Primary health Plan focused on preventive services.

Anemia in Adolescence.

Author: John Doe

Professor: Antolin Maury

Ana G. Mendez University.

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**Objective**

To find out which treatment between the use of Placebo and Ferrous Sulfate among 14- and 18-years female adolescents decrease the prevalence of anemia in six months.

**Introduction**

Iron deficiency is estimated to lead to anemia in about two billion people across the world, and another one billion are already Iron deficient. The most prevalent nutritional deficiency is inadequate iron. A program of iron supplementation has the capability of preventing its deficiency in substantial segments of the population as it has been proven among other nations (Jayatissa, & Piyasena 1999). According to the WHO (2012), adolescence is defined as the period between ages 10 and 19 years. This is the age period that experiences an increase in nutritional requirements. In addition to the increased iron needs required for myoglobin and the expanding red cell mass in newly acquired muscle tissues, girls in adolescence require up to 15 percent more iron needed to compensate for the losses due to menstrual flow (Jayatissa, & Piyasena 1999). Correcting and preventing Iron deficiency anemia in this group of the population is urgent due to its negative consequences which include increased morbidity, decreased immunity and impaired cognitive performance. Adolescent girls are considered an important target group since they are the mothers of tomorrow and they can often be easily reached through schools. Even though in principle the treatment and prevention of anemia seem simple for example increasing iron availability in diets and initiating measures to prevent abnormal losses of iron, it is not easy to achieve these goals.

**Problem identification and population**

The regular provision of supplementary foliate and ion tablets to adolescent girls has been effective in preventing anemia (Liu et al.,1995). However, such endeavors have been hampered since the health infrastructure needed for the delivery of these supplements is not adequate. The administration of 60mg iron on a daily basis results in a rapid decline in the percentage of the iron absorbed. It also makes the epithelium lining of the small intestines to be loaded with iron which causes adverse gastrointestinal symptoms. Because the renewal time of the mucosa is about five to six days, a similar dose of iron on a weekly basis should be efficacious given adequate compliance and time, and there would be minimal side effects. Large-scale initiatives to combat the deficiency of Iron have hardly been effective owing to the cost of supplementation that has to be done daily and the extra managerial need whose burden goes to the health sector (World Health Organization,2011).

**Project question**

Does the use of ferrous sulfate for female adolescents between 14 and 18 years of age of Royal Mune Community, reduce the incidence of anemia, compared with another group of adolescents receiving placebo in a period of 3 to 6 months?

In a recent study among nonanemic US women seeking to probe iron deficiency, the Iron supplements were reported to have improved results compared to placebo (Norsworthy et al.,2004). In another research, the participants were administered with iron supplements (10mg/d for 12 months) and reported an improved language development of both nonanemic and anemic preschoolers in Zambia (Daly et al.,1995). According to a WHO report (2012), Iron supplementation was found to be effective compared to placebo in a study seeking to find out which of the two would yield better patient outcomes among adolescents in Sri Lanka. Iron supplements were found to increase the concentration of hemoglobin compared to placebo.

**Description of the proposed solution**

Supplementation via intermittent dosing schedule may be an alternative for large-scale initiatives. The standard practice put in place to prevent anemia among women who are in their menstrual period is the use of folic acid and iron supplements administered on a daily basis. While this intervention has been effective, the day-to-day administration of these supplements has not yielded significant success. These hitches can be attributed to insufficient supplement distribution, low coverage rates and low adherence to the side effects. This paper argues that using iron sulfate as an intervention medication for the prevention of anemia is more effective compared to placebo. But there is a need to change the manner in which it is administered to ensure that there is an increase in patient outcome. Studies among adolescents and preschoolers have justified that intermittent iron supplements have been an effective strategy in improving the status of iron as daily supplementation. Weekly instead of daily supplementation decreases the cost of the program and might increase compliance. Therefore, this paper is of the opinion that weekly supplementation would be effective and the best intervention.

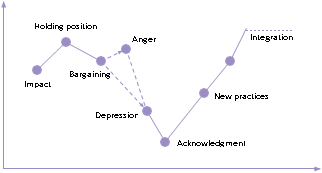
To ensure that the side effects are minimized and that there is an increase in adherence concerning the use of iron supplementation, intermittent intervention should be adopted. The rationale for this intervention is that every 5-6 days, the intestinal cells turn over thereby having a limited absorptive capacity to iron. Therefore, intermittent administration would only expose new epithelial cells to the nutrients which then may help improve the efficiency of the absorption. This intervention may also help to reduce the oxidative stress as well as the frequency of some other side effects that are related to the daily administration of Iron supplements such as constipation and nausea. Experience has also shown that intermittent interventions may also be acceptable to women and enhance compliance concerning supplementation. Further, the use of this intervention may result in the improvement in the foliate status of women before pregnancy which may help prevent some congenital anomalies especially the neural tubes.

Child development, growth, and risk of chronic illnesses in later life depend partly on maternal iron nutrition in the pregnancy period. The prevention of both iron deficiency and anemia in menstruating women and adolescents before pregnancy and the assurance of the recommended reserve levels of iron before pregnancy is an essential goal in public health practice that needs integrated, prolonged and multi-pronged flexible approaches. Foliate and iron deficiency may occur concurrently among adolescents particularly during or after pregnancy. Due to the vital role that folate plays in erythropoiesis, combined folic and iron supplementation may be required to ensure that there is an optimal hematological response among this group.

**Literature that supports the project**

According to the department of nutrition for health and development in WHO, intermittent weekly intervention for folic and iron supplementation has been recommended strongly (World Health Organization,2009). It is suggested that per week intermittent supplementation of Iron among adolescent girls is effective in increasing ferritin levels and hemoglobin concentration which then helps to reduce the prevalence of anemia (World Health Organization,2011). Intermittent administration of Iron has been successful in some countries; also, this technique has registered an increase in compliance levels. A report by WHO (2012) argues that weekly supplementation is advantageous when it comes to cost considerations, the report further argues that this kind of supplementation is also simple and easy to administer leading to higher compliance levels. There are fewer side effects reported when weekly supplementation is used. Even though daily application leads to an increase in serum ferritin, this report argues that this has no significant implication. This report concludes by saying that a weekly supplementation program should be encouraged.

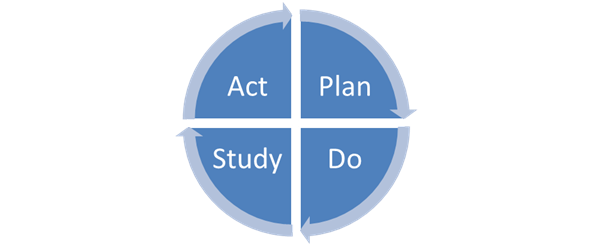
A graph to show the implementation stages of the change

  Time

**Theory of change**

The proposed approach of change is the PDSA theory. Invented by Edward Demings in (1983) this theory helps the practitioners of health to improve the quality of care. The model, therefore, helps to achieve more efficient, safer, patient-centered, effective, equitable and timely care. This model is specifically for learning and change. The model has four significant steps namely Plan, Do, Study and Act (Donnelly& Kirk, 2015).

The planning section is about formulating objectives and goals and defining the problem. The Do phase is about actualizing a given intervention, the Study stage involves monitoring performance, and the Act stage consists of the initiation of long-term measures to ensure a long-term implementation of the proposed intervention.



A plan for the change will include the following steps,

1.) Problem description

2.) Identification of intended participants

3.) Identification of possible setting for the proposed change

4.) Identification of possible setting through which to reach the intended participants

5.) Setting objectives and goals

6.) Selecting an intervention

7.) Resource allocation

8.) Community involvement

9.) Hiring and training staff

10.) Monitoring the progress of the intervention

11.) Evaluating success

**Problem identification**

Before an intervention is planned for, there is the need to have an accurate definition of the issue at hand. This description comes in handy when determining the people who are affected. Also, the definition offers guidance in coming up with a realistic objective for the proposed intervention. In this case the problem is described by the PICOT question - Does the use of treatment with ferrous sulfate to a group of female adolescents between 14 and 18 year, in an interval of 6 month, decrease the prevalence of anemia in adolescence compared with another group of teenagers of the same sex and age, that receive Placebo? The problem is to determine which between Iron supplements and Placebo yields better patient outcomes to help prevent anemia among female adolescents.

**Intended participants**

This is comprised of the group the intervention is intended to have an impact on. The intervention is meant for female adolescents from the age of 14-18 years

**Setting selection**

This stage is where the intervention or activities will occur. The intervention is meant to create a change in a health facility whereby the advanced nursing practitioners will be encouraged to adopt proposed techniques to help prevent anemia among adolescents.

**Objectives and goals**

Having identified the people that should be reached via the proposed intervention, the next thing is to decide what the objectives are. The objectives should be attainable and measurable.

Goal: Determine between Iron and Placebo which treatment has the best patient outcome for preventing anemia among adolescent females.

Objectives: To come up with an evidence best practice that will enhance the outcomes of patients when preventing anemia among adolescent females.

**Intervention**

Adoption of an intermittent administration of iron supplements once in a week. The rationale for this intervention is that every 5-6 days, the intestinal cells turn over thereby having a limited absorptive capacity to iron. Therefore, intermittent administration would only expose new epithelial cells to the nutrients which then may help improve the efficiency of the absorption. This intervention may also help to reduce the oxidative stress as well as the frequency of some other side effects that are related to the daily administration of Iron supplements such as constipation and nausea. Experience has also shown that intermittent interventions may also be acceptable to women and enhance compliance concerning supplementation. Further, the use of this intervention may result in the improvement in the folate status of women before pregnancy which may help prevent some congenital anomalies especially the neural tubes.

**Resource allocation**

This stage involves allocating funds to the various areas identified to help implement the intervention. It includes equipment, office space, and the right personnel. Also, a commitment to effort, time and support needs to be there. It is good to come up with a plan for sourcing funds. The sources of funds can be a private or public sector.

**Community involvement**

The community should be involved in planning since they are the beneficiaries of the intervention. When the members of the community are involved, a sense of ownership is developed, and they are likely to help the intervention succeed. By involving the community, it also becomes easy to obtain resources as well as volunteers.

**Develop materials and activities**

At this stage already, the plan for the critical factors of intervention has been developed, participants identified, goals and objectives formulated and now the materials and activities should be thought of. The intervention will require a change process whereby new policies will be introduced. This means that there is the need to come up with a system of learning that will help impart the knowledge to nursing practitioners, also learning equipment and staff will be required.

**Staffing the intervention**

Once the intervention has been formulated and developed, the next thing is to come up with a staffing plan. The intervention will require registered nurses, licensed medical practitioners and community health workers to implement. To formulate a staffing plan, it is critical to consider the resources available for the effort. If the resources are available and the plan has well-funded a team of the very best qualified is likely to be formulated. Limited resources, on the other hand, may mean listing volunteers.

**Training staff**

This stage is a critical one since it helps to inform the members of the staff about the problem at hand. The training will involve schedule and content. This includes team building, communication skills, and the intervention content.

**Implementation**

This stage involves addressing the issue faced. It involves intervening regarding frequency, duration, and intensity. Supervision is required here to ensure that there is a consistent level of participation by the staff members.

**Monitoring the intervention**

This is essential for all stages to ensure that everything goes according to plan, this will also help identify the barriers and unanticipated problems that might be there.

**Evaluation**

This stage involves monitoring the outcomes against the expected results to find out how well the goals and objectives have been achieved. Efforts in this stage seek to find out how the participants were reached, how the actors perceived the intervention, how the actors responded. Other factors that can be evaluated are the cost implications to determine whether the program was efficient or not by looking at the resource utilized against those allocated. The most important factors to evaluate are the outcomes of the intervention. Changes are noted, and future course of action determined based on them. If there is a positive impact, the intervention can be done in large scale to cover even bigger populations but if the impacts are negative, hitches are identified for correction or a better intervention can be proposed.

**Practice**

To put the intervention in practice, this paper suggest that there is a need to prioritize evidence-based practice in the healthcare system whereby the advanced nursing practice will be based on the latest available information on how best to improve patient outcome when dealing with anemia cases among adolescents females, this paper also argues that the clinical practice should stay abreast with what the latest research has to say about the topic and adopt the best guidelines regarding the best way to practice intermittent iron supplementation.

**Conclusion**

According to the Who, adolescence is defined as the period between ages 10 and 19 years; this is the period that experiences an increase in nutritional requirements. Other than the increased iron needs required for myoglobin and the expanding red cell mass in newly acquired muscle tissues, girls in adolescence require up to 15 percent more iron needed to compensate for the losses due to menstrual flow. Correcting and preventing Iron deficiency anemia in this group of the population is urgent due to its negative consequences which include increased morbidity, decreased immunity and impaired cognitive performance. Adolescent girls are considered an important target group since they are the mothers of tomorrow and they can often be easily reached through schools. Even though in principle the treatment and prevention of anemia seem simple for example increasing iron availability in diets and initiating measures to prevent abnormal losses of iron, it is not easy to achieve these goals. This paper concludes that Iron supplements have an increased patient outcome compared to placebo. The paper concludes that to ensure an increase in compliance, findings, and effectiveness; there is the need to administer these supplements one every week intermittently against daily usage.

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