



Effectiveness of drumstick leaves soup on hemoglobin level among antenatal mothers

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Abstract

Antenatal care is a type of preventive health care and also known as prenatal care. The main aim of antenatal care is to provide regular check-ups that allow doctors or midwives to treat and potential health problems throughout pregnancy and to promote healthy lifestyles of both mother and child. The objectives of the study were to assess the hemoglobin level before and after administration of drumstick leaves soup, to find out the effectiveness of drumstick leaves soup in improving hemoglobin level and to associate the hemoglobin level with selected demographic and clinical variables among antenatal mothers. Pre experimental with one group pretest-posttest design was used in this study. The study was conducted in selected rural areas at Kanyakumari District. The samples consisted of 30 antenatal mothers and selected by purposive sampling technique on the basis of their pre-test hemoglobin level. The tools used for data collection were Demographic Variables, Clinical Variables and Hemoglobin Estimation Tool. Among the subjects, 60% had moderate anemia and 40% had mild anemia. At post-test, 53.33% had mild anemia, 40% had normal hemoglobin level and 6.67% had moderate anemia. The study revealed that, the pre-test mean score of hemoglobin level was 10.17 ± 1.04 and post-test was 12.12 ± 1.09 . The obtained 't' value was 13.54 was very higher than the table value. Hence, it was highly significant at <0.05 level.

Keywords: effectiveness, drumstick leaves soup, hemoglobin level, antenatal mothers

Introduction

“Let food be thy medicine and medicine be thy food”

Hippocrates

Pregnancy, also known as gestation, is the time during which one or more offspring develops inside a woman [1]. Prenatal care is also known as antenatal care. It is a type of preventive healthcare. Its goal is to provide regular check-ups that allow doctors or midwives to treat and prevent potential health problems throughout the course of the pregnancy and to promote healthy lifestyles that benefit both mother and child. During check-ups, pregnant women receive medical information over maternal physiological changes in pregnancy, biological changes, and prenatal nutrition including prenatal vitamins. Recommendations on management and healthy lifestyle changes are also made during regular check-ups. The availability of routine prenatal care, including prenatal screening and diagnosis, has played a part in reducing the frequency of maternal death, miscarriages, birth defects, low birth weight, neonatal infections and other preventable health problems. The World Health Organization (WHO) reported that in 2015 around 830 women died every day from problems in pregnancy and childbirth. Only 5 lived in high-income countries. The rest lived in low-income countries [2].

Nutrition during pregnancy is important to ensure healthy growth of the fetus. Nutrition during pregnancy is different from the non-pregnant state. There are increased energy requirements and specific micronutrient requirements. Women benefit from education to encourage a balanced energy and

protein intake during pregnancy. Some women may need professional medical advice if their diet is affected by medical conditions, food allergies, or specific religious/ethical beliefs [1].

Anemia during pregnancy is a public health problem especially in developing countries and is associated with adverse outcomes in pregnancy. World Health Organization (WHO) has defined anemia in pregnancy as the hemoglobin (Hb) concentration of less than 11 g/dl. Anemia in pregnancy is associated with increased risk of preterm birth and low birth weight babies [3].

Drumstick leaves has been used as a traditional medicine around the world, for anemia, skin infections, blackheads, anxiety, bronchitis, catarrh, chest congestion, asthma, blood impurities, cholera, glandular, swelling, headaches, conjunctivitis, cough, diarrhea, eye and ear infections, fever, abnormal blood pressure, hysteria, pain in joints, pimples, psoriasis, respiratory disorders, scurvy, semen deficiency, sore throat, sprain, tuberculosis, for intestinal worms, lactation, diabetes and pregnancy [4].

Need for the Study

Pregnant women should take into account the many healthcare and lifestyle considerations since pregnancy women need healthy and nutritious food in order for their baby to be healthy. The lack of nutritional and other factors may cause many of the problems during the antenatal period. One of the major problems can be detected in antenatal mothers in developing countries such as India is anemia during pregnancy.

In developed countries, it is estimated that approximately 2% of woman are anemic; in developing world, this figure may be as high as 50% and this contributes to the high rate of maternal mortality. Iron, folic acid, and vitamin B₁₂ deficiencies are more common; the unavailability of nutritious food, food taboos, and eating and cooking customs all play a part. In order to prevent anemia, midwives must not only understand the medical problem but also any social circumstances that give rise to it. It has been estimated that over half of the pregnant woman have a hemoglobin (Hb) level indicative of anemia. In industrialized countries, anemia in pregnancy occurs in less than 20% of woman. Published rates of prevalence for developing countries range from 35% to 72% for Africa, 37% to 75% for Asia, and 37% to 52% for Latin America.

According to World Health Organization, the prevalence of anemia in developing countries among pregnant women averages 56% ranging between 35-100%, in the year 2009 among different regions of the world. Various studies from different regions of the country have reported the prevalence of anemia to be between 33-100%. In India, the prevalence of iron deficiency anemia is perhaps the highest in the world that is 80% among pregnant women are affected [5].

Studies highlighting the problem of anemia among pregnant women are very indecisive, and, hence, this study was undertaken with an objective to determine the effectiveness of drumstick leaves soup among antenatal mothers with anemia.

Statement of the Problem

“A Study to Assess the Effectiveness of Drumstick Leaves Soup on Hemoglobin Level among Antenatal Mothers in Selected Rural Areas at Kanyakumari District, Tamilnadu, India”.

Objectives of the Study

- To assess the hemoglobin level before and after drumstick leaves soup administration among antenatal mothers.
- To find out the effectiveness of drumstick leaves soup administration on hemoglobin level among antenatal mothers.
- To associate the pre-test hemoglobin level with selected demographic variables among antenatal mothers.
- To associate the pre-test hemoglobin level with selected clinical variables among antenatal mothers.

Hypotheses

H₁: There will be a significant improvement in hemoglobin level before and after administration of drumstick leaves soup among antenatal mothers.

H₂: There will be a significant association between the improvement of hemoglobin level and selected demographic variables among antenatal mothers.

H₃: There will be a significant association between the improvement of hemoglobin level and selected clinical variables among antenatal mothers.

Research Approach and Design

The research approach used for this study was quantitative approach. Pre experimental with one group pretest-posttest design was used in this study. The schematic diagram of study

design is given below:

O₁ X O₂

O₁ – Pre-test assessment of hemoglobin level among antenatal mothers

X – Exposure to an intervention (Drumstick leaves soup administration)

O₂ - Post-test assessment of hemoglobin level among antenatal mothers

Variables

Independent variable - Drumstick leaves soup

Dependent variable - Hemoglobin level

Settings of the Study

The study was conducted in selected rural areas at Kanyakumari District. These settings were selected because of the availability of samples and familiarity of the setting.

Population and Sample

The target population of the study was all antenatal mothers who are residing in selected rural areas at Kanyakumari District. Antenatal mothers between the age group of 19 and 40 years and who fit into the inclusion criteria were selected as samples.

Sample Size and Sampling Technique

The samples consisted of 30 antenatal mothers. They were selected by purposive sampling technique on the basis of their pre-test hemoglobin score.

Criteria for Sample Selection

Inclusion Criteria

Antenatal mothers who

- Were in the age group between 19 and 40 years
- In the second trimester
- Were primi gravida
- Had the hemoglobin level below 10 gm/dl
- Were present during the study period
- Can able to understand Tamil

Exclusion Criteria

Antenatal mothers who

- Had high risk pregnancies
- Residing in selected villages
- Had normal hemoglobin level in the result of pre-test
- Not willing to participate in the study
- We're receiving any other alternative therapy

Research Tool

The researcher used three data collection instruments.

Section – 1. Demographic Variables – It helps to collect the baseline socio demographic information about antenatal mothers. It consisted of age, education, occupation, religion, type of family, monthly income and sources of information.

Section – 2. Clinical Variables - It helps to collect the health related information about antenatal mothers. It consisted of age at menarche, menstrual cycle, weeks of gestation, dietary pattern and antenatal visit.

Section – 3. Hemoglobin Estimation Report – It helps to collect the hemoglobin level among antenatal mothers from laboratory. According to the hemoglobin level, anemia classified into the following,

Normal	-	>12 g/dl
Mild anemia	-	10 – 12 g/dl
Moderate anemia	-	7 – 10 g/dl
Severe anemia	-	<7 g/dl

Content Validity

The demographic variables, clinical variables and preparation of drumstick leaves soup outline were given to seven experts in the field of nursing, obstetrics, biostatistics and medicine. They were requested to give their valuable opinion on the appropriateness and relevance of the tool. There was 100% agreement for the tool as given by the experts.

Pilot Study

A pilot study was conducted at selected rural area at

Results

Kanyakumari District among 5 subjects in a manner in which the final study would be done. Data were analyzed to find out the suitability of statistics. The pilot study revealed that, the study was feasible.

Data Collection Procedure

The investigator introduced herself to the subjects and obtained their consent. Then, the study was explained and assurance given regarding confidentiality of the answers. The pre-test estimation of hemoglobin level was performed in the Primary Health Centre. The samples who fit into the inclusion criteria were selected. After pre-test, the drumstick leaves soup was given to the antenatal mothers about 200 ml for 4 weeks daily. After that, post-test assessment of hemoglobin level was done after 4 weeks. Then, the investigator thanked them for their co-operation. All the data were kept confidential.

Table 1: Distribution of Subjects according to the Demographic Variables (n=30)

Demographic Variables	Frequency (f)	Percentage (%)
Age(in years)		
19-23	8	26.67
24-28	10	33.33
29-33	7	23.33
34-40	5	16.67
Education		
School education	7	23.33
Under graduate	16	53.34
Post graduate	7	23.33
Occupation		
Housewife	12	40
Coolie worker	0	0
Private employee	8	26.67
Government employee	10	33.33
Religion		
Hindu	11	36.67
Christian	14	46.67
Muslim	5	1.66
Type of Family		
Joint	9	30
Nuclear	21	70
Family Monthly Income		
Below Rs.5000	0	0
Rs.5001-10,000	10	33.33
Rs.10,001-15,000	17	56.67
Rs.15,001-20,000	3	10
Above Rs.20,000	0	0
Sources of Information		
Electronic media	8	26.67
News paper	10	33.33
Medical personnel	12	40

Table 1 showed that, 33.33% of the samples were in the age group of 24 – 28 years, 53.34% were under graduate, 40% of them were housewives, 46.67% were Christians, 70% were

belongs to nuclear family, 56.67% were having the family income Rs. 10,001 – 15,000 and 40% were got health information through medical personnel.

Table 2: Distribution of Subjects according to the Clinical Variables (n=30)

Clinical Variables	Frequency (f)	Percentage (%)
Age at Menarche (in Years)		
Before 9	0	0
10 to 12	10	33.33
13 to 15	16	53.34
Above 15	4	13.33
Menstrual Cycle		
Regular	30	100
Irregular	0	0
Weeks of Gestation		
13-16	10	33.33
17-20	12	40
21-24	8	26.67
Dietary Pattern		
Vegetarian	0	0
Non vegetarian	30	100
Antenatal Visit		
Regular	30	100
Irregular	0	0

Table 2 inferred that, 53.34% were attained their menarche between the age of 13 – 15 years, all the samples got regular menstrual cycle, 40% of samples are in 17 – 20 weeks of

gestation, all samples belongs to non-vegetarian and all of them follows regular antenatal visit.

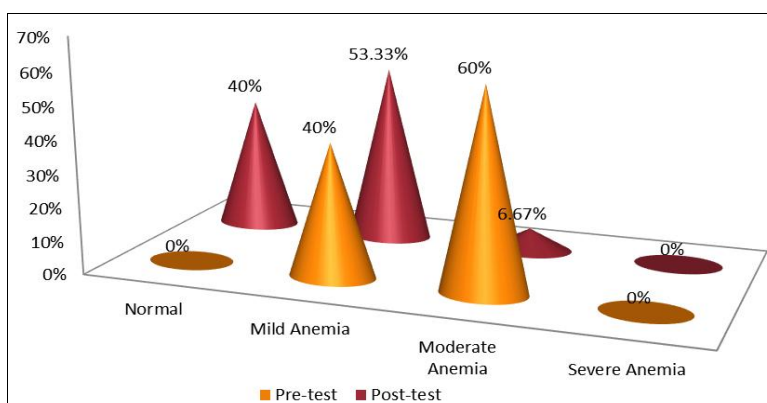


Figure 1: Distribution of Antenatal Mothers according to the Hemoglobin Level

The above Figure revealed that, 60% of antenatal mothers had moderate anemia and 40% had mild anemia in pre-test and 53.33% had mild anemia, 40% had reached normal

hemoglobin level and 6.67% had moderate anemia in post-test.

Table 3: Effectiveness of Drumstick Leaves Soup among Antenatal Mothers (n=56)

Variable	Pre-test		Post-test		Mean Difference	Paired 't' test Value	P Value
	Mean	SD	Mean	SD			
Hemoglobin Level	10.17	1.04	12.12	1.09	1.95	13.54	$P < 0.005$

Table 3 stated that, the pre-test hemoglobin level was 10.17 ± 1.0 and the post-test hemoglobin level was 12.12 ± 1.09 .

The obtained 't' test value 13.5 was very higher than the table value. Hence, it was highly significant at 0.05 level.

Table 4: Association between Pre-test Hemoglobin Level and Selected Demographic Variables (n=30)

Demographic Variables	Level of Hemoglobin		χ^2	P Value
	Mild	Moderate		
Age (in Years)				
19-23	2	6	1.76	7.82
24-28	4	6		
29-33	3	4		
34-40	3	2		

Education				
School Education	4	3	11.99	5.99*
Under Graduate	2	14		
Post Graduate	6	1		
Occupation				
House Wife	8	4	4.96	7.82
Coolie Worker	0	0		
Private Employee	2	6		
Government Employee	2	8		
Religion				
Hindu	5	6	1.05	5.99
Christian	6	8		
Muslim	1	4		
Type of Family				
Joint	3	6	0.22	3.84
Nuclear	9	12		
Family Monthly income				
Below Rs 5000	0	0	1.29	9.49
Rs 5001-10000	3	7		
Rs 10001-15000	7	10		
Rs 15001-20000	2	1		
Above Rs 20000	0	0		
Sources of Information				
Electronic media	3	5	6.48	5.99*
News paper	7	3		
Medical personnel	2	0		

*Significant at 0.05 level

The above Table depicted that, there was a significant association between pre-test hemoglobin level and education ($\chi^2=11.99$) and sources of information ($\chi^2=5.99$) among antenatal mothers. There was no significant association between pre-test hemoglobin level and age ($\chi^2=1.7$), occupation ($\chi^2=4.96$), religion ($\chi^2=1.05$), type of family ($\chi^2=0.22$) and family monthly income ($\chi^2=1.29$).

Table 5: Association between Pre-test Hemoglobin Level and Selected Clinical Variables (n=30)

Clinical Variables	Level of Hemoglobin		χ^2	P Value
	Mild	Moderate		
Age at Menarche(in Years)				
Before 9	0	0	0.19	7.82
10 to 12	4	6		
13 to 15	6	10		
Above 15	2	2		
Menstrual Cycle				
Regular	12	18	0	3.84
Irregular	0	0		
Weeks of Gestation				
13-16 Weeks	3	7	2.8	5.99
17-20 Weeks	7	5		
21-24 Weeks	2	6		
Dietary Pattern				
Vegetarian	0	0	0	3.84
Non Vegetarian	12	18		
Antenatal Visit				
Regular	12	18	0	3.84
Irregular	0	0		

The Table – 5 inferred that, there was no significant association between pre-test hemoglobin level and age at menarche ($\chi^2=0.19$), menstrual cycle ($\chi^2=0$), weeks of

gestation ($\chi^2=2.8$), dietary pattern ($\chi^2=0$) and antenatal visit ($\chi^2=0$).

Discussion

The first objective of the study was to assess the hemoglobin level before and after drumstick leaves soup administration among antenatal mothers

At pre-test, 60% of antenatal mothers had moderate anemia and 40% had mild anemia in pre-test and 53.33% had mild anemia, 40% had reached normal hemoglobin level and 6.67% had moderate anemia in post-test.

A similar study conducted by Premranjan, K.C. and Kumar, G.S. (2013) on “Anemia among Antenatal Mothers with Better Health Services in a Rural Area in India”. A total of 157 antenatal mothers participated in the study. About 94% found to be anemia. The study findings revealed that, a majority of them were mild anemic, followed by moderate and severe anemia [6].

The second objective of the study was to find out the effectiveness of drumstick leaves soup administration on hemoglobin level among antenatal mothers

The pre-test hemoglobin level was 10.17 ± 1.0 and the post-test hemoglobin level was 12.12 ± 1.09 . The obtained ‘t’ test value 13.5 was very higher than the table value. It was highly significant at 0.05 level. Hence, the H_1 (There will be a significant improvement in hemoglobin level before and after administration of drumstick leaves soup among antenatal mothers) was accepted.

The above findings supported by Sindhu S, Mangala S, and Sherry B. on “Efficacy of Moringa Oleifera in Treating Iron Deficiency Anemia in Women of Reproductive Age Group”. A simple random sampling of 60 women suffering from IDA

was taken where 30 women were assigned to the intervention group and 30 to the control group. Diagnosis of anemia was done using Tallqvist's hemoglobin scale. The intervention group was then given a therapy which consisted of 100gm of *Moringa oleifera* and jaggery (dry weight) in a ratio of 80:20 for thirty days. After thirty days the haemoglobin levels were analyzed again and recorded. This study shows that, *Moringa oleifera* with jaggery has significantly improved hemoglobin levels of anemic women [7].

The third objective of the study was to associate the pre-test hemoglobin level with selected demographic variables among antenatal mothers

There was a significant association between pre-test hemoglobin level and education ($\chi^2=11.99$) and sources of information ($\chi^2=5.99$) among antenatal mothers. There was no significant association between pre-test hemoglobin level and age ($\chi^2=1.7$), occupation ($\chi^2=4.96$), religion ($\chi^2=1.05$), type of family ($\chi^2=0.22$) and family monthly income ($\chi^2=1.29$). Hence, the H_2 (There will be a significant association between the improvement of hemoglobin level and selected demographic variables among antenatal mothers) was partially accepted.

The fourth objective of the study was to associate the pre-test hemoglobin level with selected clinical variables among antenatal mothers

There was no significant association between pre-test hemoglobin level and age at menarche ($\chi^2=0.19$), menstrual cycle ($\chi^2=0$), weeks of gestation ($\chi^2=2.8$), dietary pattern ($\chi^2=0$) and antenatal visit ($\chi^2=0$). Hence, the H_3 (There will be a significant association between the improvement of hemoglobin level and selected clinical variables among antenatal mothers) was rejected.

Implications of the Study

Nursing Education

Health education programs can be arranged in primary health centre and sub centre for educating antenatal mothers. Demonstration session can be conducted in nursing institutions to motivate the nursing students. Nurse educator ensures that student nurses should get opportunity for reading current journals and magazines to improve their knowledge on use of simple herbal remedies.

Nursing Practice

Nursing personnel are in the best position to conduct exercise programs to improve the wellbeing of the patients. The findings of the study would help the nurses in planning, organizing, implementing the alternative therapies in clinical setting. The nurses and health workers in community need to attend in service education programs to update their knowledge. This study facilitates to educate the drumstick leaves soup preparation in order to improve the hemoglobin level among anemic antenatal mothers.

Nursing Research

This study findings helps to expand professional knowledge upon with further studies can be conducted. The study can be used for guidance of researcher to make their study effective.

This study adds to the existing body of knowledge in research. Extensive research can be conducted to identify several more effective methods for improving hemoglobin level by using various methods. These study findings can be utilized for review of literature. This enables the nurses to update their knowledge, skills and quality of care.

Nursing Administration

Nurse administrators can motivate the staff nurses to conduct continuing education program. Professional interaction between nurse and community people will help to improve professional standards and create better image in their community. Nurse administrators can implement the importance of these exercises through posters, handouts, booklets, etc.

Recommendations

Based on the findings of the study, the several recommendations were drawn for the further study. A similar study can be replicated with larger samples for better generalization. A similar study can be replicated with control group. A descriptive study can be conducted to describe the health benefits of drumstick leaves soup among antenatal mothers. The study can be conducted with other remedies like beetroot, amla, dates, ghee, honey, etc.

Conclusion

The present study assessed the effectiveness of drumstick leaves soup on improvement of hemoglobin level among antenatal mothers. Early detection, management, nutrition awareness and dietary modification would reduce the severity of anemia. The findings of the study revealed that, antenatal mothers showed a significant improvement after taking drumstick leaves soup. Hence, the drumstick leaves soup administration can be incorporated as an effective method on improvement of hemoglobin level among antenatal mothers. This may be promoted in the community as a prophylactic and a dietary supplementation in anemic women.

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