

An Experimental Study to Assess the Effectiveness of Acupressure on Dysmenorrhea Pain among Adolescents in Selected Colleges, Karnataka

Laishram Dabashini Devi*, Pallavi C

Department of Nursing, Global College of Nursing, India

Abstract

Dysmenorrhea, on the other hand, is pelvic or lower abdominal cyclic or recurrent pain, associated to menstruation. It is the most common gynaecological complaint among young women, with prevalence between 43% and 93%. According to symptoms intensity, it is also major cause for school or work absenteeism. The objectives of the study was to assess the level of dysmenorrhea pain in experimental and control group of adolescent girls, compare the pre and post-test scores within and between the experimental and control group, evaluate the effectiveness of acupressure on the level of dysmenorrhea pain in experimental and control group and to find out an association between the pre-test dysmenorrhea pain scores in both experimental and control group with their selected socio-demographic variables. The research design for the study was quasi experimental design with pre-test post-test having non-equivalent control group. The study was conducted in nursing colleges. Regarding effectiveness of acupressure, the overall median score of experimental group in the pre-test was 7.5 and 2 in the post test with enhancement of 4.81 and it was significant at $P < 0.001\%$ level and the overall median score of control group in the pre-test was 8 and 4.5 in the post with mild enhancement of 4.85 with the $Z = 8.58$ in Pre-test and $Z = 3.88$ in post-test, this shows that there was significant at $P < 0.001\%$ level. Analysis of socio-demographic variables showed that there is no significant association at 5% level ($P > 0.05$) both in experimental group and control group. The findings of this study support the need for nurses to conduct the experiment to decrease the level of dysmenorrhea pain of adolescent girls in selected nursing colleges a Bangalore. And had a remarkable decrease in the level of dysmenorrhea pain when compared to their level of dysmenorrhea pain, prior to the application of the acupressure.

Keywords: Dysmenorrhea; Acupressure; Adolescent girls

Introduction

Acupressure (Chinese-Tui na), is an alternative medicine technique often used in conjunction with acupuncture. It is based on the concept of life energy which flows through "meridians" in the body. In treatment, physical pressure is applied to acupuncture points or ashi trigger points with the aim of clearing blockages in these meridians. Pressure may be applied by hand, by elbow, or with various devices [1].

Objectives of the Study

1. To assess the pre-test and post-test level of dysmenorrhea pain in experimental and control group of adolescent girls.
2. To compare the pre and post-test scores within and between the experimental and control group.
3. To evaluate the effectiveness of acupressure on the level of dysmenorrhea pain in experimental and control group.
4. To find out an association between the pre-test scores of pain level in both experimental and control group with their selected socio-demographic variables.

Methodology

A quasi experimental design with pre-test-post-test having non-equivalent control group was used. Population for the present study comprises of all subjects who were studying in nursing colleges, Bengaluru. The sample size for the present study consists of 60 subjects. In this study, Tippet Random Number Table was used for selecting the subjects from the sample frame [2].

The above Table 1 shows that In reference to age of the sample, in experimental group, 17(56.67%) belong to age group of 14-15 years, 7(23.33%) belong to age group of 12-13 years, 6(20%) belong to age

group of 16 years and above. In control group 12(40%) belong to age group of 14-15 years, 9(30%) belong to age group of 12-13 years, 9(30%) belong to age group of 16 years and above. In context with the religion, in experimental group, 21(70%) belongs to Hindu religion, 7(23.33%) belongs to Muslim religion, 2(6.67%) belongs to Christian religion and in control group, 21(70%) belongs to Hindu religion, 6(20%) belongs to Muslim religion, 3(10%) belongs to Christian religion Considering the type of family, in experimental group, 17(56.67%) belongs to nuclear family, 7(23.33%) belongs to joint family and 6(20%) belongs to extended family and in control group, 18(60%) belongs to nuclear family, 7(23.33%) belongs to joint family and 5(16.67%) belongs to extended family. In relation to monthly income, in experimental group, 12(40%) having income of above 15,000, 10(33.33%) having income of 10,001 to 15,000, 4(13.33%) having income of 5001 to 10000, 4(13.33%) having income of Less than 5000 and in control group 12(40%) having income of 5001 to 10000, 11(36.67%) having income of 10001 to 15000, 4(13.33%) having income of above 15000, 3(10%) having income of Less than 5000. Pertaining to the education of mother, in experimental group 10(33.33%) samples had post graduate education, 9(30%) samples had undergraduate education, 6(20%) subjects are illiterate, 5(16.67%) subjects had higher secondary education and in control group 11(36.67%) subjects had

***Corresponding author:** Laishram Dabashini Devi, Department of Nursing, Global College of Nursing, India, E-mail: dabashinidevi-nsg@dnu.edu.in

Received: 20-July-2022, Manuscript No. jcmhe-22-69836; **Editor assigned:** 22-July-2022, PreQC No. jcmhe-22-69836 (PQ); **Reviewed:** 05-August-2022, QC No. jcmhe-22-69836; **Revised:** 10-August-2022, Manuscript No. jcmhe-22-69836 (R); **Published:** 17-August-2022, **DOI:** 10.4172/2168-9717.1000768

Citation: Devi LD, Pallavi C (2022) An Experimental Study to Assess the Effectiveness of Acupressure on Dysmenorrhea Pain among Adolescents in Selected Colleges, Karnataka. J Community Med Health Educ 12:768.

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higher secondary education, 9(30%) samples had undergraduate education, 7(23.33%) subjects are illiterate, 3(16.67%) subjects had post graduate education. In the aspect to education of father, in experimental group 10(33.33%) samples had higher secondary education, 9(30%) samples had undergraduate education, 8(26.67%) subjects had post graduate education, 3(10%) subjects are illiterate and in control group 11(36.67%) subjects had higher secondary education, 9(30%) samples are illiterate, 6(20%) subjects had undergraduate education, 4(13.33%)

subjects had post graduate education. With regards to the source of income, in experimental group 16(53.33%) had no information, 6(20%) had information through mass media, 6(20%) had information through health professionals, 2(6.67%) had information through friends and relatives and in control group 15(50%) had no information, 6(20%) had information through mass media, 6(20%) had information through friends and relatives, 3(6.67%) had information through health professionals about acupressure on dysmenorrhea pain [3].

Frequency and percentage distribution of Adolescence Girls n=60					
Sl. No	Demographic variables	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
1	Age in years				
	12 - 13 years	7	23.33333	9	30
	14 - 15 years	17	56.66667	12	40
	16 Years and above	6	20	9	30
2	Religion				
	Hindu	21	70	21	70
	Muslim	7	23.33333	6	20
	Christian	2	6.66667	3	10
3	Type of Family				
	Joint	7	23.33	7	23.33333
	Extended	6	20	5	16.66667
	Nuclear	17	56.66667	18	60
4	Monthly income				
	Less than 5000	4	13.33333	3	10
	5001 to 10000	4	13.33333	12	40
	10001 to 15000	10	33.33333	11	36.66667
5	Education of mother				
	Illiterate	6	20	7	23.33333
	Higher Secondary	5	16.66667	11	36.66667
	Under Graduate	9	30	9	30
6	Education of Father				
	Illiterate	3	10	9	30
	Higher Secondary	10	33.33333	11	36.66667
	Under Graduate	9	30	6	20
7	Source of Information				
	Health Professionals	6	20	3	10
	Mass Media	6	20	6	20
	Friends and relatives	2	6.66667	6	20
	No Information	16	53.33333	15	50

Table 1: Frequency and percentage distribution of demographic variables of the adolescent Girls according to age, religion, type of family, monthly income, education of mother, education of father, source of information about acupressure on dysmenorrhea pain level.

The below Table 2 shows that in reference to family history of dysmenorrhea of the samples, in experimental group, 25(83.3%) have no history of dysmenorrhea, 5(16.6%) have history of dysmenorrhea and in control group 23(76.6%) have no history of dysmenorrhea, 7(23.3%) have no history of dysmenorrhea. In context to the age at menarche, in

experimental group, 20(66.6%) samples had menarche at 13-14 years, 8(26.6%) samples had menarche at 15-16 years, 2(6.6%) samples had menarche at 11-12 years and in control group, 22(73.3%) samples had menarche at 13-14 years, 5(16.6%) samples had menarche at 15-16 years, 3(10%) samples had menarche at 11-12 years [4].

Sl. No.	Clinical variables	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
Family history of dysmenorrhea					
1	yes	5	16.6	7	23.3
	No	25	83.3	23	76.6
Age at menarche					
2	11-12 years	2	6.6	3	10
	13-14 years	20	66.6	22	73.3
	15-16 years	8	26.6	5	16.6
Length of cycles in days					
3	<20 days	3	10	1	3.3
	28-30 days	22	73.3	24	80
	31-35 days	2	6.6	1	3.3
	More than 36 days	3	10	4	13.3
Duration of bleeding					
4	3-5 days	26	86.6	26	86.6
	6-8 days	3	10	4	13.3
	8 days and above	1	3.3	0	0
Menstrual cycle					
5	Regular	27	90	26	86.6
	Irregular	3	10	4	13.3

Table 2: Frequency and percentage distribution of the adolescent Girls according to clinical profile proforma such as Family history of dysmenorrhea, Age at menarche, Length of cycles in days, Duration of bleeding, Menstrual cycle.

Considering the length of cycles in days, in experimental group, 22(73.3%) samples having 28-30 days length of cycles, 3(10%) samples having more than 36 days length of cycles, 3(10%) samples having less than 20 days length of cycles, 2(6.6%) samples having 31-35 days length of cycles and in control group, 24(80%) samples having 28-30 days length of cycles, 4(13.3%) samples having more than 36 days length of cycles, 1(3.3%) samples having less than 20 days length of cycles, 1(3.3%) samples having 31-35 days length of cycles. In relation to duration of bleeding, in experimental group, 26(86.6%) having bleeding for the duration of 3-5 days, 3(10%) having bleeding for the duration of 6-8 days, 1(3.3%) having bleeding for the duration of 8 days and above and in control group 26(86.6%) having bleeding for the duration of 3-5 days,

4(13.33%) having bleeding for the duration of 6-8 days, 0(0%) having bleeding for the duration of 8 days. Pertaining to the menstrual cycle, in experimental group 27(90%) samples had regular menstrual cycle, 3(10%) samples had irregular menstrual cycle and in control group 26(86.6%) samples had regular menstrual cycle, 4(13.3%) samples had irregular menstrual cycle [5].

The below Table 3 shows the distribution of dysmenorrhea pain level among adolescent girls before the application acupressure. It revealed that in pre-test, in experimental group, majority of the subjects, 24 (80%) had severe pain, 6 (20%) subjects had moderate pain, 0(0%) had mild pain and in control group majority of the subjects, 22 (73.3%) had severe pain, 8 (26.6%) subjects had moderate pain, 0(0%) had mild pain.

Sl. no	Pre-test dysmenorrhea pain	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1	Mild pain (1-3)	0	0	0	0
2	Moderate pain (4-6)	6	20	8	26.6
3	Severe pain (7-10)	24	80	22	73.3
	Overall	30	100	30	100

Table 3: Frequency and percentage distribution of adolescent girls according to the pre-test score of dysmenorrhea pain level in both experimental and control group.

The below Table 4 shows the distribution of dysmenorrhea pain level among adolescent girls after the application acupressure. It revealed that in post-test, in experimental group, majority of the subjects, 24 (80%)

had mild pain, 6 (20%) subjects had moderate pain, 0(0%) had severe and in control group majority of the subjects, 25 (83.3%) had moderate pain, 5 (16.6%) subjects had mild pain, 0(0%) had severe pain.

Sl. no	Post-test dysmenorrhea pain	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1	Mild pain (1-3)	24	80	5	16.6
2	Moderate pain (4-6)	6	20	25	83.3
3	Severe pain (7-10)	0	0	0	0
	Overall	30	100	30	100

Table 4: Frequency and percentage distribution of adolescent girls according to the post-test score of dysmenorrhea pain level in both experimental and control group.

The below Table 5 shows: Median, Inter quartile range and Z value of pre and post-test level of pain score among experimental and control group, since the scores were ordinal, hence equal non parametric test (Wilcoxon signed rank test) was used to find out the effectiveness of acupressure on dysmenorrhea pain. Pre-test median 7.5, IQR 7.8 whereas in the post test median 2 with IQR 2-4 the calculated Wilcoxon's test value was

Z=4.81 P<0.001 level in experimental group, whereas in control group Pre-test median 8 with, IQR 7.8 whereas in the post test median 4.5 with IQR 3-6 was Z=4.85 at P<0.001 level. Hence, it shows highly statistical significance between the pre-test and post-test level of pain among the adolescent girl in both experimental and control group.

S. No	Group	Pre-test		Post test		Wilcoxon's value	
		Median	IQR	Median	IQR	Z value	P value
1	Experimental group(n=30)	7.5	07-08	2	02-04	4.81	< 0.001*
2	Control group (n=30)	8	07-08	4.5	03-06	4.85	< 0.001*

Table 5: Median, Inter quartile range and Z value of pre and post-test level of dysmenorrhea pain score among within experimental and control group.

From the below Table 6 shows that the Mann-Whitney U-test was worked to compare pre-test test mean scores of level of dysmenorrhea pain between the experimental group and control group and the Mann-

Whitney U-test value was 38.58 at level p>0.005. There was no statistical significant at level p>0.005. It is evidenced that the level before the intervention both the groups similar.

S. No	Group	Pre-test of dysmenorrhea Pain		Mann- Whitney U test	
		Median	IQR	Z-value	p-value
1	Experimental group (n=30)	7.5	07-08	8.58	p>0.005 NS
2	Control group (n=30)	8	07-08		

Table 6: Median, Inter Quartile range and Z value of pre-test in level of dysmenorrhea pain in between experimental group and control group and its statistical significance.

From the below Table 7 shows that the Mann-Whitney U-test was worked to compare post-test mean scores of level of dysmenorrhea pain between the experimental group and control group and the Mann-Whitney U-test value was 3.88 at level p<0.001. It was found to be significant at

level p<0.001. It is evidenced that the level of dysmenorrhea pain was found to be statistically significant among the adolescents girls had intervention acupressure (experimental group) than those who were not administered acupressure (control group) [6].

S. No	Group	Post-test of dysmenorrhea Pain		Mann- Whitney U test	
		Median	IQR	Z-value	p-value
1	Experimental group (n=30)	2	02-04	3.88	p<0.001*
2	Control group (n=30)	4.5	03-06		

Table 7: Median, Inter Quartile range and Z value of post-test in level of dysmenorrhea pain in between experimental group and control group and its statistical significance.

Discussion

The chi-square was carried out to determine the association between the dysmenorrhea pain levels with their selected demographic variables among adolescent girls such as age, religion, type of family, monthly income, education of mother, education of father, source of information about acupressure on dysmenorrhea pain level. Out of which none of the

demographic variables are significantly associated with dysmenorrhea pain level in experimental group at 5% level (P<0.05). From the analysis it is concluded that there is no close relationship between the demographic variables of the respondents and level of dysmenorrhea pain in pre-test of experimental group of the respondent. Thus, null hypothesis was accepted and research hypothesis was rejected (Table 8 and 9).

S.no	Demographic variables	≤ Median (Median 7.5)		>Median		Chi-square and p value
		F	%	F	%	
1	Age in years					
	12 - 13 years	7	23.3	4	26.6	2.097 Df=2 p>0.05 NS
	14 - 15 years	17	56.6	8	53.3	
	16 Years and above	6	20	3	20	

2	Religion							
	Hindu	21	70	10	66.6	11	73.3	3.0056 Df=2 p>0.05 NS
	Muslim	7	23.3	4	26.6	3	20	
	Christian	2	6.6	1	6.6	1	6.6	
	Others	0	0	0	0	0	0	
3	Type of family							
	Joint	7	23.3	4	26.6	3	20	1.3389 Df=2 p>0.05 NS
	Extended	6	20	4	26.6	2	26.6	
	Nuclear	17	56.6	7	46.6	10	66.6	
4	Monthly income							
	Less than 5000	4	13.3	2	13.3	2	13.3	3.556 Df=3 p>0.05 NS
	5001 to 10000	4	13.3	4	26.6	0	0	
	10001 to 15000	10	33.3	5	33.3	5	33.3	
	Above 150000	12	40	4	26.6	8	53.3	
5	Education of mother							
	Illiterate	6	20	4	26.6	2	13.3	0.9576 Df=3 p>0.05 NS
	Higher Secondary	5	16.6	2	13.3	3	20	
	Under Graduate	9	30	5	33.3	4	26.6	
	Post Graduate	10	33.3	4	26.6	6	40	
6	Education of father							
	Illiterate	3	10	3	20	0	0	1.7704 Df=3 p>0.05 NS
	Higher Secondary	10	33.3	4	26.6	6	40	
	Under Graduate	9	30	4	26.6	5	33.3	
	Post Graduate	8	26.6	4	26.6	4	26.6	
0.7833 Df=3 p>0.05 NS	Sources of information							
	Health Professionals	6	20	3	20	3	20	0.7833 Df=3 p>0.05 NS
	Mass Media	6	20	3	20	3	20	
	Friends and relatives	2	6.6	0	0	2	13.3	
	No Information	16	53.3	9	60	7	46.6	

Table 8: Association between the pre-test score of dysmenorrhea pain level among adolescent girls in experimental group with their socio demographic variables.

S.no	Demographic variables	≤ Median (Median 8)				>Median		Chi-square and p value
					%	F	%	
1	Age in years							
	12 - 13 years	9	30	7	26.9	2	50	0.9135 Df=1 p>0.05 NS
	14 - 15 years	12	40	11	3.8	1	25	
	16 Years and above	9	30	8	30.7	1	25	
2	Religion							
	Hindu	21	70	17	65.3	4	100	0.4921 Df=2 p>0.05 NS
	Muslim	6	20	6	23	0	0	
	Christian	3	10	3	11.5	0	0	
	Others	0	0	0	0	0	0	
3	Type of family							

	Joint	7	23.3	7	26.9	0	0	0.233 Df=2 p>0.05 NS
	Extended	5	16.6	4	15.3	1	25	
	Nuclear	18	60	15	57.6	3	75	
4	Monthly income							
	Less than 5000	3	10	2	7.6	0	0	1.135 Df=3 p>0.05 NS
	5001 to 10000	12	40	11	42.3	1	25	
	10001 to 15000	11	36.6	9	34.6	2	50	
	Above 150000	4	13.3	3	11.5	1	25	
5	Education of mother							
	Illiterate	7	23.3	6	23	1	25	0.452 Df=3 p>0.05 NS
	Higher Secondary	11	36.6	9	34.6	2	50	
	Under Graduate	9	30	8	30.7	1	25	
	Post Graduate	3	10	3	11.5	0	0	
6	Education of father							
	Illiterate	9	30	3	11.5	0	0	2.586 Df=3 p>0.05 NS
	Higher Secondary	11	36.6	5	19.2	1	25	
	Under Graduate	6	20	5	19.2	1	25	
	Post Graduate	4	13.3	13	50	2	50	
7	Sources of information							
	Health Professionals	3	10	7	26.9	2	50	3.652 Df=3 p>0.05 NS
	Mass Media	6	20	10	38.4	1	25	
	Friends and	6	20	5	19.2	1	25	

Table 9: Association between the pre-test score of dysmenorrhea pain level among adolescent girls in control group with their socio demographic variables.

Conclusion

The present study gives the evidence regarding the decrease in the pain level by applying the acupressure on particular site. In order to achieve it, the nurse educator should focus on strengthening the subject in the nursing curriculum. Continuing educational programme can be conducted among nurses and all health personnel to identify the needs of cost effective management and evidence based practice. Workshops, symposium, and discussion programmes and demonstration can be arranged in educational institutions. The students, nurses and all health personnel should be given responsibility to teach the public.

Recommendations

1. A similar study can be undertaken with a large sample for better generalization of the finding.
2. A similar study can be undertaken among young adult groups.
3. A similar study can be conducted to identify knowledge of health personnel regarding application of acupressure on particular sites decrease in the level of dysmenorrhea pain among adolescent girls.

Acknowledgement

None

Conflict of interest

The author's declared that they have no conflict of interest.

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