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A study to assess the effectiveness of foot reflexology on dysmenorrhoea among adolescent girls at a selected college

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Abstract
Though menstruation is normal, some women experienced dilemma during monthly period the cramping pain is symptom experienced by the girl during her menstruation which is known as dysmenorrhoea. A Pre experimental one group pretest and posttest research design with 30 adolescent girls aged between 17-21 years with moderate and severe dysmenorrhorea during their first day of menstruation was selected using non probability convenient sampling technique. Data was collected by using a modified numerical categorical pain scale along with self structured physiological and psychological symptoms questionnaire and the scoring was done. Foot reflexology was given for the duration of 20 minutes in 2 sessions per day for 3 days. On the third day, the post test was conducted. The overall pretest findings was, the majority of sample 97% had a severe pain and 3% had a moderate level of pain. In the posttest 80% had a mild level of pain and 20% had a moderate level of Pain. The mean score in pretest was 7.86 with the standard deviation of 0.91 and the mean score in posttest was 2.4 with the standard deviation of 1.11. The paired t- test revealed t=23.28 @ p=<0.001 level which indicated there is statistically significant difference. The findings revealed that there is a significant difference between the levels of dysmenorrhea among adolescent girls after reflexology. The study concluded that the foot reflexology brought change in the post test intensity pain level comparing with the pretest intensity pain level. The intervention was an effective management strategy to reduce the pain level of the adolescent girls with the dysmenorrhea.

Keywords: foot reflexology, dysmenorrhoea, adolescent girls

Introduction
Dysmenorrhoea is one of the common problems experienced by many adolescent girls. There are two types of dysmenorrhoea - primary and secondary dysmenorrhea. Primary dysmenorrhoea is a periodic pain and cramping, that may radiate to the lower back and upper thighs. This is not caused by an underlying medical condition. It may last for 1-3 days of periods, when chemical messenger called prostaglandin peaks. Symptoms may include backache, leg pain, nausea, vomiting, diarrhea, headache, and dizziness whereas secondary dysmenorrhea is a cramps caused by medical problems.

Dysmenorrhoea is highly prevalent among adolescence, ranges from 60 percent to 93 percent. About 15 percent of adolescents describe their dysmenorrhoea as severe and seek medical attention for menstrual pain. Many adolescents report that dysmenorrhea affect activities of daily living such as missing schools and colleges, sport events etc. There are some alternative methods for treating dysmenorrhea, Such as pharmacological and non-pharmacological treatments. But prevention is the best management for treating dysmenorrhea. Preventive measures include complementary therapies like massages, reflex therapy, exercises and yoga.

Foot is the mirror of the body. Feet and hand are microcosms of the body. Reflexology, one of the most effective complementary therapies, is a natural healing art based on the principle that there are reflex points in the feet, hands and ears and their referral areas within zone related areas, which correspond to every part, gland and organ of the body. Through application of pressure on these reflex points without the use of tools, crèmes or lotions, the feet being the primary area of application, reflexology relieves tension, improves circulation and helps in promoting the natural function of the related areas of the body. The basic principle is that activation of nerves which do not transmit pain signals, called non-nociceptive fibers, can interfere with signals from pain fibers, thereby inhibiting pain." Stimulating nerves that sense touch, heat, cold and pressure- as doe's reflexology- overcomes the action of the pain nerves.

Reflex therapy is found effective in many health problems including gynecological problems. Among this it has proved effective in complaints related to menstruation like dysmenorrhoea, amenorrhea, premenstrual syndromes and menopausal problems. Alleviation of dysmenorrhea may result for better mood, increases the sense of control and boosts the energy level.

Materials and Method
The study was conducted at selected college in Chennai. One group pre testpost test research design was used for the present study.

Inclusion criteria
Adolescent girls aged between 17-20 years and above with moderate and severe dysmenorrhorea during the first day of menstruation. Adolescent girls who were available and willing to participate at the time of study. Adolescent girls who can understand Tamil and English.

Exclusion criteria
Adolescent girls who having pathological dysmenorrhoea. Adolescent girls who were using pharmacological measures for dysmenorrhoea. Adolescent girls who were not available at the time of study period. Adolescent girls who were not willing to participate in the study.Adolescent girls who are having painful legs, cracks, wounds and secondary infection in the foot.

Ethical approval
All collected data was examined and approved by the appropriate Institutional Ethics Committee (Ethical Code: 007/04/2019/IEC/SMCH) and have therefore been performed in accordance with the ethical standards laid down in the Updated Revised Declaration of Helsinki (2008**).**

Data collection procedure
The study was conducted after obtaining Institutional Ethical Clearance from Saveetha Medical College and Hospital. 30 samples who fulfilled the inclusion criteria was selected, using non probability purposive sampling technique. The adolescent girls who were in moderate and severe dysmenorrhoea within 8 hours of menstruation was selected as study participants. A self introduction was given to the samples and the written consent was obtained from the study samples and the confidentiality was assured. A brief and detailed explanation about the study was given. Privacy was provided and the demographic data was collected. The samples were pretested using the modified numerical categorical pain scale along with self-structured physiological and psychological symptoms questionnaire and the scoring was done; the samples who fall in the moderate and severe dysmenorrhoea was selected and the foot massage was given for the duration of 20 minutes in 2 sessions per day for 3 days. On the third day, the post test was conducted to assess the intensity of pain by using modified numerical categorical pain scale.

Statistical analysis
Both descriptive and inferential statistical was used to analyze the data.

Section A: Assessment of demographic variables of adolescent girls
The present study shows the frequency and percentage distribution of demographic variables. With regards to the age among adolescent, 22(73%) were in the age group of 21-22 years 8(27%) were in the age of above 23 years. With regards to the area of residence, 18(60%) belongs to urban, 8(27%) belongs to semi urban and 4(13%) belongs to rural. With regards to the type of family, 25(84%) belongs to nuclear family 5(16%) belongs to joint family. With regards to the religion, 13(43%) were Hindu, 16(53%) were Christian, 1(3%) was Muslim.

Frequency and percentage distribution of the factors of dysmenorrhoea of adolescent girls.
The present study shows the frequency and percentage distribution of factors of dysmenorrhoea variables of the adolescent girls. With regards to the age of menarche, 8(27%) were between 11-12years, 17(57%) were between 13-14years, 5(16%) were in 15-16%years. With regards to the regularity of menstrual cycle, 28 (93%) were regular, 2(7%) were irregular. With regards to the length of menstrual cycle, 1(3%) were <21days, 20(67%) were between 21-28days, 8(27%) were between 24-35days, 1(3%) was between >35 days. With regards to the duration of menstruation in days, 9(30%) were between 2-3days, 17(57%) were between 4-5days, 4(13%) were between 6-7days. With regards to the menstrual flow (number of pads used /day) 20(67%) were between 3-4 pads (little), 10(33%) was between 4-5pads. With regards to the menstrual symptoms present during the menstruation 26(687%) were present, 4(13%) were absent. With regards to the presence of premenstrual symptoms 23(77%) belongs to first day and 1(3%) belongs to second day, 1(3%) belongs to third day, 5(17%) belongs to all the day. With regards to the diversional activity during menstruation 10(33%) was watching TV 9(30%) were listening music 1(3%) were reading books and 10(33%) were none. With regards to the habit of performing exercise during menstruation, 27(90%) were doing no exercise and 3(10%) were doing 15 minutes of exercise. With regards to the dietary habits, 3(10%) belongs to vegetarian 27(90%) belongs to non-vegetarian. With regards to the sleep pattern, 10(33%) slept less than <6 hours and 1 day, 19(64%) between 6-8 hours 1day, 1(3%) >8hours 1day. With regards to the body mass index 22(74%) were between18-22.9, 4(13%) were between23-24.9, 4(13%) were between 25- 29.9.

Section B: Assessment of pre and posttest level of dysmenorrhoea among adolescent girls

Table 1: Frequency and percentage distribution of the level dysmenorrhoea experienced by adolescent girls. N=30

Level of Dysmenorrhoea	Pre Test		Post Test	
	Frequency Number	Percentage {%}	Frequency Number	Percentage {%}
Mild	0	0%	24	80%
Moderate	1	3%	6	20%
Severe	29	97%	0	0%
Excruciating	0	0%	0	0%

The above table 1 shows the frequency and distribution on the level of dysmenorrhoea among adolescent girls in pretest and posttest. With regard to the pretest, the majority of 29 adolescent girls (97%) had severe level of dysmenorrhoea and 1(3%) had a moderate level of dysmenorrhoea. With regard to the posttest 24(80%) had mild level of dysmenorrhoea and 6 (20%) had moderate level of dysmenorrhoea

Table 2: Frequency and percentage distribution of the level of physiological and psychological symptoms experienced by the adolescent girls. N=30

Level of Symptoms	Physiological Symptoms				Psychological Symptoms			
	Pre Test		Post Test		Pre Test		Post Test	
	No.	%	No.	%	No.	%	No.	%
Mild	0	0%	25	83%	0	0%	24	87%
Moderate	4	13%	5	17%	5	17%	6	13%
Severe	25	84%	0	0%	20	66%	0	0%
Excruciating	1	3%	0	0%	5	17%	0	0%

The above table 2 shows the Frequency and percentage distribution on the level of physiological and psychological symptoms experienced by the adolescent girls in the pretest and posttest. With regards to the pretest physiological symptoms, the data illustrated that majority 25(84%) had severe level of symptom and 4(13%) had moderate level of symptoms and 1(3%) had a excruciating level of symptoms. With regards to the posttest physiological symptom the data illustrated that majority 25(84%) had a mild level of symptoms and 5(17%) had a moderate level of symptoms. With regards to the pretest psychological symptom, the data illustrated that majority 20(66%) had severe level of symptoms and 5(17%) had a moderate level of symptoms and 5(17%) had a excruciating level of symptoms. With regards to the posttest psychological symptoms the data illustrated that the majority 24(87%) had mild level of symptoms 6(13%) had a moderate level of symptoms.

Section C: Assessment of the effectiveness of foot massage on level of dysmenorrhoea among adolescent girls

Table 3: Comparison on the effectiveness of foot massage on the level of dysmenorhoea among adolescent girls in the pre and posttest N=30

	Level of Dysmenorrhoea		
	Mean	Standard deviation	Paired 't' test
Pre test	7.86	0.91	t= 23.28 S*
Post test	2.4	1.11	

P<0.001, S-significant

The above table shows the comparison on the level of dysmenorrhoea among adolescent in the pre and posttest. The findings revealed that the pretest mean value was 7.86 with the standard deviation of 0.91 and posttest mean value was 2.4 with the standard deviation of 1.11. The calculated 't' value was 23.28 which was greater than the table value and this indicated that there was a statistically significant difference between pre and posttest at p <0.001 level. The overall mean improvement shows a significant decrease on the level of dysmenorrhoea among adolescent girls from 7.86 to 2.4 in pre and posttest respectively, which is suggestive of effectiveness of foot massage

Table 4: comparison on the effectiveness of foot massage on the level of physiological and psychological symptoms among adolescent girls in the pre and posttest N=30

	Physiological Symptoms			Psychological Symptoms		
	Mean	Standard Deviation	Paired 't' test	Mean	Standard deviation	Paired t test
Pre test	7.36	1.347	t=14.32 S*	7.76	1.539	t= 12.61 S*
Post test	2.73	1.36		2.8	1.304	

The above table 4 shows the comparison in the symptoms level among adolescent in the pre and posttest. The findings revealed in the physiological symptoms was that, the pretest mean value 7.36 with the standard deviation of 1.347 and the posttest mean value was 2.73 with standard deviation of 1.136 and paired t=14.32. The overall mean shows a decrease in the level of physiological symptoms among the adolescent girls from 7.36 to 2.73 in pre and posttest respectively. The findings revealed in the psychological symptoms that, the pretest mean value 7.76 with the standard deviation 1.539 and the posttest mean value was 2.8 with standard deviation of 1.304 and paired t=12.61 The overall mean shows a decrease in the level of psychological symptoms among the adolescent girls from 7.76 to 2.8 in pre and posttest respectively, which is a suggestive on the effectiveness of foot massage

Section D: Association of the posttest level of dysmenorrhoea among adolescent girls with their selected demographic variables and study back groung variables.

The analysis showed that association of posttest level of dysmenorrhoea among adolescent girls with selected demographic variables such as age, area of residence, Types of family and religion. It revealed that there was no significant association was found with their selected demographic variables like age, area of residence, types of family and religion.

Table 5: Association of the posttest level of dysmenorrhoea among adolescent girls with their selected factors of dysmenorrhea variables N=30

S. No.	Study Background Variables	Mild		Moderate		Severe		Excruciating		Chi- Square Value
		No.	%	No.	%	No.	%	No.	%	
1.	Regularity of menstrual cycle a. Regular b. Irregular	22 2	74% 6%	6 0	20% 0%	0 0	0% 0%	0 0	0% 0%	χ^2=7.6 Df=3 S*
2.	Menstrual symptoms c. Present d. Absent	16 3	54% 10%	5 1	17% 3%	0 0	0% 0%	0 0	0% 0%	χ^2=8.51 Df=3 S*

3.	Dietary habits e. Vegetarian f. Non-vegetarian	0 24	0% 80%	3 3	10% 10%	0 0	0% 0%	0 0	0% 0%	χ^2=13.32 Df=3 S*

This table 5 shows the association of posttest level of dysmenorrhoea among adolescent girls with their factors of dysmenorrhea variables.

Results

It revealed that there was significant association was found between level of pain and the factors of dysmenorrhea variables such as regularity of menstrual cycle (χ^2=7.6 p<0.001), menstrual symptoms (χ^2=8.51 p<0.05) dietary habits (χ^2=13.32 p<0.001). and it also revealed that there was no significant association was found between level of dysmenorrhoea and the factors of dysmenorrhea variables like age at menarche, length of menstruation, duration of menstruation in days, menstrual flow (pads/day), presence of premenstrual symptoms, diversional activity during menstruation, habits of performing exercise during menstruation, sleep pattern, body mass index The comparison of pretest and posttest level of dysmenorrhea revealed, the mean score was 7.86 with the standard deviation 0.91 and posttest the mean score was 2.4 with the standard deviation of 1.11. The paired t- test revealed t=23.28 @ p=<0.001 level which indicated there is statistically significant difference. The comparison of pretest and posttest of physiological symptoms revealed the mean score was 7.36 with the standard deviation of 1.347 and posttest the mean score for 2.73 with the standard deviation of 1.136 and paired t test revealed t =14.32 @ p=<0.001 level which indicated there is statistically significant difference. The comparison of pretest and posttest of psychological symptoms revealed the mean score 7.76 with the standard deviation 1.539 and post mean score 2.8 with standard deviation 1.304 the paired t test revealed t=12.61@ p=<0.001 level which indicated there is statistically significant difference.

Conclusion

Thus the study concludes that foot reflexology can be used as an effective intervention for reducing the intensity of pain level among adolescent girls with dysmenorrhoea.

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