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A QUASI-EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF ACUPRESSURE THERAPY ON HEMOGLOBIN LEVEL AMONG ANEMIC ADOLESCENT GIRLS IN SELECTED SCHOOLS OF AMRITSAR, PUNJAB.

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ABSTRACT

Background: Objectives:1. To assess the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group. 2. To assess the post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group 3. To compare the pre and post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group. 4. To find the association of pre-interventional Hemoglobin level among Anemic Adolescent Girls with selected socio-demographic variables in experimental group and control group. Material and method: A Quasi-Experimental study was conducted to evaluate the effectiveness of Acupressure Therapy on Hemoglobin Level among Anemic Adolescent Girls. Total 20 anemic adolescent girls were selected using random sampling technique for the study. The hemoglobin was assessed using cyanmethemoglobin method. Results: Maximum number of adolescent girls were having moderate level of anemia in experimental group whereas in control group equal number of adolescent girls were having mild and moderate anemia. Equal number of the Anemic Adolescent Girls in experimental group were having moderate while in control group maximum number of adolescent girls were having mild level of anemia and the intervention acupressure therapy had a significant effect on the level of hemoglobin among adolescent girls in experimental group. Conclusion: Acupressure therapy had a significant effect on the level of hemoglobin among adolescent girls.

Keywords: *Acupressure therapy, Hemoglobin level, Anemic Adolescent Girls.*

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Author, Ms. Jatinder Kaur is a Professor at Chief Khalsa Diwan International Nursing College, Amritsar, Punjab, India. She has a strong academic and clinical background in nursing. Her work reflects interest in complementary interventions such as acupressure and therapeutic techniques for pain management. She is also engaged in promoting safe and effective healthcare practices, particularly in areas related to clinical procedures and patient safety. Through her teaching and research, she contributes to advancing nursing education and improving healthcare outcomes.

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INTRODUCTION

Anemia is a serious general health issue in India which influence female all through her life. Anemia restricts the growth, academic capability, working capacity. It brings down the focus in routine work, person become more susceptible to acquire contaminated diseases and bring down the task productivity in both the genders. Anemia in women is related to pre-term birth and maternal morbidity and mortality during pregnancy. Puberty is a good time to take an action to mark the issue, as this is the crucial period of growth.[1]

Adolescent age is the stage from 10-19 years of age. Adolescents are the distinctive part of life with the rapid overall growth. In total 1.2 billion of the world's population are the adolescents. It estimate about one sixth of the world's population. World Health Organization assist many countries to secure the health of their nation's adolescents with EBP and by putting preferences on their believes and choices.[2]

An Acupressure technique was created a long ago in China as alternative treatment therapy. The principle behind the acupressure therapy is triggering the acupressure point on the body around the meridian points. During acupressure therapy the pressure is applying with thumb of the hands at the particular points to maintain the passage of the psychological energy throughout the body. By putting pressure and relieving the acupressure points it will help in reducing the muscular rigidity which in result in flow of energy in the body.[3]

Anemia is a worldwide common health issues among teenagers. Anemia influences the physical as well as the mental health. Teenagers are the high-risk population group for anemia as this is the age of speedy growth. Teenager girls undergone anemia the most because of the discriminating behavior of our society. Beginning of menarche again is the contributing factor of anemia among teenage girls. Many studies focus attention on increasing number of anemia among teenager girls.[4]

A Pre-experimental study was conduct to assess the effect of acupressure therapy on Hemoglobin level among teenage girls at Tarvna Pembangunan Intensive High School in Surabaya. The total of 25 subjects was chosen using purposive sampling technique. Subjects were trained to perform self acupressure therapy for every 2 day for 10 minutes for 2 months from Sep to Nov 2021. The pre-interventional and post-interventional Hb level was examined using an electric Hemoglobinometer. Finding of the study revealed that before intervention 44% of the subjects had hemoglobin level around 11-12mmHg which was increased after intervention with more than half (53%) of the subjects were having 3-14 mmHg hemoglobin level. So it can be concluded that acupressure therapy has influence on increasing hemoglobin level of teenage girls.[5]

Statement of the problem

A Quasi-Experimental study to evaluate the effectiveness of Acupressure Therapy on Hemoglobin Level among Anemic Adolescent Girls in selected schools of Amritsar. Punjab**.**

Aim of the study

The aim of the study is to evaluate the effectiveness of Acupressure Therapy on Hemoglobin level among Anemic Adolescent girls.

Objectives

1. To assess the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.
2. To assess the post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group
3. To compare the pre and post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

MATERIAL AND METHODS

The quantitative research approach and Quasi-experimental Research Design was used to accomplish the objectives of the study. Senior secondary schools of Amritsar-I were selected for the present study. Total 20 adolescent girls

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who were found anemic during screening were selected using purposive sampling technique for the study. Among total sample 10 girls were in experimental group and 10 girls were in control group. Tools used for the study include socio-demographic profile and cyanmethemoglobin method was used to assess the hemoglobin level. The intervention was performed on experimental group for 15 minutes sessions for 4 weeks at SP6, ST36 and LV3 points. The data was collected before and after intervention using cyanmethemoglobin method.

RESULTS

SECTION-A

SAMPLE CHARACTERISTICS

Table 1 : Frequency and percentage distribution of Adolescent Girls in Experimental and Control Group according to Socio-demographic Variables N=20

Demographic Variables	Experimental Group (n= 10)		Control Group (n=10)			
	N	%	n	%	df	χ^2
1. Age (in years)						
a) 13	2	20	0			
b) 14	3	30	3	30	3	5.600^{NS}
c) 15	3	30	7	70		
d) 16	2	20	0	0		
2. Class						
a) VII	5	50	5	50	1	$.000^{NS}$
b) VIII	5	50	5	50		
3. Socio-economic status						
a) Upper class	0	0	0	0	1	$.000^{NS}$
b) Upper Middle class	7	70	7	70		
c) Lower Middle class	3	30	3	30		
d) **Lower class**	0	0	0	0		
4. Residential area						
a) Urban	7	70	6	60	1	$.220^{NS}$
b) Rural	3	30	4	40		
5. Dietary Pattern						
a) Vegetarian	8	80	8	80	1	$.000^{NS}$
b) Non-Vegetarian	2	20	2	20		
6. Menarche						
a) Yes	8	80	7	70	1	$.267^{NS}$
b) No	2	20	3	30		
7. Taken Iron Supplement (within 3 months)						
a) No	10	100	10	100		
b) Yes	0	0	0	0		

Table 1 reveals the frequency and percentage distribution of sample characteristics of selected adolescent anemic girls in experimental and control group.

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- **According to age**, majority of the anemic adolescent girls in experimental group were in the age group of 13 and 14 years while rest were in the age group of 13 and 16 years whereas in control group majority (70%) of the anemic adolescent girls were 15 years old followed by (30%) were of 14 years.
- **According to class**, both in experimental and control group equal number of the students were studying VII and VIII class.
- **According to socio-economic status**, majority (70%) of the anemic adolescent girls in the experimental group and control group were from upper middle class followed by (30%) of the anemic adolescent girls were from lower middle class.
- **According to residential area**, majority (70%) of the anemic adolescent girls were belongs to urban area followed by (30%) of the anemic adolescent girls were belongs to rural area whereas in control group majority (60%) of the anemic adolescent girls were belongs to urban area followed by (40%) of the anemic adolescent girls were belongs to rural area
- **According to the dietary pattern**, in experimental group majority (80%) of the anemic adolescent girls were vegetarian followed by (20%) of the anemic adolescent girls were non-vegetarian whereas in control group majority (70%) of the anemic adolescent girls were vegetarian followed by (30%) of the anemic adolescent girls were non-vegetarian.
- **According to menarche**, in the experimental group majority (80%) of the anemic adolescent girls have started their menstruation period followed by (20%) of the anemic adolescent girls have not started their menstruation period yet whereas in the control group majority (70%) of the anemic adolescent girls have started their menstruation period followed by (30%) of the anemic adolescent girls have not started their menstruation period yet.
- **According to taking iron supplementation from last 3 months**. None of the anemic adolescent girls in experimental and control group have taken iron supplementation from last 3 months.

SECTION- B

OBJECTIVE WISE ANALYSIS

Objective 1: To assess the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

Table 2: Frequency, percentage and mean distribution of pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group. N=20

Hemoglobin Level	Experimental group N=10				Control group N=10			
	n	%	Mean	S.D	n	%	Mean	S.D
Mild (10.0 -11.9 g/dl)	4	40			5	50		
Moderate (7.0 -9.9 g/dl)	6	60			5	50		
Sever (<7.0 g/dl)	-	-	10.22	1.34	-	-	10.51	1.266

Table 2. depicts the frequency, percentage and mean distribution of the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group with mean and standard deviation (Mean =10.22, SD=1.34 and Mean=10.51, SD=1.266) in experimental and control group respectively. In experimental group maximum (60%) of the adolescent girls were having moderate level of anemia followed by (40%) were having mild level of anemia whereas in control group equal number of adolescent girls were having mild and moderate level of anemia

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Hence, it can be concluded that maximum number of adolescent girls were having moderate level of anemia in experimental group whereas in control group equal number of adolescent girls were having mild and moderate anemia.

Objective 2: To assess the post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

Table 3: Frequency, percentage and mean distribution of post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group. N=20

Hemoglobin Level	Experimental group N=10				Control group N=10			
	n	%	Mean	S.D	n	%	Mean	S.D
Mild (10.0 -11.9 g/dl)	5	40	10.22	1.34	6	60	10.51	1.266
Moderate (7.0 -9.9 g/dl)	5	60			3	30		
Sever (<7.0 g/dl)	-	-			1	10		

Table depicts the Frequency, percentage and mean distribution of post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group with mean and standard deviation (Mean=10.22, Standard Deviation=1.34, Mean=10.51, Standard Deviation=1.266) respectively. Equal number of the Anemic Adolescent Girls in experimental group were having moderate and mild level of anemia while in control group maximum of the Anemic Adolescent Girls were having mild level of anemia followed by 30% were having moderate level followed 10% were having sever level of anemia.

Hence it is concluded that Equal number of the Anemic Adolescent Girls in experimental group were having moderate and mild level of anemia while in control group maximum number of adolescent girls were having mild level of anemia.

Objective 3: To compare the pre- and post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

Table 4: Comparison of the pre-and post-intervention hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

Intervention	Experimental Group N=10		Control Group N=10		df	t
	Mean	SD	Mean	SD		
Pre-interventional Score	10.22	1.34	10.51	1.266	18	0.50
Post-Interventional Score	10.41	1.17	10.47	1.4	18	0.10
	Df	T	Df	T		
	9	1.912***	9	.383		

*** significant at p<0.005

Table 4 depicts the comparison of the pre-and post – intervention hemoglobin level among Anemic Adolescent Girls in experimental group and control group. The pre interventional and post-interventional Mean and Standard Deviation score among experimental group was (Mean=10.22 Standard Deviation =1.34 and Mean 10.41, Standard Deviation =1.17) respectively with df= 9 and t=1.912 while the pre interventional and post-interventional Mean and

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Standard Deviation score among control group was (Mean=10.51, Standard Deviation =1.266 and Mean 10.47, Standard Deviation =1.4) respectively with df= 9 and t=.383. The pre interventional Mean and Standard Deviation score among experimental group and control group was (Mean=10.22 Standard Deviation =1.34 and Mean 10.51, Standard Deviation =1.26) respectively with df= 18 and t=0.50 while The post-interventional Mean and Standard Deviation score among experimental group and control group was (Mean=10.41 Standard Deviation =1.17 and Mean 10.47, Standard Deviation =1.4) respectively with df= 18 and t=0.10.

Therefore, it can be concluded that the intervention acupressure therapy do have a significant effect on the level of hemoglobin among adolescent girls in experimental group. Hence, null hypothesis is rejected.

CONCLUSION

The present quasi-experimental study concluded that acupressure therapy was effective in improving the hemoglobin level among anemic adolescent girls in selected schools of Amritsar, Punjab. The finding revealed a statistically significant increase in post-interventional hemoglobin levels in experimental group as compared to the control group. Thus, acupressure therapy can be safe, non-invasive, cost-effective complementary intervention for managing anemia among adolescent girls.

DISCUSSION

To assess the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

In the present study the frequency, percentage and mean distribution of the pre-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group with mean and standard deviation (Mean =10.22, SD=1.34 and Mean=10.51, SD=1.266) in experimental and control group respectively. In experimental group maximum (60%) of the adolescent girls were having moderate level of anemia followed by (40%) were having mild level of anemia whereas in control group equal number of adolescent girls were having mild and moderate level of anemia.

These findings are about to similar in a study conducted in Government Higher Secondary School, Hassan District, Karnataka, India. Sample size of the study were 60 adolescents girls. The sample was divided into 30 girls were in experimental group and 30 girls were in control group with Hb < 11.9 g/dl. Quasi-experimental, pre-test–post-test control group design was used for the study. Result of the study shows that Pre-test mean Hb in experimental group was10.64 ± 0.92 g/dl whereas Pre-test mean Hb in control group was10.60 ± 0.87 g/dl. Majority (70%) had mild anemia (10.0–11.9 g/dl); 30% moderate anemia (7.0–9.9 g/dl).[6]

To assess the post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

In the present study the Frequency, percentage and mean distribution of post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group with mean and standard deviation (Mean=10.22, Standard Deviation=1.34, Mean=10.51, Standard Deviation=1.266) respectively.

A similar study was conducted at Residential school, Secunderabad. Experimental with random assignment design was used for the study. The results of the study depicted that after intervention (Acupressure on SP6, LI10 for 18 min × 28 days) Post-test mean Hb: 11.85 g/dl. Hence there was Significant improvement in experimental group ($p < 0.01$).

To compare the pre- and post-interventional Hemoglobin level among Anemic Adolescent Girls in experimental group and control group.

In the present study the pre interventional and post-interventional Mean and Standard Deviation score among experimental group was (Mean=10.22 Standard Deviation =1.34 and Mean 10.41, Standard Deviation =1.17) respectively with df= 9 and t=1.912 while the pre interventional and post-interventional Mean and Standard Deviation score among control group was (Mean=10.51, Standard Deviation =1.266 and Mean 10.47, Standard

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Deviation =1.4) respectively with df= 9 and t=.383. The pre interventional Mean and Standard Deviation score among experimental group and control group was (Mean=10.22 Standard Deviation =1.34 and Mean 10.51, Standard Deviation =1.26) respectively with df= 18 and t=0.50 while The post-interventional Mean and Standard Deviation score among experimental group and control group was (Mean=10.41 Standard Deviation =1.17 and Mean 10.47, Standard Deviation =1.4) respectively with df= 18 and t=0.10.

A similar study was conducted to assess the effectiveness of Acupressure on Hemoglobin Levels in Anemic Adolescent Girls: A Community Study. The study was conducted in Rural Community Health Centre, Pune, Maharashtra, India. Design used for the study was one-group pre-test–post-test Sample size of the study was 50 adolescent girls with mild anemia (Hb 7.0–11.9 g/dl) Acupressure on SP6, ST36, and LV3 points for 15 minutes daily over 30 days was administered and results showed that in experimental group Pre-test Mean Hb was 9.98 ± 0.78 g/dl and Post-test Mean Hb was 11.21 ± 0.65 g/dl. Improvement was significant at $p < 0.001$

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