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Short Communication

Effectiveness of Multigrain Panjiri in Management of Anaemia and Cardio Vascular Efficiency in Tribal Women

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Abstract

Objective of this study was to assess the efficacy of soya multigrain panjiri on anemia profile and cardio vascular efficiency of malnourished women. To conduct the study 100 tribal women were selected as sample. The age range of selected subjects was 19 to 25 years. The inclusion criteria for selection of subjects were NIN classification for anemia. Random sampling was used for selection of subjects. Cyanmet hemoglobin method was used for estimation of hemoglobin while cardiovascular efficiency was measured by modified Harvard step test prepared by Skubic and Hodgkins. The result showed significant impact of supplementation on anemia profile and cardio vascular efficiency of tribal women. It was found that dietary supplementation in the form of multigrain panjiri can be added in management of anemia in tribal women along with other measures as well as enhancement of their cardio vascular efficiency.

Keywords: Soya multigrain panjiri, anemia, cardio vascular efficiency, tribal women.

Introduction

According to Global Nutrition Report[1] 2017 in Italy, under nutrition in India is of serious concern especially when half of women of reproductive age in India are suffering from anaemia. This Global Nutrition Report[1] reported that more than 51 percent women of reproductive age in India are suffering from anaemia while 22 percent are obese. According to reports of National Vector Borne Disease Control Programme about 41.0% women were underweight while 57.6 percent women of reproductive age were anaemic. Anaemia among women of reproductive age is of serious concern because of its detrimental effect on child health.

Despite various governments scheme malnourishment in women of reproductive age is still rampant. Hence supplementation in the form of nutritious rich food may be the answer to find an answer to the control number of malnourished women in our country. One such supplement may be multigrain panjiri, an age old traditional seasonal staple from Punjab region be used as nutritional supplement. Effectiveness of multigrain panjiri in management of iron deficiency anaemia in tribal women of reproductive age group is assessed in the present study. Additionally impact of multigrain panjiri in cardio vascular efficiency in tribal women is assessed in the present study.

Review of Literature: Researchers like Sharda Sidhu et al[2]., Jawarkar et al[3]., Bansal et al[4]. and Upadhye et al[1]. explored the various factors associated with iron deficiency anaemia. Study done by Nanda Gurwara and Reena Barai[5] on Impact of soya multigrain Panjiri supplementation on haemoglobin level among women in Raipur. They found that, dietary supplementation given to anaemic women in the form of soya multigrain Panjiri is useful in boosting their haemoglobin levels. Since none of the studies assessed the impact of dietary supplementation in the form of multigrain panjiri on anaemia profile and cardio vascular efficiency in anaemic tribal women, the present study was planned.

Objectives: The main objective of the present study is to assess the efficacy of soya multigrain panjiri on anaemia profile and cardio vascular efficiency of malnourished women.

Materials and methods

The present study was being carried out on the tribal women selected from colleges' hostels (Women from different areas like Jagdalpur, Bastar, Dantewada, Kanker, Mahasamund, Saraipali, Dhamtari, Sarguja, Ambikapur, Mannendragarh, Raigarh, Dallirajarha) between the age group of 19-23 years. Samples were collected by Random Sampling method. 100 non-anaemic samples were grouped as control group and 100 anaemic sample grouped as experimental group. Cardiovascular efficiency was also measured in both the groups by modified Harvard step test before supplementation.

At first the haemoglobin estimation was be done by Cynamet haemoglobin method for the purpose of collection of both anaemic and non-anaemic samples in the next step of the research, an iron rich nutritious soya multi grain panjiri was be prepared for the purpose of supplementation to the experimental group.

75g (one small katorie) of soyamulti grain panjiri was be measured on electronic weighing machine and packed for each sample per day. The supplementation was given to the period of three months to experimental group. The Rava panjiri 75g was given to control group. After the supplementation of soya multi grain panjiri, again the haemoglobin estimation and measurement of cardiovascular efficiency of experimental group was done to find out the impact of soya multigrain panjiri supplementation on them. After the supplementation of rava panjiri, [According to Institutional Ethics Committee for Human Research Pt. Ravishankar Shukla University Raipur, (C.G.)] again the haemoglobin estimation and measurement of cardiovascular efficiency of control group was done to find out the impact of rava panjiri supplementation on them.

Tools: Estimation of Haemoglobin: Haemoglobin was estimated by Cyanmet haemoglobin method[6]. It uses Drabkin cyanide-ferri cyanide solution. The solution is made up of potassium cyanide (50mg), potassium ferri cyanide (200mg), distilled water (1litre). This solution was kept in brown bottle under cold storage. Haemoglobin cyanide and ferricyanide were converted to cyan met haemoglobin. The absorbance of solution was measured in photoelectric colorimeter at a wavelength of 540nm.

Procedure: 0.2ml of blood was transferred with the help of pipette into a test tube containing 5ml of Drabkin solution. The contents of the tubes were mixed and reading was taken in a photoelectric colorimeter using 540nm. Haemoglobin level was recorded in gm/dl.

Table-1: NIN[7] classification of anaemia.

Classification	Range (g/dl)
Mild	10.0-11.9
Moderate	8.0-9.9
Severe	<7.9
Normal	12 & above

Cardiovascular efficiency: Cardiovascular efficiency was measured by modified Harvard step test prepared by Skubic and Hodgkins[8]. An 18 inch bench was used for exercising. The maximum duration of exercise was 3 minutes. Only one pulse count was taken. The pulse rate was felt at the carotid artery and was converted from one to one and half minutes after exercise. The same procedure was applied for subject NIN stopped before the end of 3 minutes. The formula was employed in computing the subject's cardio-vascular efficiency score.

Design: The one group pre-test-post test design was preferred to conduct the study.

Results and Discussion

The pre-post frequency distribution on the basis of NIN classification of anaemia in different study groups is shown in Table-1.

Table-1: Pre-Post Test Frequency Distribution of Selected Ethnic Tribal Women on the Basis of their Anaemia Profile.

Groups↓	Grades of Anemia	Pre Test (N=50)		Post Test (N=50)	
		Frequency	%	Frequency	%
Experimental Group	Severe (Hb<7.9 g/dl)	02	4.0	-	-
	Moderate (Hb 8-9.9 g/dl)	09	18.0	-	-
	Mild (Hb 10-11.9 g/dl)	39	78.0	11	22.0
	Normal (Hb >12 g/dl)	-		39	78.0
	Total	50	100.0	50	100.0
Control Group	Severe (Hb<7.9 g/dl)	02	4.0	01	2.0
	Moderate (Hb 8-9.9 g/dl)	07	14.0	06	12.0
	Mild (Hb 10-11.9 g/dl)	41	82.0	39	78.0
	Normal (Hb >12 g/dl)			04	8.0
	Total	50	100.0	50	100.0

In experimental group, pre test statistics showing that 4% subjects had severe anaemia, 18% classified as moderately anaemic while 78% were mildly anaemic. The post test frequency distribution for experimental group shows that none of the subjects had severe or in moderate anaemia category while 22.0% came under the category of mild anaemic. The post test frequency distribution reveals that 78% women subjects had normal haemoglobin levels.

In control group, pre test statistics showing that 4% subjects had severe anaemia, 14% classified as moderately anaemic while 82% were mildly anaemic. The post test frequency distribution in control group shows that 2% subjects had severe anaemia and 12% were moderate anaemia while 78% came under the category of mild anaemia. The post test frequency distribution reveals that 8% women subjects had normal haemoglobin levels.

Results indicate that supplementation of multigrain panjiri is beneficial in reducing iron deficiency anaemia in tribal women. This fact is verified by changes in anaemia profile of tribal women placed in experimental and control group.

The pre-post test score on cardio vascular efficiency test is shown in Table-2.

Table-2: Pre-post mean scores on cardiovascular efficiency.

	Cardio vascular efficiency		Mean Difference
	Pre-test (Mean)	Post test (Mean)	
Experimental Group (N=50)	49.88	59.46	9.58*
Control Group (N=50)	48.86	49.01	0.15

* p<.01

A perusal of entries shown in table 2 reveals that cardio vascular efficiency of tribal women belonging to experimental group have increased significantly during study period while no significant variation was observed in cardio vascular efficiency of tribal women belonging to control group.

In the present study multigrain panjiri was prepared by wheat flour 10gm; soya flour 20gm, black till 10gm, ragi 10gm, Jaggery 20gm and ghee 5gm respectively. Soybeans are very rich in nutritive components. Besides the very high protein content, soybeans contain a lot of fibre and are rich in calcium, magnesium and iron. Hence there is no surprise that dietary supplementation in the form of soya multigrain panjiri effectively improved the anaemia profile of tribal women which was also reflected in their enhanced cardio vascular efficiency.

Conclusion

On the basis of results it may be concluded that dietary supplementation in the form of multigrain panjiri can be added in management of anaemia in tribal women along with other measures as well as enhancement of their cardio vascular efficiency.

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