


ORIGINAL

Effectiveness of diet therapy compared to medical pharmacological treatment for iron deficiency anemia in residents of the temporary shelter in the Jesús del Gran Poder neighborhood, aged 18 to 75 years, Santo Domingo

Eficacia de la dietoterapia, en comparación con el tratamiento médico farmacológico para la anemia ferropénica en los moradores del albergue provisional del barrio Jesús del Gran Poder, en edades de 18 a 75 años, Santo Domingo

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ABSTRACT

Introduction: food plays an essential role in the incorporation of iron, a mineral necessary for the growth and development of the body. Diet therapy is applied to people who suffer from a disease; in this case, iron deficiency anemia, consisting of a decrease in hemoglobin levels in the blood due to iron deprivation.

Objective: to determine the effectiveness of diet therapy compared to pharmacological treatment to treat iron deficiency anemia in people from the Jesús del Gran Poder neighborhood, in the period February-May, Santo Domingo 2021

Method: quasi-experimental longitudinal study, for data collection a sociodemographic data sheet was used and a blood count was performed to corroborate the diagnosis. The sample was divided into a control and experimental group, each group of 15 participants. The control group was given 50 g of oral iron, once a day, and the experimental group received diet therapy workshops for three months.

Results: at the end of the treatment, the results of the intervention showed that 53 % of the experimental group had moderate anemia and 47 % had mild anemia, while 80 % of the control group had anemia and 20 % had mild anemia. After the intervention, 100 % of both groups significantly overcame anemia, demonstrating the effectiveness of the experimental treatment.

Conclusions: a decrease in iron deficiency anemia was obtained compared to the control sample; although the difference between the levels was not significant, there was an efficacy in the application of the natural treatment.

Keywords: Diet Therapy; Pharmacological Treatment; Iron Deficiency Anemia; Blood Count.

RESUMEN

Introducción: la alimentación ocupa un lugar esencial en la incorporación de hierro, un mineral necesario para el crecimiento y desarrollo del cuerpo. La dietoterapia es aplicada a personas que sufren una enfermedad; en este caso, a la anemia ferropénica, consistente en la disminución de los valores de hemoglobina en la sangre por privación de hierro.

Objetivo: determinar la eficacia de la dietoterapia en comparación con el tratamiento farmacológico para tratar la anemia ferropénica en las personas del barrio Jesús del Gran Poder, en el periodo febrero-mayo, Santo Domingo 2021

Método: estudio cuasi experimental de corte longitudinal, para la recolección de datos utilizó una ficha de datos sociodemográficos y se realizó una biometría hemática para corroborar el diagnóstico. La muestra se dividió en un grupo control y experimental, cada grupo de 15 participantes. Al grupo control se le administró 50 g de hierro oral, una vez al día y al experimental talleres de dietoterapia por tres meses.

Resultados: al finalizar el tratamiento los resultados de la intervención el grupo experimental presentó un 53 % anemia moderada y el 47 % anemia leve, así mismo del grupo control el 80 % padecía anemia y el 20 % anemia ligera. Posterior a la intervención el 100 % de ambos grupos superó la anemia significativamente, demostrando la efectividad del tratamiento experimental.

Conclusiones: se obtuvo un descenso de la anemia ferropénica, en comparación con la muestra control; aunque la diferencia entre los niveles no fue significativa, sí existió una eficacia en la aplicación del tratamiento natural.

Palabras clave: Dieto Terapia, Tratamiento Farmacológico, Anemia Ferropénica, Biometría Hemática.

INTRODUCTION

Worldwide, more than 4 billion people suffer from iron deficiency, and it is estimated that about 50 % of the population has iron deficiency anemia. This public health problem mainly affects pregnant women and children.^(1,2,3)

Iron deficiency anemia is a sign of poor nutrition that negatively impacts children's cognitive and physical development. In adults, it can affect physical performance and impair various organ functions. This nutritional disorder is the most common in the world, and the body's physiological needs vary according to age, gender, geographic location, and stages of pregnancy. Therefore, it is essential to pay attention to the nutrition of populations, as much of the problem originates from inadequate nutrition.^(2,4)

The efficacy of intravenous iron infusion therapy in non-pregnant patients with iron deficiency anemia has been investigated, and it has been found that this method may be helpful for those who cannot tolerate oral iron or as initial therapy in specific cases. In addition, intravenous iron sucrose has been used in patients with inflammatory bowel disease, showing to be a more effective treatment by reducing the number of doses needed and associated costs. Clinical trials have also compared intravenous and oral administration routes in postpartum patients, suggesting that intravenous iron could be an effective alternative for treating iron deficiency anemia.^(5,6,7)

In Ecuador, according to the latest Health and Nutrition Survey⁽⁸⁾, up to 2013, prevalences of iron deficiency anemia were reported to be 25,7 % in preschoolers, 3,5 % in schoolchildren, 4,1 % in adolescents aged 12 to 14 years, 8,9 % in adolescents aged 15 to 19 years, and 15,3 % in adults. The indigenous population has a 41,6 % prevalence rate. A National Institute of Statistics report and Census⁽⁹⁾ identified the provinces with the highest poverty levels as Esmeraldas, Morona Santiago, Manabí, and Santo Domingo de los Tsáchilas. Iron deficiency anemia is related to poor nutrition and is influenced by a lack of income and access to health interventions. This type of anemia is a relevant health indicator for global public health since it is among the leading causes of morbidity and mortality, affecting both individual health and social and economic aspects.

Objective

To determine the efficacy of diet therapy compared to pharmacological treatment to treat iron deficiency anemia in people from the Jesús del Gran Poder neighborhood, in February-May, Santo Domingo, 2021.

METHOD

The study used a quantitative approach since the efficacy of diet therapy in curing iron deficiency anemia was measured. It was developed as a field research of quasi-experimental design since it was intended to test the effect of a natural treatment on iron deficiency anemia in a beneficial way, such as a longitudinal cut. The treatment was applied to a sample, the effects of the treatment were observed, the effectiveness of the intervention was measured, and later, the research results were made public.⁽¹⁰⁾

The population is 70 people between the ages of 18 and 75 years old who reside in the facilities where the Six de Diciembre school used to be located in the Jesús del Gran Poder neighborhood, Santo Domingo de los Tsáchilas; however, the exact number of people with iron deficiency anemia was not known, the exact number of people with iron deficiency anemia was not known, because the economic factor made it impossible to apply paraclinical tests to the entire population to determine how many in total had iron deficiency anemia and for reasons of inclusion and exclusion, the questionnaire was first applied to 70 people of whom 50 gave references of symptoms of anemia, so blood biometry tests were applied to these 50 people, resulting in 35 people with results of anemia, of which 30 people were used as a sample (15 for the control sample and 15 for the experimental sample).

The sample was established through non-probabilistic convenience sampling since there was no access to

the complete sampling frame list and to facilitate operationalization at low sampling costs.

Two instruments were used for data collection, one oriented to a 21-question polytomous questionnaire and the other to a blood test (blood biometry). As for the questionnaire, validity was applied through the judgment of experts, consisting of a professional, a physician, and two nursing graduates. The Microsoft Excel data analysis program was used for data processing. The data were processed quantitatively and descriptively, and once the instrument was applied and the data collected, the results were tabulated. The results were presented in frequency tables, the comparison tables in comparative tables, and the Wilcoxon statistic for nonparametric samples was used to analyze efficacy since it did not meet the normality parameter with the population that was worked with.

Informed consent is an informative document inviting a group of people to participate in the research. Thus, accepting and signing the guidelines established by the informed consent authorizes a person to participate in a study, as well as allowing the information collected during the study to be used by the researchers of the project in the elaboration of the analysis and communication of the results. Applying this document was mandatory since the privacy of each person who participated in the study was invaded, highlighting the respect for the confidentiality of each type of information and demonstrating professional ethics.

RESULTS

The range of ages that answered the questionnaire prior to the diagnosis of iron deficiency anemia so that the following results were obtained with the highest percentage were the ages between 46-60 years with 37,1 %, followed by the ages between 31-45 years with 32,9 %, 18-30 years with 24,3 % and with a lower range to the ages of 61-75 years with 5,7 %.

The highest frequency concerning the sex of the persons to whom the instrument was applied was answered by women with 62,86 %. The socioeconomic level of the respondents was low at 90 %, followed by a medium level at 10 %. One hundred percent of the respondents lived in houses/villas, and 100 percent reported having toilets directly discharged to the sea, river, lake, or creek. 75,7 % of the respondents were not affiliated or covered by IESS insurance, ISSFA, or ISSPOL insurance, and 24,3 % had such insurance.

The level of education of the heads of households surveyed is most frequently incomplete secondary school at 31,4 %, followed by complete primary school at 28,6 %, complete secondary school at 24,3 %, incomplete primary school at 11,4 %, and a lower percentage with no studies, which is 4,3 %. The occupations with the highest frequency of respondents are unemployed, with 48,6 %, followed by 37,1 % of workers and artisans, 7,1 % of service workers and traders, 5,7 % are inactive, and a lower percentage of 1,4 % of skilled agricultural and fishing workers. Of the respondents, 92,9 % did not know about iron deficiency anemia, and 7,1 % knew of it. 71,4 % had not been tested in the last three months, and 28,6 % had been tested in the last three months. Table 1 shows a summary of these indicators.

Table 1. Summary of socio-economic indicators of surveyed individuals

Variable		Frequency	%
Age range	18-30	17	24,3
	31-45	23	32,9
	46-60	26	37,1
	61-75	4	5,7
Sex	Female	44	62,86
	Male	26	37,14
Socioeconomic level	Under	63	90
	Medium	7	10
Public or private insurance affiliation	IESS Insurance	17	24,3
	Private Insurance	0	0
Education level of the head of household	No education	3	4,3
	Incomplete primary school	8	11,4
	Primary school complete	20	28,6
	Secondary incomplete	22	31,4
	High school complete	17	24,3
Occupation of head of household	Service workers and traders	5	7,1
	Skilled agricultural and fishing workers	1	1,4
	Workers and craftsmen	26	37,1
	Unemployed	34	48,6
	Inactive	4	5,7
Knowledge about iron deficiency anemia	Yes	5	7,1
	No	65	92,9

Medical check-up in the last three months	Yes	11	28,6
	No	59	71,4
Total		70	100

47,1 % of the respondents almost always had a feeling of fatigue, 45,7 % almost always had a persistent headache, 41,4 % were sleepy for no apparent reason almost always, 42,9 % had a feeling of dizziness and 47,1 % sometimes had their nails split, quickly (table 2).

Table 2. Symptomatology of iron deficiency anemia								
Question asked	Always		Almost always		Sometimes		Never	
	No.	%	No.	%	No.	%	No.	%
Do you feel fatigue?	9	13,2	33	47,1	18	25	10	14,7
Do you have persistent headaches lately?	9	12,9	32	45,7	21	30	8	11,4
Are you sleepy for no apparent reason?	10	14,3	29	41,4	23	32,9	8	11,4
Do you have a feeling of dizziness?	7	10	30	42,9	25	35,7	8	11,4
Do your fingernails break easily?	3	4,3	25	35,7	33	47,1	9	12,9

Respondents ate 64 % always at breakfast, 13,3 % almost always at breakfast, 86,7 % always ate at lunch, 13,3 % almost always at lunch, 52 % always ate at snack, 10,9 % almost always ate at snack, and 37,1 % sometimes ate at snack. Finally, 80 % never ate dinner, 13,2 % sometimes ate, and 3,4 % almost always ate. As for vegetable consumption, 52,9 % never consumed broccoli, followed by 37,1 % who sometimes consumed broccoli, 2,1 % almost always consumed broccoli and 7,9 % who always consumed broccoli, 56,1 % never consumed spinach, 32,5 % sometimes, 3,2 % almost always consumed spinach and 8,2 % always consumed spinach, 53 % never consumed beets, 40,2 % sometimes consumed beets, 2,1 % almost always consumed beets, 4,7 % always consumed beets, 89,2 % never consumed red peppers, 5,2 % sometimes consumed red peppers and finally 3,8 % always consumed red peppers (table 3).

Table 3. Frequency of food and vegetable consumption									
		Always		Almost always		Sometimes		Never	
		%	No.	%	No.	%	No.	%	No.
Power frequency	Breakfast	64	80	6	13,3	0	0	0	0
	Lunch	65	86,7	5	13,3	0	0	0	0
	Snack	45	52	10	10,9	15	37,1	0	0
	Dinner	1	3,4	1	3,4	12	13,2	56	80
Vegetable consumption	Broccoli	8	7,9	4	2,1	24	37,1	34	52,9
	Spinach	4	8,2	3	3,2	22	32,5	41	56,1
	Beets	3	4,7	2	2,1	28	40,2	37	53
	Red bell pepper	1	3,8	0	0	7	5,2	63	89,2

There was equality in food preparation: between fried, fast food, and steamed or boiled (both 38,6 %), followed by 12,9 % roasted or grilled, 5,7 % baked, and 4,3 % stewed or sautéed. 44,3 % believed that iron-rich foods should be consumed once a month, 28,6 % believed that iron-rich foods should not be consumed, 18,6 % believed that iron-rich foods should be consumed once a week, 5,7 % believed that iron-rich foods should be consumed every 15 days, and 2,9 % believed that iron-rich foods should be consumed every day. 71,4 % answered that it is false that oranges help to absorb iron from vegetables, and 28,6 % mentioned that it is true (table 4).

Table 4. Results on iron preparation and perception of iron intake			
		Frequency	%
Food preparation	Fried, fast food	27	38,6
	Steamed or boiled	27	38,6
	Roasted or grilled	9	12,9
	Baked	4	5,7
	Stewed or sautéed	3	4,3
Perception of iron consumption	Every 15 days	1	5,7
	Once a week	13	18,6

	Every day	2	2,9
	Once a month	31	44,3
	It is not necessary to consume it	20	28,6
Perception of the importance of orange juice	Totally true	20	28,6
	Totally false	50	71,4
Total		70	100

The efficacy of the natural treatment was confirmed based on the hemoglobin level of the experimental group, since the p -value=0,001 (table 5).

Table 5. Hemoglobin test results				
Order number	Hemoglobin Values			
	Experimental group		Control group	
	Initials	Finals	Initials	Finals
21042138	10	11,5	9	14
21042139	10,5	12,5	8,5	14,5
21042140	9,5	11,5	9	14,5
21042141	9,9	12,5	8,9	13
21042142	10	13,5	9,5	15
21042143	10,5	11,5	8,5	14,7
21042144	9,5	12	10,5	15
21042145	8,5	12,5	9,5	14
21042146	10,5	12,5	9,5	14,5
21042147	9	11,5	9	15
21042148	10,5	12,5	9	14,5
21042149	8	12,5	9	14
21042150	9	12	10	15
21042151	10	11,5	9	14,5
21042152	9	13,5	10	15

DISCUSSION

The objective of the research was to determine the efficacy of natural treatment about pharmacological treatment to treat iron deficiency anemia, with the result that a diet rich in iron helped to raise hemoglobin levels, a result similar to that of the study conducted by Mantilla⁽¹¹⁾ where he applied a moringa arequipe plus nutritious food in children with iron deficiency anemia, generating the same efficacy.

Therefore, it can be concluded that an excellent strict diet during treatment is effective in treating iron deficiency anemia without the need to take pharmacological drugs, as long as there are no other pathologies that enhance the complication of the condition.

About the second objective, which was to determine the socioeconomic level, the result was that populations of low socioeconomic levels are prone to suffer from pathologies due to the lack of medical check-ups, knowledge, and resources to have a nutritious diet, and the symptoms of iron deficiency anemia go unnoticed. Iron deficiency anemia in any given society, the incidence of the disease is determined mostly by economic factors, low quality of life, lack of food, poor housing conditions, and other symptoms of poverty, which have always been the major causes of disease.^(3,6,7,12)

A low socioeconomic level is a gateway to suffering from diseases such as iron deficiency anemia because they do not have the essential services mentioned above to prevent it.

In the third objective, which was to determine the symptoms and signs of iron deficiency anemia, it was found that the population almost always had headaches, suffered from sleepiness for no apparent reason, and their nails broke quickly, leading to the diagnosis of iron deficiency anemia. Baviera⁽¹³⁾ in her article, mentions that the symptoms of iron deficiency anemia are a feeling of fatigue, headache, sleepiness for no apparent reason, brittle nails, and hair loss. It can be concluded that the population suffered from the symptoms of iron deficiency anemia.

About the fourth objective, which was to determine dietary habits, it was found that the population had an inadequate diet without iron-rich nutrients, which is why iron deficiency anemia was unleashed. According to Castillo and Sanchez⁽¹⁴⁾ in their study, they determined that poor eating habits trigger iron deficiency anemia because they do not consume iron correctly and even evidenced other pathologies as a result.

In conclusion, an inadequate feeding habit triggers iron deficiency anemia, and not only this but also other types of pathologies reach a critical state if it is not diagnosed in time.

CONCLUSIONS

Low-income populations are the ones predisposed to suffer from iron deficiency anemia due to the lack of economic income. The symptoms most frequently presented by the participants were fatigue, sleepiness for no apparent reason, frequent headaches, and dizziness. The participants had inadequate eating habits, a risk factor for iron deficiency anemia, without forgetting that other pathologies may be associated.

A significant decrease in iron deficiency anemia was obtained, and compared with the control sample, the difference between the levels is insignificant. However, there is an efficacy in the application of the natural treatment, showing that a diet rich in iron, as long as there is no other base pathology that complicates it, is as effective as the pharmacological treatment, but with the advantage of not generating secondary complications such as constipation.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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