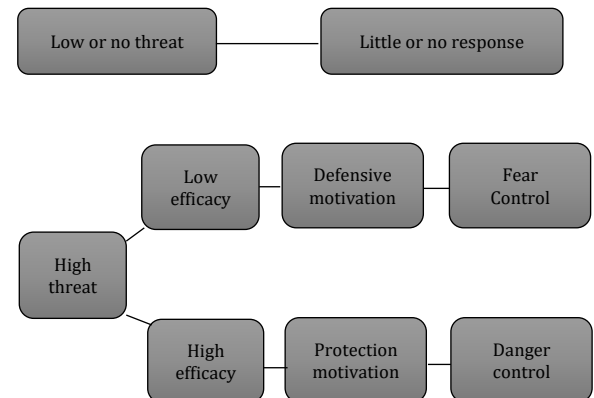


Figure 1 The extended parallel process model and expected responses to threat and efficacy levels (adapted from) (Witte, K., Meyer, G., Martell, 2001)

According to research by Witte and Allen (2000), the greatest behavioral changes occur when messages that evoke strong fear are accompanied by the belief that the recommended action is truly effective and can be carried out by the individual (high efficacy). Conversely, if messages that evoke strong fear are not accompanied by the belief that the action is effective or can be carried out (low efficacy), then what emerges is a more defensive response, such as avoiding, rejecting, or ignoring the message (Witte & Allen, 2000).

The Extended Parallel Process Model (EPPM) (Figure 2) has proven useful for understanding adaptive behavior in the face of unknown risks. First proposed by Witte in the early 1990s, the EPPM represents an integration and extension of earlier psychosocial models of "fear appeal." The model focuses on messages received both by individuals and collectively by groups. Importantly, although the model was originally developed to explain individual behavior, it has since been applied directly to the analysis of collective behavior (Smith et al., 2007).

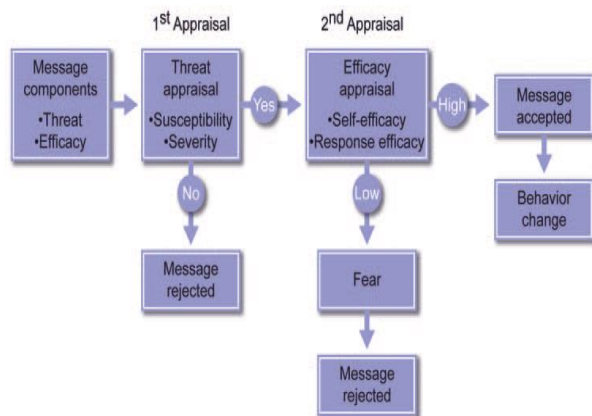


Figure 2 Extended Parallel Process Model (Barnett et al., 2009)

Designing persuasive messages that evoke fear (fear appeal) is a communication strategy to change someone's behavior by showing a serious risk or threat if they do not follow advice (Berto, 2015; Eriyanto & Zarkasih, 2018; Tannenbaum et al., 2015). The EPPM model consists of three parts (external stimulus, message processing, and output/process) (Eriyanto & Zarkasih, 2018).

No persuasive messages have been found to influence perceptions of anemia prevention. This study aims to develop persuasive messages that can influence perceptions of anemia prevention in women of reproductive age.

Method

The qualitative research was conducted with four experts gathered based on their expertise: three public health experts and one psychology and cultural expert. They were tasked with drafting persuasive messages, which were divided into six groups:

• Anemia Impact – No Belief Needs Prevention Group

The persuasive message for this group focused on the real impact of anemia and the importance of evaluating prevention programs. It presented a message that highlighted the impact of anemia and evidence that it is not preventable, along with various criticisms of the implementation of anemia prevention programs.

• Anemia Impact – Scientific Belief Needs Prevention Group

The persuasive message focused on the real impact of anemia and the importance of prevention programs for women of reproductive age, highlighting the various impacts of anemia

and evidence that anemia needs to be prevented.

• Anemia Impact – Control Group

The persuasive message focused on anemia and its real impact on women of reproductive age, and presented a list of the various impacts anemia can have on various conditions.

• Anemia Non-Impact – No Need for Prevention Group

The message in this group presented evidence that anemia symptoms should be treated with caution because they can also occur in other conditions. The tendency to hastily diagnose anemia has an important basis: fatigue does not always indicate anemia, and anemia itself is not always a simple or harmless condition.

• Anemia Non-Impact – Prevention Needed Group

The persuasive message in this group focuses on the fact that anemia is often mild, but still needs to be monitored and prevented.

• Anemia Non-Impact – Control Group

The message in this group focuses on the importance of health awareness among adolescents to create a quality generation and offspring without specifically containing messages about anemia.

The drafting team has collected various literature and secondary data to support the development of persuasive messages. Each piece of literature is organized based on its relevance to the focus of each group. Secondary data is compiled and analyzed to gain an understanding of the ongoing anemia prevention program.

The persuasive messages that had been prepared were then presented together to obtain input and improvements in a meeting attended by lecturers in the fields of health and culture.

This research has obtained ethical feasibility for its implementation through the results of the ethical review of the Faculty of Medicine and Health Sciences, Lambung Mangkurat University (FKIK ULM) dengan nomor 072/KEPK-FKIK ULM/EC/VI/2026.

Results and Discussion

Results

The persuasive message development team finally succeeded in creating persuasive messages on health communication, specifically on anemia prevention. These persuasive messages were then compiled and presented to their groups.

- Anemia Impact – Disbelief: Prevention is Necessary Group. Experts began by highlighting the various impacts of anemia, followed by evidence that anemia prevention programs need to be evaluated.
- The Impact of Anemia – Scientifically Believed Needs to Prevent It Group. The message begins with various symptoms caused by anemia, followed by practical steps to prevent it.
- Anemia Impact Group (Control). Messages in this group only address the symptoms of anemia without any messages about preventing anemia.
- Non-Anemia Impact – No Prevention Required Group. The message outlined the various impacts of anemia, which are often mild and similar to symptoms of various diseases.
- Non-Anemia-Impacted – Prevention Required Group. The message outlined the various impacts of anemia, which are often mild, but still require prevention.
- Non-Anemia Impact Group (Control). In this group, messages are designed solely for general health promotion without addressing anemia.

The following are messages that were successfully compiled by the persuasive message compilation team for each group.

- Anemia Impact – Disbelief: Prevention is Necessary Group

Anemia is a health problem that remains prevalent, especially among women of reproductive age. This condition can cause various real impacts, such as fatigue, decreased concentration, reduced productivity, and a reduced quality of life (World Health Organization, 2011). In women of reproductive age, anemia can also increase the risk of health problems during pregnancy and childbirth, and

impact the health of mothers and children. Therefore, anemia prevention efforts are a priority in various public health programs (Juffrie et al., 2020; Kraemer & Zimmermann, 2007).

However, anemia prevention programs are not always without criticism. In some quarters, it has been argued that various programs focus more on product distribution, supplement procurement, or achieving administrative targets than on ensuring real health improvements in the community. As a result, program success is often measured by the number of tablets distributed or the amount of budget absorbed, rather than by reducing anemia rates or improving the quality of life of the target group (Maulida et al., 2023).

This criticism is important because the primary goal of health programs should be to generate benefits that can be directly felt by the community, especially women of reproductive age, a group vulnerable to anemia. If interventions are not accompanied by adequate education, monitoring of supplement compliance, improving dietary habits, and addressing the broader factors causing anemia, the results may be suboptimal (Maulida et al., 2023; Permatasari, 2017).

On the other hand, it is also inappropriate to assume that all anemia prevention programs solely benefit businesses or service providers. Many health programs have provided tangible benefits to the community. However, like any other public program, their implementation needs to be continuously evaluated to ensure that the public interest remains the primary focus. Transparency in procurement, efficient budget use, and evidence-based outcome measurement need to be essential components of every program.

Therefore, what is needed is not the termination of anemia prevention programs, but rather improvements in the quality of their implementation. Program success should be measured by the reduction in anemia prevalence, the improvement in the health status of women of reproductive age, and the creation of sustainable behavior changes in maintaining health and nutrition. With this approach, anemia prevention programs will not be merely administrative or economic activities but will actually have a real impact

on the target communities.

- The Impact of Anemia – Scientifically Believed Needs to Prevent It Group

Anemia is a health problem that remains a concern in various countries, including Indonesia. This condition occurs when hemoglobin levels in the blood fall below normal, reducing the blood's ability to transport oxygen throughout the body. Although often considered a minor health problem, anemia can have a significant impact on quality of life, productivity, and overall public health (Aggarwal et al., 2020; Mawani & Aziz Ali, 2016; Wu et al., 2015).

A person with anemia generally experiences symptoms such as fatigue, weakness, dizziness, difficulty concentrating, and a reduced ability to perform daily activities. In the long term, this condition can reduce academic productivity in students and work productivity in adults. Consequently, anemia not only impacts individual health but can also impact the social and economic development of a community.

The impact of anemia becomes even more important to consider in women of reproductive age. This group is at higher risk of developing anemia due to blood loss during menstruation, increased iron requirements, and the possibility of future pregnancies. If anemia occurs before or during pregnancy, the risk of health complications for the mother and fetus can increase. Furthermore, the mother's health condition before pregnancy has a significant impact on the growth and development of the unborn child. (World Health Organization, 2011).

Anemia in women of reproductive age can also lead to reduced physical fitness, decreased immunity, and disrupted daily activities. Under certain conditions, untreated anemia can progress to more severe levels and require more intensive medical treatment. Therefore, prevention is far better than treating the problem after it arises.

Anemia prevention programs play a crucial role in maintaining public health, especially for women of reproductive age. These programs can be implemented through nutrition education, promoting a balanced diet, increasing the consumption of iron-rich foods, providing iron supplements as needed, and regular health check-ups. These efforts aim to prevent anemia while raising public awareness of the importance of maintaining health from an early age (Obed &

Patience, 2006).

The success of anemia prevention programs benefits not only individuals but also future generations. Women with good health and nutritional status will be better prepared to have healthy pregnancies and give birth to healthy children. Thus, anemia prevention is a crucial part of efforts to build healthy, productive, and high-quality human resources (Shu & Ogbodo, 2005).

Therefore, anemia should not be considered a trivial health problem. Its significant impact on health, productivity, and quality of life makes anemia prevention programs a crucial health investment, especially for women of reproductive age. Through collaboration between communities, health workers, families, and the government, anemia prevention efforts can provide significant benefits for the health of both current and future generations.

- Anemia Impact Group (Control)

Anemia is a condition in which hemoglobin levels in the blood are below normal, reducing the blood's ability to transport oxygen throughout the body. This condition remains a common health problem among women of reproductive age. This group is at higher risk of developing anemia due to increased iron requirements and regular blood loss during menstruation.

The impact of anemia on women of reproductive age is not limited to minor physical symptoms. One of the most common side effects is prolonged fatigue. Women with anemia tend to feel weak, lethargic, and lacking energy even after rest. As a result, their ability to carry out daily activities, including work, education, and household chores, can be reduced.

In addition to fatigue, anemia can also cause concentration problems and decreased thinking skills. Inadequate oxygen supply to body tissues, including the brain, can make it more difficult to focus and lead to mental fatigue more quickly. This condition can impact academic achievement, work productivity, and the ability to make decisions and complete daily tasks.

Another impact is reduced physical fitness and

endurance. Women with anemia often tire quickly when performing activities that require energy, even tasks that were previously easy. In some cases, anemia can also cause the heart to work harder to meet the body's oxygen needs, resulting in symptoms such as palpitations or shortness of breath during activity.

Anemia in women of reproductive age also has important implications for reproductive health. When a woman enters pregnancy with anemia, the risk of health problems during pregnancy can increase. Furthermore, iron reserves and the mother's health before pregnancy are factors that play a role in supporting optimal fetal growth and development (Shu & Ogbodo, 2005; Zimmermann & Hurrell, 2007).

More broadly, anemia can impact the quality of life of women of reproductive age. Persistent fatigue, reduced physical ability, and decreased concentration can limit participation in social, educational, and economic activities. These impacts are felt not only by the individual with anemia but can also affect their family and the surrounding community.

Thus, anemia is a condition that has a real and significant impact on women of reproductive age. In addition to reducing physical health, anemia can also affect cognitive function, productivity, reproductive health, and overall quality of life. Therefore, anemia should be recognized as a significant health issue with real consequences for women's well-being.

- Non-Anemia Impact – No Prevention Required Group

In society, anemia is often understood as a condition synonymous with fatigue, lack of sleep, or excessive activity. It's not uncommon for someone who complains of weakness, dizziness, or fatigue to be immediately assumed to have anemia. This perception can lead to a tendency to diagnose anemia too quickly without adequate evaluation.

It's true that fatigue is a common symptom in people with anemia. However, fatigue itself is not the cause of anemia; it can be a consequence of reduced hemoglobin levels, or the number of red blood cells that carry oxygen throughout the body. Furthermore, symptoms such as weakness and fatigue can also be caused by many other conditions, such as lack of sleep, stress, thyroid disorders, infections, depression, heart disease,

and other metabolic problems.

The assumption that anemia rarely causes dangerous effects should be interpreted with caution. In some cases, especially mild anemia, symptoms can be relatively mild and do not lead to serious complications. However, anemia can also be a sign of a more underlying health problem, such as severe iron deficiency, chronic bleeding, bone marrow disorders, kidney disease, or even certain malignancies. If the underlying cause is not identified, the consequences can be serious. Therefore, a diagnosis of anemia should not be made solely based on complaints of fatigue or other subjective symptoms. Establishing a diagnosis requires more objective examination, particularly through blood tests that can assess hemoglobin levels and other hematological parameters. Once anemia is confirmed, the next step is to identify the underlying cause so that appropriate treatment can be provided. Therefore, criticism of the tendency to hastily diagnose anemia has important grounds: symptoms of fatigue do not always indicate anemia, and anemia itself is not always a simple or harmless condition. A careful approach, based on clinical and laboratory examinations, is necessary to ensure an accurate diagnosis and appropriate treatment.

- Non-Anemia-Impacted – Prevention Required Group

Anemia is a fairly common health problem across all age groups. This condition occurs when hemoglobin levels, or the number of red blood cells in the body, are below normal, reducing the blood's ability to carry oxygen. In many cases, anemia causes relatively mild symptoms, such as fatigue, lethargy, reduced concentration, or a feeling of lack of energy during activities.

Because its symptoms often include fatigue, anemia is often considered a minor condition. Indeed, most cases of mild anemia do not immediately cause serious consequences and can be effectively managed through dietary adjustments, supplementation as needed, and treatment of the underlying cause. Therefore, many sufferers can still carry out daily activities without significant disruption.

Nevertheless, anemia should not be ignored. Persistent fatigue can reduce productivity,

impair quality of life, and affect a person's ability to study and work. Furthermore, untreated anemia can progress to more severe conditions or be a sign of other health problems that require further attention.

Certain groups, such as children, adolescent girls, pregnant women, and the elderly, require special attention because they are more susceptible to anemia. In pregnant women, for example, anemia can increase the risk of complications during pregnancy and childbirth. In children and adolescents, anemia can affect growth, development, and learning ability.

Therefore, preventive measures should be taken as early as possible. Consuming foods rich in iron, folic acid, vitamin B12, and vitamin C can help maintain healthy red blood cell production. Regular health check-ups are also important, especially for those with risk factors or who frequently experience symptoms such as fatigue, paleness, and weakness.

Therefore, although anemia often only causes mild symptoms such as fatigue and, in many cases, does not immediately cause dangerous consequences, this condition still requires vigilance. Awareness of prevention, early recognition of symptoms, and proper examination are important steps to maintain health and prevent more serious problems later in life.

- **Non-Anemia Impact Group (Control)**

Adolescence is a crucial period in a person's life. During this time, various physical, mental, and social changes occur that will lay the foundation for health and quality of life in adulthood. Therefore, every teenager needs to be aware of the importance of maintaining good health and strive to maintain a healthy body from an early age.

Health awareness not only means avoiding disease but also includes implementing a healthy lifestyle in everyday life. Teenagers need to get used to consuming a balanced, nutritious diet, exercising regularly, getting enough rest, maintaining personal hygiene, and avoiding behaviors that can be detrimental to health, such as smoking, drug abuse, and alcohol consumption. Good habits developed during adolescence will provide long-term benefits into adulthood.

Maintaining health during adolescence also impacts the quality of human resources in the future. Healthy teenagers tend to have better

learning abilities, higher concentration, and optimal productivity. With good physical and mental condition, they can develop their full potential and contribute positively to their families, communities, and the nation.

Furthermore, adolescent health is closely linked to the quality of the next generation. Young women who maintain their nutritional and health status will be better prepared for pregnancy and motherhood. Similarly, young men who adopt a healthy lifestyle will promote good reproductive health. The health of prospective parents is one factor that can influence their child's future growth and development.

Therefore, every teenager needs to understand that maintaining their health is not only for their own benefit now, but also an investment for the future. A healthy young generation will grow into a strong, intelligent, and productive generation. Ultimately, they will be able to give birth to and raise healthy, high-quality offspring, and have better opportunities for a prosperous life.

Therefore, health awareness and concern must be instilled from adolescence. Through a healthy lifestyle, regular health check-ups, and a responsible attitude towards their own health, adolescents can lay the foundation for a superior generation and high-quality offspring in the future.

The entire persuasive message that had been prepared was discussed together in a meeting with health lecturers. Twenty lecturers were recorded as attending this discussion.

Discussion

The six persuasive messages, developed by six experts, were then presented to a meeting with health lecturers. Twenty health lecturers attended. The following are the notes from the meeting:

"The messages are well-structured, with good language and from reliable sources. Agree to use them as a source for future research."

"Perhaps messages in Banjar, the language spoken in South Kalimantan, could be added to improve understanding."

"Each use of these persuasive messages should

include a debriefing process, explaining the true nature of anemia, particularly anemia in women of reproductive age."

These notes were of concern to the research team. Specifically, for the addition of messages in Banjar, the persuasive messages were then added to all groups.

- Anemia Impact – Don't believe it needs to be prevented Group, added message in Banjar language, namely:

"Urang tuha bahari bapadah bahwa anak gadis memang biasa haja pucat wan capat capai, apalagi mun lagi datang bulan. Kada usah tapi banar dipikirakan. Lamah sedikit itu biasa haja gasan anak gadis. Kada usah minum tambah darah tarus, kaina darah jadi 'panas'." ("My parents used to say that it's normal for girls to be pale and tired easily, especially during their period. Don't worry too much about it. A little weakness is normal for girls. There's no need to constantly take iron supplements, as it will make your blood 'hot'.")

- The Impact of Anemia – Scientific Believes It Needs to be Prevented Group added the following Banjar language message:

"Jangan sampai awak pian jadi kaya batang kayu hanyut di batang banyu — lemah, pucat, kada batanaga. Urang tuha bahari percaya, gadis nang jarang makan iwak sungai, daun kelor, wan kada pandai manjaga kesehatan, gampang kana panyakit wan kada kuat lagi membantu keluarga." ("Don't let yourself become like a log of wood floating in the water—weak, pale, and weak. Our parents used to believe that a girl who rarely ate river fish or moringa leaves was not good at maintaining her health, was easily susceptible to illness, and was not strong enough to support her family.")

"Anemia itu kada bulih dianggap ringan. Lamun tubuh kurang darah, awak jadi gampang capek, kada sumangat, wan mudah sakit. Jadi, ayu kita biasakan makan makanan bergizi, banyak makan sayur wan buah, serta rajin minum tablet tambah darah sesuai anjuran petugas kesehatan. Kesehatan kita adalah modal utama gasan bausaha wan baibadah." ("Anemia is often considered mild. If your body lacks blood, you tire easily, lack enthusiasm, and become ill easily. So, let's make it a habit to eat nutritious food, eat lots of vegetables and fruit, and diligently take iron supplements as recommended by health workers.

Our health is the main capital for our efforts and worship.")

- Anemia Impact Group (control) with additional Banjar language message as follows:

"Wanita nang menderita anemia biasanya lakas marasai uyuh awak, awak lamah, kada tapi batanaga, pusing, dan sulit berkonsentrasi. Gajala ini kawa mengganggu aktivitas sapandarian, baik di rumah, di tempat kerja, maupun dalam kegiatan sosial. Pekerjaan nang biasanya kawa dikerjakan dengan lancar jadi terasa lebih berat dan mambuat produktivitas manurun." ("Women who suffer from anemia often experience fatigue, weakness, dizziness, and difficulty concentrating. These symptoms can disrupt daily activities, whether at home, at work, or in social settings. Tasks that were usually carried out smoothly become more difficult and productivity decreases.")

"Pada wanita usia subur nang sedang hamil, anemia kawa mambari dampak nang lebih serius. Ibu hamil nang mengalami anemia barisiko lebih tinggi marasa lemah, mudah capai, dan mengalami gangguan kesehatan selama masa kehamilan. Anemia jua dapat mangaruhi kondisi janin karena kabutuhan oksigen dan nutrisi menjadi kada terpenuhi secara optimal." ("In women of reproductive age who are pregnant, anemia can have more serious consequences. Pregnant women with anemia are at higher risk of feeling weak, easily tired, and experiencing health problems during pregnancy. Anemia can also affect the condition of the fetus because its oxygen and nutrient needs are not optimally met.")

"Wanita usia subur nang anemia, kaya lampu minyak nang habis sumbunya, masih manyala tapi cahayanya kada tarang. Anemia pada wanita usia subur ibarat kabut di pagi hari, kada salalu kalihatan, tapi nyata manghalangi jalan." (A woman of reproductive age with anemia is like a burned-out oil lamp; it still burns but the light is not bright enough. Anemia in women of reproductive age is like fog in the morning, sometimes invisible, but clearly blocking the path.")

- Non-Affected of Anemia – No need for Prevention Group. The Banjar language message that was added is as follows:

“Mun awak hanyar karasa lalah, jangan langsung galau, lihati dahulu asal muasalnya, jangan bapandir sambil manyangka. Awak agak lunglai jangan langsung takutan, sabab kada samua lemah itu tanda masalah nang basar. Kaya riak di banyu sungai, gejala ringan kada salalu manandakan arus nang bahaya. Tanaga kada salawasnya sama, kaya banyu sungai nang kadang pasang kadang surut.” “If you just feel bad, don't be immediately upset. Look at the source first, don't be confused and guess. If you're feeling a little weak, don't be immediately afraid, because feeling weak is a sign of a bigger problem. Like ripples in a river, mild symptoms always indicate a dangerous current. Energy is not always the same, like river water that sometimes rises and sometimes recedes.”)

- Non-Affected of Anemia – Prevention is Needed Group; the added Banjar language message is as follows:

“Anemia kada salalu datang dengan keluhan basar, tanda nang halus pun patut dijadikan pangingat. Mun daun hanyar mulai layu, urang bijak sudah maingat akar; tanda ringan jangan sampai jadi kabar. Anemia nang masih halus ibarat riak di banyu, balum mangguncang parahu, tapi patut diperhatikan lalu.” (“Anemia doesn't always come with major symptoms; even subtle signs are worth noting. While the leaves are wilting, the wise have already fortified the roots; mild symptoms shouldn't be reported. Mild anemia is like ripples in the water, not yet enough to rock the boat, but it's worth paying attention to.”)

- Non-Anemia Impact Group (Control), The Banjar language message added is as follows:

“Mun awak dijaga wayah anum, insyaallah jadi pondasi kuat gasan generasi nang handal. Jaga kesehatan wayah muda, supaya keturunan esok tumbuh kuat, cerdas, wan baakhlak. Sabalum manjadi urang tua, jadilah remaja nang pandai manjaga awak, sabab generasi baik lahir dari tubuh nang sehat. Remaja nang sehat ibarat banih unggul, ditanam hari ini, dipanen jadi generasi berkualitas di masa datang.” (“If you take care of your body from a young age, God willing, it will become a strong foundation for a reliable generation. Take care of your health from a young age, so that tomorrow's children will grow up strong, intelligent, and well-mannered. Even after you grow old, be a youth who is good at taking care of yourself, because a good generation is born

from a healthy body. Healthy youth are like superior seeds, planted today, harvested into a quality generation in the future.”)

A note on the need for debriefing, which is a useful part of clarifying information after the research is completed to ensure participants are not misinformed, is provided. The debriefing team drafted the following message:

Anemia is a condition where the hemoglobin (Hb) level in the blood is below normal, resulting in a lack of oxygen circulating to the tissues. Hemoglobin is a protein in red blood cells that carries oxygen throughout the body. In adolescents, anemia is most often caused by iron deficiency, hence the term iron deficiency anemia. Generally, the hemoglobin level limits for adolescents are: 1) Boys: around 13 g/dL or more, 2) Girls: around 12 g/dL or more. Below these levels, a person is classified as anemic, depending on the severity.

The dangers of anemia (a lack of hemoglobin/red blood cells) include decreased immunity, impaired concentration, low productivity, and the risk of heart failure and death. Anemia has serious impacts on adolescents, including impaired growth, decreased performance, and reduced physical fitness. If a woman of reproductive age with anemia becomes pregnant, it can increase the risk of death after childbirth and the risk of premature birth or low birth weight.

Anemia treatment involves addressing the lack of red blood cells or hemoglobin so that the body returns to health and receives sufficient oxygen. Treatment depends on the cause of the anemia, but the most common is iron deficiency anemia. Prevention can be achieved by taking iron supplements, eating iron-rich foods (red meat, green vegetables), and regular prenatal checkups.

In this study, we strive to minimize any risks or discomfort that may arise from using information containing general information. Therefore, we apologize for any misleading initial information about the study, as we believe this is the most effective way to elicit a natural response or avoid research bias once you are aware of the true purpose of the study.

Therefore, since you have been informed of

the true purpose of this study, you still have the opportunity to refuse the use of your data for research purposes. If you decide to withdraw or refuse the use of your data, we will respect your wishes and your data will not be used for research purposes.

Because this study is ongoing, we ask that you maintain confidentiality and refrain from sharing any information related to this study with other potential participants.

This study has been deemed fit for implementation through the FKIK ULM ethics review, number 072/KEPK-FKIK ULM/EC/VI/2026.

Conclusion

Persuasive messages were arranged into six groups: 1) Anemia Impact Group - Don't Believe - Need to Prevent - The message was structured by showing the various impacts of anemia followed by evidence that anemia prevention programs need to be evaluated; 2) Anemia Impact Group - Scientifically Believe - Need to Prevent - The message began with various symptoms that occur due to anemia, followed by various practical steps to prevent anemia; 3) Anemia Impact Group - Control - The message compiled in this group only shows various symptoms of anemia without a message on how to prevent anemia; 4) Anemia Non-Impact Group - No Prevention Needed - The message compiled shows the various impacts of anemia, which are often mild and similar to the symptoms of various diseases; 5) Anemia Non-Impact Group - Need Prevention - The message compiled shows the various impacts of anemia, which are often mild but still require prevention; 6) Anemia Non-Impact Group - Control - The message compiled only focuses on maintaining general health without mentioning anemia.

The persuasive messages were supplemented with messages in Banjar as an input language used by the majority of people in South Kalimantan Province. This was deemed necessary to ensure the messages were better understood by the community. The use of persuasive messages to provide treatment that can influence Threat Appraisal and Efficacy Appraisal must be followed by the use of debriefing as this part is useful for straightening out information after the research is completed so that participants do not receive incorrect information.

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