

Lifestyle Intervention for Reducing Leg Cramps among Pregnant Women

Eman Nabil Ramadan^{1*}, Samah Abdelhaliem Said², Nehad Ahmed Zahra¹, Mervat Gaber Zaghoul³

¹Community Health Nursing, Benha Faculty of Nursing, Egypt

²Obstetrics and Woman Health Nursing, Benha Faculty of Nursing, Egypt

³Maternity, Obstetrics and Gynecological Nursing, Port-Said Faculty of Nursing, Egypt

*Corresponding author: samah.ibrahim@fnur.bu.edu.eg

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Abstract Background: Leg cramps are a common discomfort during pregnancy account 30-50% of pregnant women. Lifestyle intervention help in reducing symptoms and discomfort associated with leg cramps. **Aim:** Was to study the effectiveness of lifestyle intervention for reducing leg cramps among pregnant women. **Research Design:** A quasi-experimental design was used. **Setting:** This study was conducted in Outpatient Clinic at Obstetric and Gynecological Department affiliated at Benha Teaching Hospital. **Sampling:** A purposive sample of 212 pregnant women having leg cramps and divided into study and control group. **Tools:** Three tools were used for collecting data; 1) A structured interviewing questionnaire; it includes four parts personal characteristics of studied women, past and current obstetric history, leg cramps history, and studied women's knowledge. 2) Modified Healthy Life Style Assessment Scale. 3) Visual analogue Scale. **Results:** showed that the mean age in the studied group and control group were 27.06 ± 6.45 & 26.98 ± 7.43 respectively. And secondary education is the education level of the large proportion of both study and control group 49.1% & 57.5% respectively, there was highly significant differences between two groups in all items related to their knowledge $p < 0.001$. Also, there were significant differences between two groups in all items related to nutritional life style, rest and sleep in addition exercise, physical activity and intensity of leg cramps pain ($p < 0.001$). **Conclusion:** implementation of lifestyle intervention was effective in improving pregnant women's Lifestyle, through improving their knowledge and decreasing the severity and frequency of leg cramps. **Recommendation:** The nurses should provide all pregnant women at antenatal clinics with a self-care guideline about lifestyle intervention for reducing leg cramps during pregnancy to improve their awareness.

Keywords: *lifestyle intervention, leg cramps, pregnancy*

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1. Introduction

Leg cramps during pregnancy are a common discomfort characterized by involuntary, painful contractions of muscle groups that usually occur in the calf or small muscles of the foot but can affect different parts of the leg. The severity of leg cramp pain is variable and each attack may take a few minutes. The prevalence of leg cramps occurred among 30% to 50% of pregnant women [1]. Leg cramping means painful spasm especially in the lower extremities occurs during pregnancy and mainly occurred in the second half of pregnancy typically occurs at night and usually lasts for seconds or 2 minutes [2].

Unfortunately, causes and the precise mechanism of leg cramps during pregnancy are still unclear [3]. According to [4], leg cramps during pregnancy are mainly associated with different factors including; metabolic disorder, inactivity or excessive exercise, physiological changes in

neuromuscular performance, weight gain, and joint laxity in the late trimesters of pregnancy, and increase pressure of a gravid uterus on pelvic nerves and blood vessels during late pregnancy. Imbalances between the intake and output of electrolytes and minerals, such as calcium and magnesium, might be other reasons for cramping. Other factors are dehydration, standing or sitting for a prolonged period.

Night leg cramps also called nocturnal leg cramps characterized by local pain at the site of cramps which can be severe, firmness or tenderness of the involved muscle. Pain takes several seconds, minutes or hours. The muscle may remain tender for up to 24 hours after leg cramps, the most common site that effected muscle is the back of leg calf cramps, the back of thigh hamstrings and in front of thigh quadriceps [5].

Lifestyle has emerged as an important health-related concept. In medical research, lifestyle is used to identify individual characteristics, habits and attitudes that increase the risk of individual to diseases. Lifestyle interventions

were defined as any intervention that included exercise, diet, and at least one other component as counseling, stress management, smoking cessation, and sleeplessness management [6]. The goals of life style interventions for women suffering from leg cramps during pregnancy are to reduce symptoms and discomfort associated with leg cramps through changing in diet habits and improving exercise (e.g., eat healthy food, increase fluid, stretching exercise, wearing low heeled shoes and avoid standing or sitting position for long periods). And minimize pregnant women sleep disturbance [7].

[8] recommends that healthy life style adaptation among the pregnant women can prevent leg cramps including: daily activities e.g. standing or sitting for too long at one time can cause leg cramping. Adaptation of nutritional healthy life style is important to establish and maintain a healthy pregnancy to avoid minor discomfort such as leg cramps. [9,10] Added that poor nutrition and excessive weight gain and obesity increases the risks of leg cramps. Moreover [11] indicated that adequate diet, incorporating sufficient carbohydrates, is necessary to prevent premature muscle fatigue.

Nurses plays an important role during pregnancy. As providing pregnant women with essential knowledge and help her to change their life style toward healthy adaptations. Also; the nurse can promote health promotion among the pregnant women through encouraging women self-care [12]. Improving pregnant women life style is one of the main roles for nurses that must not be neglect while caring pregnant women to attain safe motherhood and avoid excessive discomfort during pregnancy that may negatively affect woman and fetus [13].

1.1. Significance of the Study

Leg cramps during pregnancy are a serious minor discomfort affect between 30% to 50% of pregnant women, especially during the last three months of pregnancy and often occurs at night time. Leg cramps are negatively impact women's sleep, job performance and family relationships [14]. When pain of leg cramps is severe, persistent and swelling or redness occurs in legs it indicated complications as blood vessel avulsion. Moreover, the significant psychosocial morbidity caused by severe symptoms leading to sleep disturbance and impaired quality of life for pregnant women [15]. If she gets, enough sleep will help women to feel better and promotes optimal performance levels during the day. The body releases its greatest concentration of growth hormone during sleep, helping the body to repair damaged tissue and grow. Finally understanding major pregnant women's complaints is important to guide the development of clinical strategies and management of health services for this target audience, aiming at decreasing injuries and generating positive impact on quality of life of such women.

1.2. Aim of the Study

The study aimed to study the effectiveness of lifestyle intervention for reducing leg cramps among pregnant women.

1.3. Hypothesis

Pregnant women who adopt healthy lifestyle interventions would have a reduction of leg cramps than those who don't.

2. Subject and Methods

2.1. Research Design

A quasi experimental study design was used to achieve the aim of the study.

2.2. Research Setting

This study was conducted in Outpatient Clinic at Obstetric and Gynecological Department affiliated at Benha Teaching Hospital which is located at the ground floor of the out-patient building that include one room divided into diagnostic and examination areas. In addition, waiting area where researchers interviewed the studied women to implement the study.

2.3. Sampling

Type: A Purposive sample with *Inclusion Criteria:*

- Women have leg cramps during pregnancy.
- Pregnant women in second trimester prime and multigravida
- No medical or obstetrics problems.

Size and technique

- This sample size was calculated based on the annul flow rate of women at time of data collection for a year (2015-2016).
- It includes 212 pregnant women (106 for control group and 106 for study group) among those attending the above mentioned setting.
- The sample size was calculated according to statistical sample equation:

$$n = \frac{N}{1 + N(e^2)}$$

n=sample

N=The whole population

e=margin error.

• **Technique**

All pregnant women attending the Out-patient Clinic at Benha Teaching Hospital and fulfilled inclusion criteria are taken until the predetermined number obtained. The researchers firstly collect intervention group followed by control group.

- Group I (intervention group). 106 women who met the inclusion criteria of the study
- Group II (control group). 106 women who met the inclusion criteria of the study.

2.4. Tools of Data Collection:

Three tools were used for data collection:

2.4.1. First Tool: A Structured Interviewing Questionnaire

It was designed by the researchers after reviewing a related literature it was written in simple Arabic language in the form of close and open questions and divided into three parts:

Part I: Personal characteristics of studied women including (age, occupation, level of education, residence and measurements of weight, height and body mass index).

Part II: Past and current history of obstetric history (gravidity, parity, gestational age and Numbers of antenatal visits)

Part III: leg cramps history such as (most common sites of leg cramps, intensity, most common time of occurrence of leg cramps and factors aggravating intensity of pain).

Part IV: Assessment of the studied women" knowledge regarding: Meaning of healthy life style intervention, importance of adapting healthy life style, elements of healthy life style intervention, and leg cramps during pregnancy related knowledge including (Definition, causes, factors affecting leg cramps, complications, preventive and management measures of leg cramps in addition to unhealthy life style that increase severity of leg cramp during pregnancy).

Scoring system: A complete correct answer was scored (2), incomplete answer was scored (1) and the incorrect or unknown answer was scored (zero). The knowledge score was calculated by adding the scores for the correct answers. The higher scores reflect higher levels of knowledge. The total knowledge score was summed up and categorized as follows; poor <60%, Average 60-<75%, Good \geq 75%.

2.4.2. Second Tool: Modified Healthy Life Style Assessment Scale

Adapted from [16] modified by the researchers to evaluate studied pregnant women practice of healthy life style intervention.it include (18 items): Nutritional activity life style (11 items), physical activity and exercise life style include (4) and rest and sleep life style include (3 items).

Scoring system for lifestyle practice: The studied women were scored as follow: Usually = done the activity or task frequently. Sometimes = done the activity or task infrequently. 0 = Never done. The total practice score was summed up and categorized as follows: \geq 80-100 High Satisfactory, \geq 60-80 % Satisfactory. <60 % Unsatisfactory.

2.4.3. Third Tool: Visual analogue Scale

It was done to assess degree and characteristic of pain during leg cramps for both control and study groups at different times. It was adopted from [17]. The researchers assess study and control group at 4 times of assessment (before intervention, 2week, 4 weeks, 6 weeks after it).

Scoring system

The scoring ranged from 0 to10 .Each women was instructed to choose one of the ten possible responses. Where a score 0 none, a score between 1 and 3 is considered mild, score between 4 and 6 is considered moderate, score between 7 and 10 is considered severe.

2.5. Methods

The study was executed according to the following steps:

2.5.1. Approval

An official permission obtained from the director of Outpatient Clinic in Obstetric and Gynecological Department at Benha Teaching Hospital Clinic through an official formal letter from the dean of The Faculty of Nursing, Benha University.

2.5.2. Tools Validity

The developed tool was reviewed for appropriateness of items and measuring the concepts through three an expert jury panel in the field of Maternity nursing, Obstetric medicine and Community health nursing specialty to assure content validity. The questionnaires were modified according to the panel judgment on clarity of sentences and appropriateness of content. The tools were then adjusted based upon their recommendations.

2.5.3. Tools Reliability

The reliability was done by Cronbach's Alpha coefficient test which revealed moderate to high reliability of each tool. The internal consistency of the first tool was 0.876 while internal consistency of the second tool was 0.857 and finally was 0.957 for the third tool.

2.5.4. Ethical Considerations

All ethical issues were considered, participants were given explanations about the purpose of the study, and they were also informed that they could withdraw from the study at any time before the completion of the study. Participants who agreed to complete in this study were asked to sign a consent form. Confidentiality of participants, information was assured, and the data were accessed only for research purpose.

2.5.5. Pilot Study

The pilot study commenced, once ethical approval had been obtained, to test the clarity, feasibility and applicability of the study tools. It was conducted on 10% (20 women) who was excluded from the study sample. Based on the results of the pilot study, modifications and omissions of some details were done and then the final forms were developed.

2.5.6. Procedure

Assessment phase: This phase-involved preparation of the tools and assessment after obtaining the cases consent it includes filled a structured interviewing questionnaire. (tool 1) Including personal characteristics, measure weight and height, and in turn calculating body mass index by equation weight (in kilograms) over height squared (in centimeters).Take past and current obstetric history then evaluate their knowledge about healthy lifestyle intervention (meaning, importance of adopting healthy life intervention, essential elements of healthy lifestyle intervention and leg cramps (time, intensity, frequency and factors aggravate , and relief cramps). This sheet took about 30 minutes. Each woman (control and study) assessed by visual analogue

scale to evaluate degree and characteristic of pain. the researchers conducted an individual interview with them in the study setting according to hospital policy. The second tool took approximately 15 to 20 minutes.

Planning phase: The researchers developed the educational booklet using the baseline information gathered in the assessment phase. The booklet aimed to improve women lifestyle behavior. The booklet included materials to improve women lifestyle as diet, sleep and physical exercise to enhance healthy life style.

Implementation phase: Data were collected from the beginning of April 2015 till the end of March 2016 covering 1 year.

The researchers visit the previous setting 2 days per week from 9.00 A.m. to 1.00 P.M and each day approximately 5-7 pregnant women with inclusion criteria interviewed after taking permission, aim of study and ethical consideration explained. The researchers explained two sessions for daily group one about healthy lifestyle and other about leg cramps during pregnancy. The duration of each session lasting for 40 to 60 minutes. The researchers began to provide instructional material to each woman of study group as supportive material it included healthy activity and life style practice during pregnancy and management of leg cramps.

The educational program was presented in a clear and concise form, following the principles of adult learning, focusing on interactive learning and active participation. It was implemented using different teaching methods such as short lectures, group discussion, practice, demonstration and re- demonstration. In addition,

Different audiovisual materials were used as pamphlets, pictures, posters and video to facilitate the teaching of each topic.

Evaluation phase:

The effectiveness of the intervention was based on assessing the improvement in women" knowledge along with reported practice and in the improvement of women life style and one leg cramps. This was achieved through comparing the pre-test with the post-test immediately, 3 weeks, 6weeks and 9 weeks after the implementation of the intervention.

2.5.7. Statistical Design

The data were collected, organized, coded, computerized and analyzed by using appropriate statistical methods and tests (mean and standard deviation for quantitative data, X² for qualitative data and correlation tests) were used, data presented in suitable tables and figures using appropriate statistical techniques & tests of significance.

3. Results

Table 1: Showed that the mean age in the studied group and control group were 27.06±6.45 & 26.98±7.43 respectively. And secondary education is the education level of the large proportion of both study and control group 49.1% & 57.5% respectively. 56.1% reside in urban areas in study group, and 61.3% of control group are also

urban residence. In both study and control group the majority of women don't work 69.8% and 78.3% respectively.

Table 2: Showed that studied women in both groups showed a non-significant difference between both groups in the mean values of body weight and body mass index (BMI).

Table 3: Showed no significance difference in body mass index in both study and control group. The majority of women in study and control group are overweight 44.3% and 50.0% respectively.

Table 4 : Showed that the large number of women in both study and control group are 31-32 gestational age 67.4 % and 73.6 % respectively and majority of them had one antenatal visit 59.4% and 61.3% in study and control group respectively.

Table 5: Showed that the most common sites of leg cramps in study group were left leg (41.5%) but in control group was both legs 46.2% . At sleep was the most common time of leg cramp occurrence in both groups (45.3% in study group and 52.8% in control group). According to factors aggravate intensity of leg cramp in study and control group standing for long time was the common factor in 66.0% and 52.8% respectively. There were no significance differences between study and control group regarding leg cramps history items.

Table 6 Showed that according to the distribution of leg cramps pain characteristics of the studied participants, the intensity of leg cramp pain is severing among both control and studied groups (71.7%& 57.5% respectively). And the times of leg cramps exceeds more than 15 minutes in about 59.4% in the study group and 51.9% in the control one.

Table 7: Showed that there were highly significant differences between two groups in all items related to their knowledge $p < 0.001$.

Table 8: Showed the distribution of the mean score of leg cramp related nutritional life style of the studied participants. It shows that there were significant differences between two groups in all items related to nutritional life style as intake of food rich vitamins, rich in calcium, rich in protein, rich in iron, decrease salty and spicy food,...etc.

Table 9: Showed the distribution of the mean score of leg cramp related rest and sleep self-reported practice of the studied participants. It shows that there were highly significant differences between two groups in all items related to self-reported practice as rest, sleep, avoid stress $p < 0.001$.

Table 10: Showed the distribution of the mean score of leg cramp related physical activity self-reported practice of the studied participants. It shows that there were significant differences between two groups in all items related to self-reported practice as antenatal exercises, ante natal follow up. etc.

Table 11: Showed that no statistical significant between two groups pre intervention regarding intensity of leg cramps pain otherwise there were highly statistical differences between two groups at different times after intervention $p < 0.001$.

Table 1. Distribution of personnel characteristics of the studied participants (n=212).

Variable	Study group N=106		Control group N=106		X ²	P value
	No	%	No	%		
Age in years					1.07	>0.05
Less than 20 years	34	32.1	36	34.0		
20-<30	48	45.3	52	49.1		
30-<40	24	22.6	18	17.0		
Mean ±SD	27.06±6.45		26.98±7.43			
Educational level					2.73	>0.05
Illiterate	8	7.5	7	6.6		
Primary	2	1.9	4	3.8		
Secondary education	52	49.1	61	57.5		
University	44	41.5	34	32.1		
Residence					0.325	>0.05
Rural	37	34.9	41	38.7		
Urban	69	65.1	65	61.3		
Occupation					1.89	>0.05
Yes	32	30.2	23	21.7		
No	74	69.8	83	78.3		

Table 2. Distribution of mean score of anthropometrics measures of the studied women

Variable	Study group N=106	Control group N=106	Independent t test	P value
	Mean ±SD	Mean ±SD		
Body weight	70.8491±10.98639	71.8868±11.43205	0.674	>0.05
Height	163.4057±4.86343	163.0377±4.72869	0.558	>0.05
Body mass index	26.4443±3.21031	26.9566±3.46135	1.11	>0.05

Table 3. Distribution of Body Mass Index of the studied participants (n=212)

Body mass index	Study group N=106		Control group N=106		X ²	P value
	No	%	No	%		
Normal	42	39.6	33	31.1		
Overweight	47	44.3	53	50.0		
Obese	17	16.0	20	18.9		

Table 4. Distribution of obstetric history of the studied participants (n=212)

Variable	Study group N=106		Control group N=106		X ²	P value
	No	%	No	%		
Gestational age					0.236	>0.05
29-30	25	23.6	28	26.4		
31-32	42	67.4	78	73.6		
Numbers of antenatal visits					0.165	>0.05
One visit	63	59.4	65	61.3		
Two visits	27	25.5	27	25.5		
More than two visits	16	15.1	14	13.2		

Table 5. Distribution of leg cramps history of the studied participants (n=212)

Variable	Study group N=106		Control group N=106		X ²	P value
	No	%	No	%		
Most common Sites of leg cramp					1.63	>0.05
Right leg	19	17.9	22	20.8		
Left leg	44	41.5	35	33.0		
Both legs	43	40.6	49	46.2		
Most common time of occurrence of leg cramp					1.72	>0.05
At day	16	15.1	17	16.0		
At night	42	39.6	33	31.1		
At sleep	48	45.3	56	52.8		
Factors aggravate intensity of leg cramp					4.61	>0.05
Walking	9	8.5	17	16.0		
Up stairs	27	25.5	33	31.1		
Standing for long times	70	66.0	56	52.8		

Table 6. Distribution of leg cramps pain characteristics of the studied participants (n=212).

Variable	Study group N=106		Control group N=106		X ²	P value
	No	%	No	%		
Intensity of leg cramp pain					4.66	>0.05
Mild	4	3.8	3	2.8		
Moderate	41	38.7	27	25.5		
Sever	61	57.5	76	71.7		
Times of leg cramp pain					1.61	>0.05
5-10 minutes	4	3.8	3	2.8		
10-15 minutes	39	36.8	48	45.3		
>15 minutes	63	59.4	55	51.9		

Table 7. Distribution of leg cramp related knowledge among the pregnant women (study & control) group (n=212)

Knowledge items	Study group N=106						Control group N=106						X ²	P value
	Don't know		Incomplete correct		Complete correct		Don't know		Incomplete correct		Complete correct			
	No	%	No	%	No	%	No	%	No	%	No	%		
Definition of healthy life style	3	2.8	26	24.6	77	72.6	62	58.5	44	41.5	0	0.0	135.18	<0.001**
Importance of adapting healthy life style	3	2.8	28	26.4	75	70.8	56	52.8	41	38.7	9	8.5	101.91	<0.001**
Components of healthy life style.	2	1.9	26	24.5	78	73.6	34	32.1	69	65.1	3	2.8	117.35	<0.001**
Meaning of leg cramp	1	0.9	10	9.4	95	89.6	43	40.6	51	48.1	12	11.3	132.03	<0.001**
Causes of leg cramp	3	2.8	30	28.3	73	68.9	31	29.2	63	59.4	12	11.3	78.54	<0.001**
Preventive measures of leg cramp	2	1.9	14	13.2	90	84.9	17	16.0	77	72.6	12	11.3	115.10	<0.001**
Management measures of leg cramp	2	1.9	18	17.0	86	81.1	25	23.6	69	65.1	12	11.3	105.36	<0.001**
Complication of leg cramp	3	2.8	36	34.0	67	63.2	45	42.5	61	57.5	0	0.0	110.19	<0.001**

Table 8. Distribution of mean score of leg cramp related nutritional life style of the studied participants (n=212)

Life style	Study group N=106						Control group N=106						X ²	P value
	Never		Sometimes		Usually		Never		Sometimes		Usually			
	No	%	No	%	No	%	No	%	No	%	No	%		
Intake of food rich in calcium	1	0.9	17	16.0	88	83.0	26	24.5	38	35.8	42	39.6	47.44	<0.001**
Eat adequate fruits	0	0.0	21	19.8	85	80.2	16	15.1	45	42.5	45	42.5	37.03	<0.001**
Intake of food rich protein	0	0.0	8	7.5	98	92.5	15	14.2	59	55.7	32	30.2	87.32	<0.001**
Intake of food rich potassium	0	0.0	25	23.6	81	76.4	15	14.2	80	75.5	11	10.4	97.07	<0.001**
Decrease intake of spicy	0	0.0	14	13.2	92	86.8	22	20.8	68	64.2	16	15.1	111.04	<0.001**
Increase intake of food rich in iron	0	0.0	18	17.0	88	83.0	28	26.4	68	64.2	10	9.4	119.15	<0.001**
Intake of food rich vitamins	0	0.0	19	17.9	87	82.1	37	34.9	35	33.0	34	32.1	64.95	<0.001**
Drinking fresh juice	0	0.0	16	15.1	90	84.9	45	42.5	48	45.3	13	12.3	118.56	<0.001**
Adequate intake of fluid	3	2.8	19	17.9	84	79.2	41	38.7	52	49.1	13	12.3	100.12	<0.001**
Decrease salty food	0	0.0	17	16.0	89	84.0	27	25.5	55	51.9	24	22.6	84.44	<0.001**
Intake of multivitamins	1	0.9	12	11.3	93	87.7	10	9.4	39	36.8	57	53.8	30.29	<0.001**

Table 9. Distribution of mean score of leg cramp related rest and sleep self-reported practice of the studied participants

Life style	Study group N=106						Control group N=106						X ²	P value
	Never		Sometimes		Usually		Never		Sometimes		Usually			
	No	%	No	%	No	%	No	%	No	%	No	%		
Adequate sleep	0	0.0	16	15.1	90	84.9	12	11.3	68	64.2	26	24.5	79.50	<0.001**
Adequate rest	4	3.8	16	15.1	86	81.1	29	27.4	65	61.3	12	11.3	104.45	<0.001**
Avoid stress	1	0.9	12	11.3	93	87.7	10	9.4	39	36.8	57	53.8	30.29	<0.001**

Table 10. Distribution of mean score of leg cramp related physical activity self-reported practice of the studied participants

Life style	Study group N=106						Control group N=106						X ²	P value
	Never		Sometimes		Usually		Never		Sometimes		Usually			
	No	%	No	%	No	%	No	%	No	%	No	%		
Antenatal exercises	0	0.0	8	7.5	98	92.5	27	25.5	61	57.5	18	17.0	122.88	<0.001**
Antenatal follow up	2	1.9	19	17.9	85	80.2	29	27.4	56	52.8	21	19.8	80.41	<0.001**
Avoid standing for a long time	3	2.8	20	18.9	83	78.3	31	29.2	58	54.7	17	16.0	85.13	<0.001**
Wearing comfort shoes	3	2.8	19	17.9	84	79.2	41	38.7	52	49.1	13	12.3	100.12	<0.001**

Table 11. Distribution of intensity of leg cramp pain among the studied participants at different times of assessment (n=160)

Times of assessment		No		Mild		Moderate		Sever		Chi square test	P value
		No	%	No	%	No	%	No	%		
Pre-intervention	Study	0	0.0	16	15.1	59	55.7	31	29.2	3.94	>0.05
	Control	0	0.0	27	25.5	48	45.3	31	29.2		
After 3weeks	Study	7	6.6	70	66.0	29	27.4	0	0.0	83.02	<0.001**
	Control	0	0.0	16	15.1	57	53.8	33	31.1		
After 6 weeks	Study	20	18.9	81	76.4	5	4.7	0	0.0	174.55	<0.001**
	Control	0	0.0	5	4.7	67	63.2	34	32.1		
After 9 weeks	Study	43	40.6	58	54.7	5	4.7	0	0.0	175.15	<0.001**
	Control	0	0.0	5	4.7	59	55.7	42	39.6		

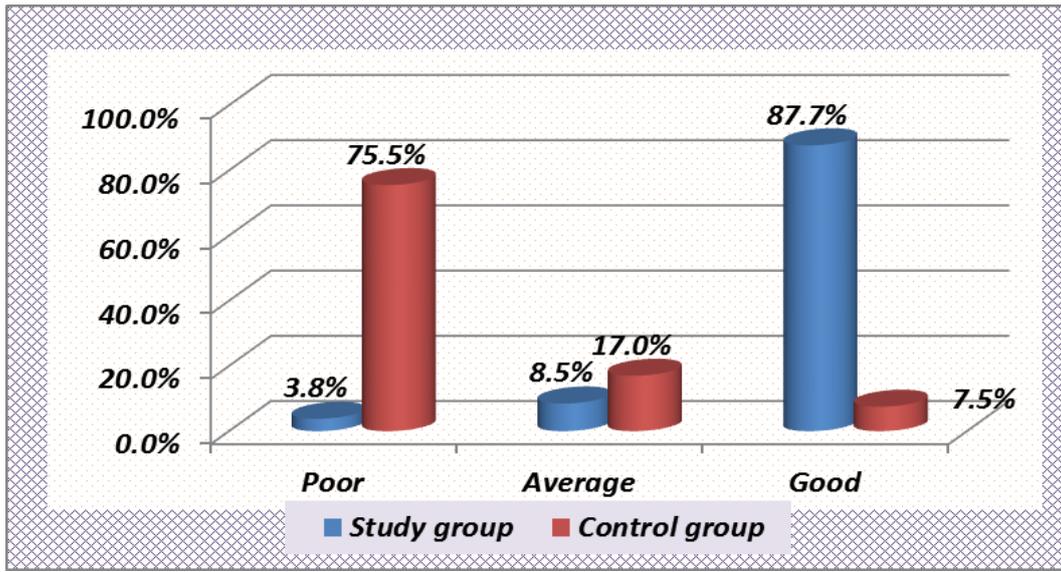


Figure 1. Percentage distribution of total knowledge score of the study and control group

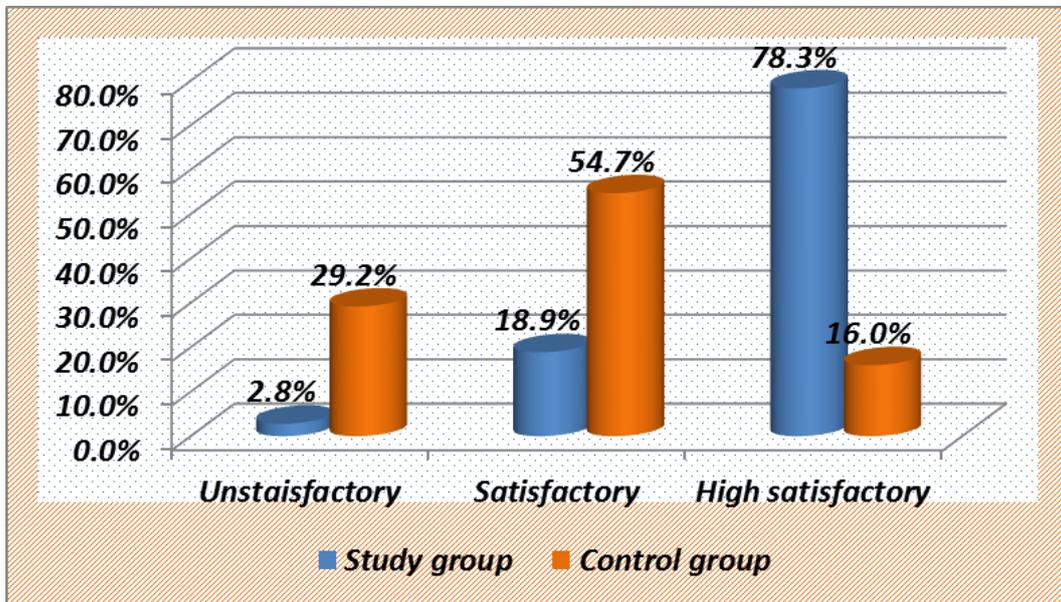


Figure 2. Percentage distribution of total life style of the studied participants

Figure 1: Illustrated total knowledge score of the study and control group. It revealed significant difference between two groups (87.7% good knowledge in study group compared to 7.5% in control group).

Figure 2: Illustrated total life style score of the studied participants. It revealed significant differences between two groups (78.3% highly satisfactory in study group compared to 16% in control group).

4. Discussion

During the period of pregnancy, women will undergo by a lot of normal physical and hormonal changes. These changes cause the non-harmful minor discomforts during pregnancy such as; back pain, varicosities and leg cramps. Leg cramp is serious minor discomfort. It is strong painful contraction or tightening of affected muscle

that come on suddenly, and lasts from second to several minutes [18].

The aim of the current research was to study the effectiveness of lifestyle intervention for reducing leg cramps among pregnant women.

Regarding the socio-demographic characteristics of the studied women, the present findings showed that about half of studied women had age ranged from (20-30) years of age. More than half of them had a secondary education. And the majority of them were housewives. These results agree with many studies [19]. in his study showed that, 72% of the respondents belong to 21 to 31 years ages. Also, [20]. who concluded that; most of the pregnant women of Indian community were from the age group of 23-27 years, highest educational status of the pregnant women was intermediate among samples and majority of pregnant women were housewives. In addition [18] who illustrated that 79.2% of women in their study fall in the age group between 20 to 30 and 9.8% of them fall below the age of 20.

The researchers view these findings may help in the research because the education level of women may help them in reading and understanding the guided booklet and in performing the activity. Also non-working women may have times at home to perform the exercise rather than working one.

Regarding the obtained results of the studied women in both groups showed a non-significant difference between both groups in the mean values of body weight and body mass index (BMI). It's normal to gradually gain weight during pregnancy as the baby grows. The changes in woman's body during gestation meet maternal and fetal demands and may induce from mild discomforts to major daily life or professional activities limitations. The effect of increased estrogen and relaxin hormones, typical of gestation, associated to weight gain.

Our study showed that the large number of women in both study and control group are 31-32 gestational age and there were no significance difference between both groups of study. Leg cramps may be caused by the additional weight gain of pregnancy and changes in circulation. Pressure from the growing baby may also be placed on the nerves and blood vessels that go to your legs. This pressure or pinching increases in the third trimester and may be the cause of leg cramps. These results were similar with [18]. Who showed that; participated were on different stages of pregnancy where 43.9% of subjects are in the gestation period of 29-40 weeks (the 3rd trimester)

The present study showed that the predominant site of cramps in study group is left legs and both legs in control group. Most common time of occurrence of leg cramp is at sleep and standing for long times is represented the main factor aggravate intensity of leg cramps among the studied pregnant women. This result is in agreement with [21] who found in their study that majority of women diagnosed leg cramps have night cramps and excessive daytime sleepiness. [22] In his study indicate the similar results he found that leg cramps among studied women typically begins in the evening and often prevents the woman from falling asleep. [23] In their study suggests that people who stand for long periods of time at work are more likely to experience leg cramps. It may be due to impaired blood supply to lower body organs, and

increased pressure of the gravid uterus on pelvic nerves and blood vessels during late pregnancy.

According to the distribution of leg cramps pain characteristics of the studied women, the intensity of leg cramp pain is severing among majority of both control and studied group. And the times of leg cramp exceeds more than 15 minutes in more than the half of the study group and the control one. Regarding the intensity of leg cramps pain at different time, the obtained results showed a significant increasing among the studied group after intervention compared to control group especially in the mild degree of pain. These results are in the same way of [24] who reported that 57.9% of the participants pregnant women developed leg cramps in the 3rd trimester of pregnancy. The mean \pm SD of the cramp numbers per week was 6.0 ± 178.17 , length of leg cramps 40.2 ± 178.1 minutes and severity of leg cramps 6.0 ± 2.6 .

The obtained results of the mean score of leg cramp frequency per day among the studied participants at different times showed a significant decrease in the study group compared to the control one after intervention. This result is in agreement with [2]; [24] who demonstrated that, leg cramps are often unidirectional and mostly happen twice a week or less frequently, usually at night, last a few seconds to a few minutes and mostly disappear by themselves.

Also, the results concord the result of [15] who stated that, there was no difference in the frequency of leg cramps after treatment with calcium versus Vitamin C. In contrast, to these results [24] who reported that, since the control group received ascorbic acid in their study, and cramps improved relatively or completely in most participants.

Regarding distribution of the mean score of leg cramp related nutritional life style of the studied participants. It shows that there were significant differences between two groups in all items related to nutritional life style as intake of food rich vitamins, rich in calcium, rich in protein, rich in iron, decrease salty and spicy food, this is in agreement with. [25] In their study about the relation between nutritional life style and leg cramp found that there was a significant improvement in women receiving vitamin B, magnesium and calcium comparing with control group. [15] Who suggested that, treatment, preventing and curing pain associated with leg cramps during pregnancy including taking Vitamins B1, B6, E, and C and magnesium. Furthermore, Vitamin D supplement during pregnancy is necessary. In spite of the results obtained by [26] who reported that, increased levels of serum calcium and phosphorous cause improvements in metabolic performances, bone health, and neuromuscular functions.

This result is agree with [24] who reported that, Vitamin D and Ca had no effect on leg cramps in their study, and because the main reason for and the mechanism of leg cramps in pregnancy are not clear yet, the authors concluded that leg cramps during pregnancy may not be due to calcium deficiency and could have other causes.

Other six randomized controlled studies (With a total of 390 women who were 14 to 36 weeks pregnant, comparing either magnesium, calcium or vitamin B with the placebo or no treatment, and comparing vitamin C with calcium. All treatments were given as tablets to be chewed or swallowed) showed that a greater proportion of

women receiving calcium, vitamins B, magnesium experienced no leg cramps after treatment compared to women who did not receive any treatment. It is not clear from the evidence reviewed whether any of the oral interventions (magnesium, calcium, vitamin B or vitamin C) provide an effective and safe treatment for leg cramps in pregnancy. Supplements may have different effects depending on women's usual intake of these substances.

Regarding knowledge of studied women; the findings of the current study revealed highly statistical difference between study and control group with significant improvement in study group knowledge compared to control group including meaning, importance, and components of life style intervention also, definition, causes, prevention and management of leg cramps during pregnancy. This result consistent with [20] who recommend in his study that pregnant women need specific education design to help them to modify their life style and to take appropriate remedial measures to feel better and to reduce risk of cramps during pregnancy.

Also, this result agrees with [27,28] who reported that; pregnant women should have basic knowledge on leg cramps and also they should have knowledge on how to manage these discomforts during pregnancy So that they can avoid the complications related to their minor discomforts of pregnancy and they can maintain their health condition. One study in India shows that 87% of antenatal women have inadequate level of knowledge about the discomforts related to pregnancy as leg cramps and 65% of them had inadequate knowledge regarding its management.

Our view of point show that poor knowledge of studied pregnant women related to lack of educational programs and awareness to promote their knowledge and practices to overcome minor discomfort during pregnancy.

Regarding rest and sleep self-reported practice of the studied women the current study revealed adequate rest and sleep among women in the studied group compared to inadequate rest and sleep in the control group. It may be due to presence of pain associated with frequent leg cramps at the night or it may also associate with lack of exercise during the 3rd stage of pregnancy. These results are in agreement with [29] who stated that, the American Sleep Association (ASA) considers leg cramps as one of the reasons for sleep disorders during pregnancy. Sleep disorder resulting from cramps influences performance of daily activities and may lengthen the duration of pregnancy and the type of childbirth.

Concerning exercise and physical activity self-reported practice of studied women the study revealed that study group after intervention follow healthy life style behavior as ante natal visits , avoid standing for long period of time and avoid wearing high heel shoes, etc. by acceptable manner compared to control group . This result in the same line with [30] who revealed that, the positive impact of adopting a healthy lifestyle during gestation improves perinatal results for babies and decreases the risk of premature birth, low weight at birth and the need to be admitted to the neonatal unit.

As regards at distribution of the mean score of leg cramp frequency per day among the studied women at different time, The result of the current study showed that there were decreases in leg cramps frequency per day among the studied women at different time after

intervention. This result reflects the role of life style intervention in preventing leg cramp during pregnancy. This result is in agreement with [2] who demonstrated that, leg cramps are often unidirectional and mostly happen twice a week or less frequently, usually at night, last a few seconds to a few minutes, and mostly disappear by themselves. This improvement in our opinion is due to change in life style behavior to become healthy behavior which should be every pregnant woman know about it.

5. Conclusion

Based on the findings of the present study, it can be concluded that, the above- mentioned findings proved and reinforced the study hypothesis. The implementation of lifestyle intervention was effective in improving pregnant women's life, through improving their knowledge, Life style modification are also associated with decrease the severity and frequency of leg cramps, suggesting that leg cramp is a marker and possibly manage by life style intervention and modification.

6. Recommendations

1-The nurses should provide all pregnant women at antenatal clinics with a self-care guideline about life style intervention for reducing leg cramps to improve their awareness.

2-Life style modification to prevent leg cramps should be recommended by Obstetricians to be first trial by pregnant women who have leg cramps.

7. Further Research

1- Leg cramps are common problem; therefore its evaluation and proper care should be included in antenatal care programs as well as preventive health programs.

2- Effectiveness of leg cramps preventive strategies among pregnant women should be done in future research.

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