Advanced International Journal for Research (AIJFR)
E-ISSN: 3048-7641 ● Website: www.aijfr.com ● Email: editor@aijfr.com

To Evaluate the Effect of Electroacupuncture Stimulation in Modulating Pain in Subjects with Primary Dysmenorrhoea

Dr. Sandeep. S[1], Shreya Hegde[2], Rajashree[3], S. M Soumya[4], Spoorthi[5], S. Harshitha[6], Sakshi[7], Vimalakshi[8], Nayana[9]

[1]BNYS, MD, (PhD), HOD, Department of Research Methodology and Recent Advances & Department of Clinical Naturopathy, Government Nature cure and yoga medical college Mysore Karnataka.
[2,3,4,5,6,7,8,9]Final year, BNYS students
GNCYMC&H, MYSORE

1. Introduction

Adolescence is the period of transition between puberty and adulthood. Menarche is one of the markers of puberty and therefore can be considered as an important event in the life of adolescent girls. Studies suggested that menarche tends to appear earlier in life as the sanitary, nutritional, and economic conditions of a society improve. For most females, it occurs between the age of 10 and 16 years; however, it shows a remarkable range of variation. The normal range for ovulatory cycles is between 21 and 35 days. While most periods last from 3 to 5 days, duration of menstrual flow normally ranges from 2 to 7 days. For the first few years after menarche, irregular and longer cycles are common. (1)

Menstrual disorders are a common presentation by late adolescence; 75% of girls experience some problems associated with menstruation including delayed, irregular, painful, and heavy menstrual bleeding. Menstrual patterns are also influenced by a number of host and environmental factors. (1)

Menstruation is natural, but for it to cause extreme pain isn't (5). As a woman in the workplace, schools, colleges and many places there is a maze of social issues which navigate but painful menstruation makes it worse(15) .A study, The Girl Who Cried Pain: A Bias Against Women in the Treatment of Pain, found that while women experience "more frequent and greater pain" than men, they are likely to "be less well treated than men for their painful symptoms"(2). According to the American Academy of Family Physicians, up to 20% of women suffer from menstrual cramping severe enough to interfere with daily activities (2). Therefore, it's important to focus on alleviating the pain experienced during menstruation and improve the quality of life, the technical term for painful menstruation is Dysmenorrhoea (16).

Dysmenorrhoea is defined as painful menstruation (3). The word dysmenorrhoea is derived from the Greek words dys meaning difficult, painful or abnormal, "Meno" meaning month, and "rrhoea" meaning flow (6). Dysmenorrhoea is also defined as painful menstrual cramps of uterine origin, and considered as one of the most common gynaecological disorders among females of child bearing age. (4)

Dysmenorrhoea usually begins around the time that menstruation begins, the pain is usually experienced in lower abdomen or the pelvic region, it may also refer to lower back and inner thigh region, other symptoms of dysmenorrhoea include nausea, vomiting, headache, diarrhoea etc [18]. Dysmenorrhoea is classified into two types, namely **primary** and **secondary**, based on the presence or absence of an underlying gynaecological condition [5].

Primary dysmenorrhoea largely affects the quality of life of women, often seen as absentism from work or college, decreased participation in sports or other physical activities, reduced concentration during exams, in severe cases of dysmenorrhoea women often find it difficult to even get out of bed, various NSAIDS (non-steroidal anti-inflammatory drugs) and other analgesics have been advocated to reduce this pain. However, the regular consumption of these drugs can have side effects on some individuals. [6]

According to naturopathy, dysmenorrhoea is caused due to severe congestion in the abdominal organs [6]. The pain and unpleasantness caused by menstruation is due to encumbrance of the body with morbid matter [6]. In the management of menstrual disorders, there is a growing demand for an alternative and complementary approach to wellness that is natural, low- tech, inexpensive AND SAFE [6].

Naturopathic modalities like fasting therapy and diet therapy, hydrotherapy, manipulative therapy, acupressure and acupuncture, yoga therapy and physiotherapy are best suited to deliver these approaches [6]. Physiotherapy is broadly divided into electrotherapy and exercise therapy [19]. According to many studies conducted worldwide it is seen that electro therapeutic procedure like Electroacupuncture has been found to relieve the primary dysmenorrhoeal pain[7]. This study particularly aims to evaluate the efficacy of Electroacupuncture in modulating pain in subjects with primary dysmenorrhoea.

2. Objectives of The Study

Primary Objective

- To reduce pain
- To increase the quality of life
- To reduce discomfort
- To reduce absentism from work, schools and colleges.
- To enhance mood
- To assess the efficacy of Electroacupuncture in reducing PD pain

Secondary Objective

- To manage other symptoms of primary dysmenorrhoea

3. Review of Literature:

Dysmenorrhoea is basically of two types:

a. Primary dysmenorrhoea (Spasmodic)
b. Secondary dysmenorrhoea (Congestive)

Primary dysmenorrhea (PD) is a common gynaecological condition characterized by pelvic/abdominal pain before or during the menstrual period in the absence of pelvic disorder [7]. It is common in adolescent girls and young women of reproductive age [20]. Primary dysmenorrhea is related to an overproduction of uterine prostaglandins which induces myometrium hyper contractility and arterial vasoconstriction, both involved in painful menstrual cramps [7]

EPIDEMOLOGY

The worldwide prevalence of primary dysmenorrhoea ranges from 25-90% in females of reproductive age (widely ranging between15 to 49 years of age according to WHO), with 2-29% experiencing severe pain [8]. A greater prevalence (70-90%) was generally reported among younger women (less than 24 years of age), in India the prevalence ranges between 50-87.8% [8].

SIGNS AND SYMPTOMS [3]

- Nausea
- Headache
- Tiredness
- Intestinal dysfunction
- Low back pain
- Irritability
- Adynamia
- Lower abdominal pain

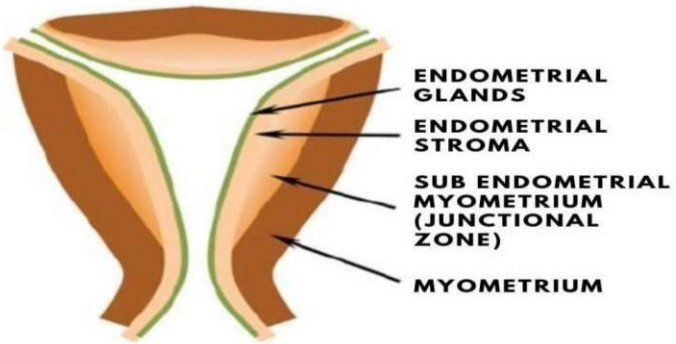
CAUSES OF PAIN [3]

- Confined to ovulatory cycles (menstrual cycles)
- Abnormal anatomical and functional aspect of myometrium
- Pain is related to dysrhythmic uterine contractions
- Uterine myometrial hyperactivity
- Imbalance in the autonomic nervous control uterine muscles
- Role of prostaglandin
- Role of vasopressin
- Endothelin
- Platelet activating factor (PAF)

ETIO-PATHOGENESIS

1. ABNORMAL ANATOMICAL AND FUNCTIONAL ASPECT OF MYOMETRIUM

In women with dysmenorrhoea significant changes in junctional zone is seen i.e., junctional zone hyperplasia causes irregular thickening and hyperplasia of smooth muscles and less vascularity [3]

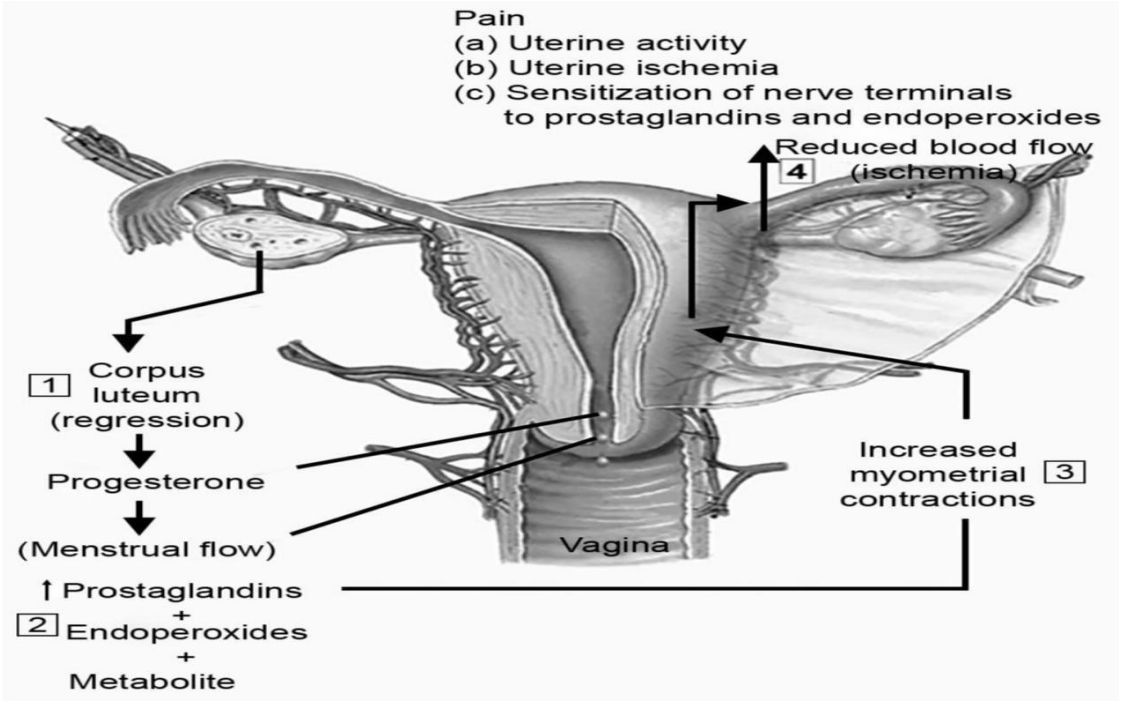


FUNCTIONAL ASPECT OF MYOMETRIUM [3]

2. IMBALANCE IN THE AUTONOMIC NERVOUS CONTROL OF UTERINE MUSCLES

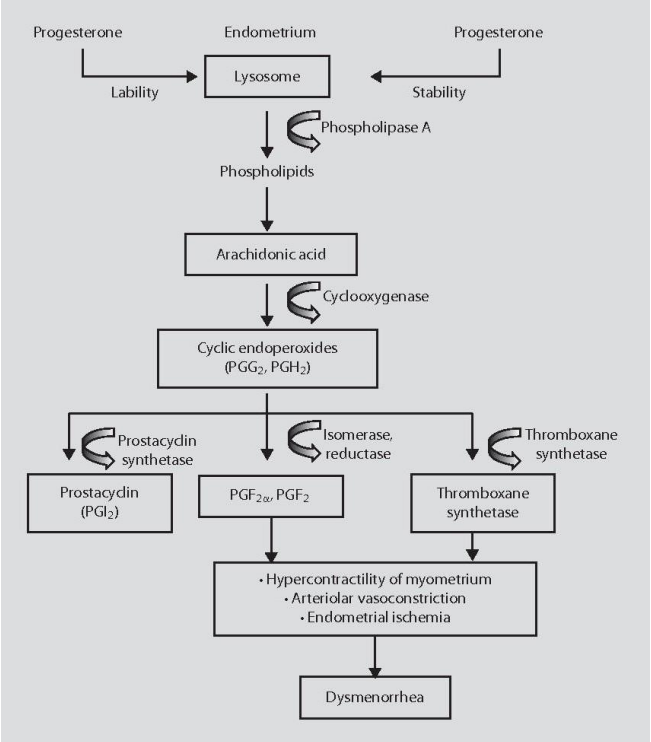
There is over activity of sympathetic nerves, it causes hyper tonicity of circular fibres of the isthmus and internal OS [3]

The pain is cured following pregnancy and vaginal delivery due to dilatation of the cervix following vaginal delivery by the damage of the adrenergic neurons which fails to regenerate. [3]



DIAGRAMMATIC REPRESENTATION OF ETIOPATHOGENESIS OF PRIMARY DYSMENORRHOEA [9]

3. ROLE OF PROSTAGLANDINS IN DYSMENORRHOEA



SCHEMATIC DIAGRAM SHOWING THE ROLE OF PROSTAGLANDINS IN PRIMARY DYSMENORRHOEA [10]

In ovulatory cycles under the action of progesterone; prostaglandins ($PGF_2\alpha$, PGE_2) are synthesised from the secretory endometrium. [3] $PGF_2\alpha$ is a strong vasoconstrictor, causes ischemia of the myometrium. [3] There is increased myometrial contraction with or without dysrhythmia. [3]

4. ROLE OF VASOPRESSIN

There is an increased release of vasopressin in women with PD. [3] Vasopressin increases prostaglandin synthesis and increases myometrial activity and it causes uterine hyperactivity and dysrhythmic contractions. (3)

5. ENDOTHELINS

It causes contraction of the myometrium at the junctional zone and also induces $PGF_2\alpha$, ischemia caused by Endothelin and $PGF_2\alpha$ aggravates uterine dysperistalsis and hyperactivity. [3]

6. PLATELET ACTIVATING FACTOR (PAF)

Its concentration is found high in PD women, leukotrienes and PAF are vasoconstrictors and stimulate myometrial contraction. [3]

Naturopathy, it is a system of man building in harmony with the constructive principles of nature on the physical, mental, social and moral planes of being.

(11) This system helps to maintain natural state of bodies physiological process with the aid of panchmahabhutas, namely Akash, Vayu, Agni, Jala and Prithvi which helps in both improving the state of health and treating disease conditions. (11)

Naturopathy treatment embarks on a holistic approach (11). Naturopathy medicine does not prescribe conventional drugs; it instead focuses on processes like *mud therapy, hydrotherapy, yoga therapy, manipulative therapy, acupuncture and acupressure, physiotherapy, fasting therapy and dietetic (11).* **Physiotherapy,** it is the system of medicine for complete health care of all age groups of modern age. (12) It is a form of treatment carried through the medium of physical forces such as heat, electricity, mechanical pressure and mechanical forces thus, in physiotherapy heat, electric current, water, massage and exercise with or without resistance are utilised (12). Physiotherapy is divided into two types namely

- Electrotherapy
- Exercise therapy

Electrotherapy is defined as sum of therapeutic modalities of physical medicine capable to change the threshold of elicitation of nerve or muscle (13). It includes treatment by electro physical modalities such as low frequency, medium frequency and high frequency currents (12). Low frequency currents are known to treat various painful conditions, Electroacupuncture being one of them, various studies have shown that Electroacupuncture provides analgesia specifically when applied at a strong non
painful intensity. (14)

ELECTROACUPUNCTURE

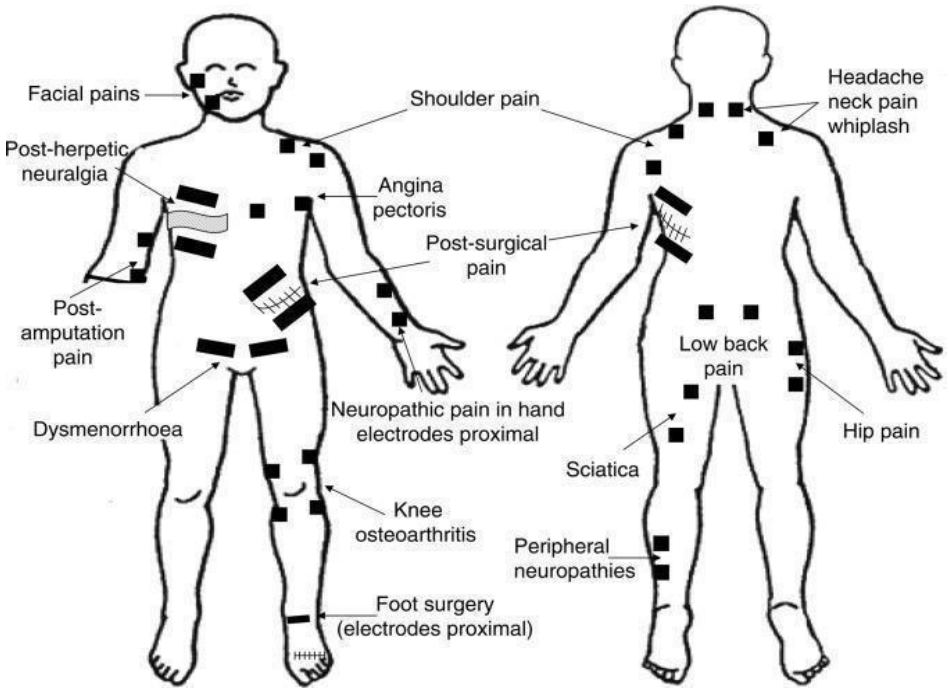
Electroacupuncture consists of the generic application of electrical current transmitted by electrodes through the surface of the skin to stimulate the peripheral nerves producing various physiological effects, the main one being analgesia (7).

Mechanism of Electroacupuncture: It is known that the main analgesic mechanism of Electroacupuncture occurs by the activation of opioid receptors in the central and peripheral nervous system, with the delta-opioid receptors being activated in the high frequency Electroacupuncture (21). Whereas the muopioid receptors in the low frequency Electroacupuncture (7).

MAIN POINTS:

- **LI 11 (Quichi)**
- **ST- 29 (Guilai)**
- **ST-36 (Zusanli)**
- **SP-6 (Sanyinjiao)**
- **SP-8 (Diji)**
- **SP-9(Yinlingquan)**

- **GV-20(Baihui) CV-2(Qugu)**
- **CV-3(Zhongji)**
- **CV-4(Guanyuan)**
- **CV-12(Zhongwan)**
- **EX-6(Sishencong)**



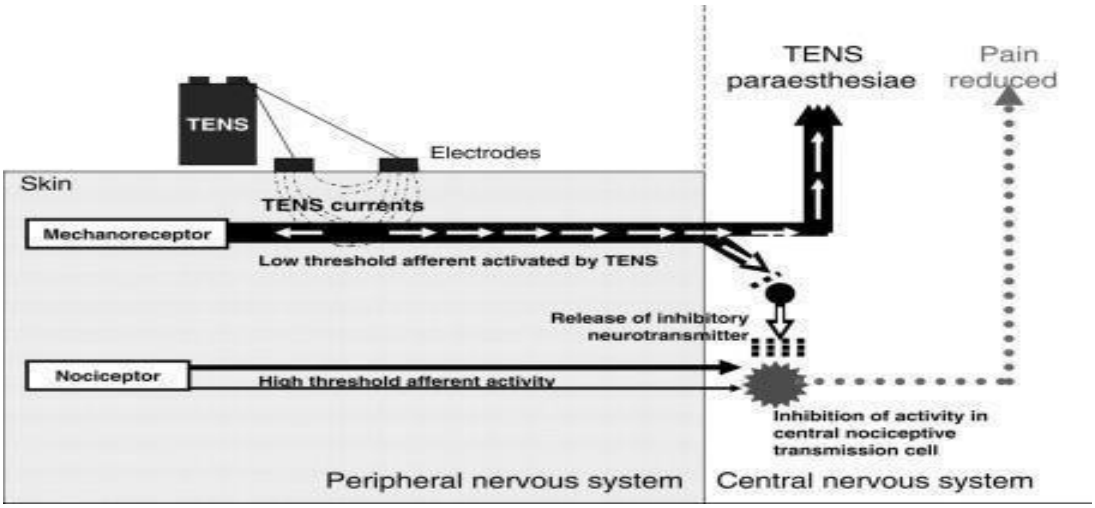
Mechanism of Electroacupuncture in reducing PD pain

The use of Electroacupuncture in PD especially causes a vasodilatation in the area of the dermatome via axonal reflex, which suggests a decrease in the uterine muscle ischemia through increased blood flow in the corresponding area [(7)].

The pathophysiology of PD should be considered when dealing with some of the variables of Electroacupuncture, such as the optimal timing and duration of treatment. Endocrine factors have been suggested because PD occurs only during ovulatory cycles recent studies have indicated excessive secretion of prostaglandins and decreased ovarian steroid hormone levels in the endometrium as causes of PD [(7).] These changes result in hyper contractility of uterus that lasts for hours with possible elevated intrauterine pressure and decreased blood flow, and leads to uterine hypoxia and ischemia, which are believed to cause the underlying aetiologies for the pain and cramps (7).

Vasodilatation, increased blood flow, and menstrual fluid prostaglandins may be altered by Electroacupuncture, and may indirectly induce analgesic effect (8). These effects are probably mediated by the inhibition of nociceptive fibre-evoked responses in the dorsal horn, based on the gate control theory of pain, this inhibition is caused by stimulation of large diameter afferents which are stimulated by Electroacupuncture (8). Sensory stimulation of the skin may also cause local vasodilatation in the same dermatome via axonal reflexes, the effects of Electroacupuncture are also modulated by anatomic pathways, opioid release, decreased release of prostaglandins, and possibly eicosanoids that are released

from the endometrium during menstruation following antidromic blockage of nerve fibres with large diameters (8).



MANAGEMENT FOR PRIMARY DYSMENORRHOEA

1. Conventional system of management (Pharmacological therapy) (30)

a. Non-steroidal anti-inflammatory drugs (NSAIDs)
b. COX-2 inhibitors
c. Transdermal glyceryl trinitrate
d. Oral contraceptives
e. Progestin regimens
f. Levonorgestrel Intrauterine System
g. Calcium channel blockers
h. Simple analgesics

2. Surgical interventions

a. Hysterectomy [30]
b. Laparoscopic uterine nerve ablation [30]
c. Presacral neurectomy [30]

Conventional system of management (Pharmacological therapy)

a) Non-steroidal anti-inflammatory drugs (NSAIDs)

NSAIDS are an analgesic which is the standard medical management for dysmenorrhoea and it inhibit the cyclooxygenase (COX) enzymes, thereby inhibiting the production of prostaglandins [30]. Pharmacological intervention with commonly used drugs aspirin, Diclofenac, ibuprofen, ketoprofen, meclofenamate, mefenamic acid, and naproxen acetaminophen have been providing symptomatic relief [30]. Nonsteroidal

anti-inflammatory drugs (NSAIDs) are the best-established initial therapy for dysmenorrhea; however, these drugs are not 100% effective and are related with side effects [30].

b) COX-2 inhibitors

Prostaglandin synthesis which is mediated primarily by 2 different isoforms of cyclooxygenase (COX-1 and COX-2), which catalyse the metabolism of arachidonate to prostaglandin H2[30]. The Conventional NSAIDs are non- selective inhibitors of both isoforms of COX, it has been proposed that the therapeutic efficiency of NSAIDs is primarily the result of cyclooxygenase-2 (COX-2) inhibition, whereas their well-recognized gastrointestinal toxicity and disruption of platelet function is derived from inhibition of cyclooxygenase-1 (COX-1) activity [30].

c) Transdermal glyceryl trinitrate

Transdermal glyceryl trinitrate has a relaxing effect on the myometrium. In a study comparing glyceryl trinitrate with diclofenac, both the treatments significantly reduced the pain intensity score by 30minutes [31]. Though, diclofenac continued to be effective in reducing pelvic pain for 2 hours while glyceryl trinitrate did not [31]. Headache was significantly increased by glyceryl trinitrate. This study indicates that glyceryl trinitrate has a reduced efficiency and tolerability by comparison with diclofenac in the treatment of primary dysmenorrhea [31]. When the glyceryl trinitrate patch was compared with a placebo patch, the pain intensity differences from 1 to 6 hours were statistically significant in favour of active treatment [31]. The incidence of the headache was 26% for the active drug and 6.1% for placebo [31].

d) Oral Contraceptives

Oral contraceptive pills (OCP) are used as a second-line treatment [30]. OCP prevent ovulation and improve dysmenorrhoea by reducing the amount of endometrial tissue available for PG and leukotrienes [32]. One potential disadvantage of the use of OCPS is the possible adverse effects that can accompany the two hormones used [32]. Oestrogen associated side effects may include nausea, vomiting, headaches, breast tenderness, and changes in body weight; progestogenic side effects may include acne, weight gain, increased hair growth and depression [32].

e) Progestin regimens

The Depot medroxyprogesterone acetate (DMPA) works primarily by suppressing the ovulation [30]. It can also induce endometrial atrophy. One of its non-contraceptive benefits is amenorrhea with a resultant reduction in the incidence of dysmenorrhoea [33]. Amenorrhea rates are 55% to60% at 12 months and 68% at 24 months [33]. For this reason, the DMPA may be considered in the treatment dysmenorrhea [33]. The progestin only pill (POP) may decrease menstrual flow, and up to 10% of POP users will build up amenorrhea [33].

Menstrual cramping may be decreased [33].

f). Levonorgestrel Intrauterine System

It is commonly used for heavy menstrual bleeding; the hormonal intrauterine system can help to relieve pain by reducing heavy blood flow [30].

g) Calcium channel blockers

Calcium antagonists can reduce myometrial activity and alleviate dysmenorrhoea by controlling the cytoplasmic concentration of free calcium and thereby the contractions of the uterine muscle [30].

h) Simple analgesics

Simple analgesics, such as aspirin and paracetamol are useful as a starting point especially when NSAIDs are contraindicated [30].

3. Naturopathic Modalities which are used in treating Primary Dysmenorrhoea

1. FASTING AND DIET

Regular fasting once a week is advised to maintain general health [3]. Anecdotal evidence suggests that fasting or having light meal during the days of menstruation is advisable to manage the symptoms of primary dysmenorrhoea
(6).
Tender coconut water, fruit juice, raw ash guard juice, fruit or raw vegetable salads, helps to relieve severe menstrual pain [6]

Ginger as a spice is used commonly in every household, it is well known for its anti- inflammatory and analgesic effects [6]. Gingers constituents such as gingerols, shogaols, zingerone, and paradol have shown its pharmacological effects in various conditions [22]. Systematic review and meta-analysis have shown that ginger is effective in treating primary dysmenorrhoea [22].

Cinnamon is also used for menstrual cramps and excessive bleeding during menstruation, it has anti-inflammatory and anti-spasmodic properties due to the presence of cinnamaldehyde and eugenol [6]. It can prevent the biosynthesis of prostaglandins and further helps to reduce inflammation; it is helpful in managing the symptoms of primary dysmenorrhoea [23].

Fennel essence is cultivated and used widely in India and also in Mediterranean area to relieve painful menstruation [24].

Dietary calcium has a functional role in dysmenorrhoea because low levels of muscular contractions [6]. Therefore, consuming foods rich in calcium like ragi, coconut water, dried coconut, almond, mustard seeds, sunflower seeds, gingelly seeds, cumin seeds and green leafy vegetables may help to relieve pain, Supplements like vit-E, thiamine (vit-B1), pyridoxine (vitB6), and magnesium may be effective in the management of dysmenorrhoea [6].

2. HYDROTHERAPY

It has been observed that the blood supply of every organ can be controlled by thermic applications to the surface of the body [6]. Hence, hydriatic application is a powerful therapeutic solution in naturopathy for

the management of many diseases and disorders [6]. According to the various study conducted in hydrotherapy many procedures show varied effects on primary dysmenorrhoea

I. Hot hip pack

It is applied on to the abdomen it extends from the umbilicus to the middle of the thighs it is useful as an analgesic measure and helps in relieving menstrual pains (25).

II. Hot hip bath

When given for 15 min at a temperature of 102-112^{0}F for dysmenorrhoea with scanty flow and for 3-4 min at a temp of 105-110^{0}F for excessive flow is helpful (26).

III. Revulsive sitz bath

It should start at 100-degree Fahrenheit and should be rapidly raised to 115- or 120-degree Fahrenheit [26]

IV. Hot hip pack with hot foot bath

It is always followed by cold compress to the hypogastrium and inner surface of thighs for 30-40 sec [25]
Other measure includes [6]

- Alternate hot and cold hip bath
- Alternate hot and cold lower abdomen packs
- Neutral spinal spray
- Direct mud applications to lower abdomen

3. MASSAGE

The effect of massage on the circulatory, lymphatic, and nervous system has been intensively studied [6]. In primary dysmenorrhoea, stress plays a major role as it increases the sensitivity and severity of pain, by activating sympathetic responses and inhibiting parasympathetic responses, massage has been proved to reduce stress, gives a sense of relaxing and calming effects and helps in improving the quality of life [27]. Abdominal massage every day for 5 min 6 days before menstruation was observed to be effective in alleviating the pain during menstruation [27].

Sl.no	Meridian	Points [28]
1.	Kidney	K-3
2.	Spleen	Sp-4, sp-6, sp-8
3.	Stomach	St-36, st-25, st,29, st-30
4.	Conceptional vessel	Cv-3, cv-4, cv-6

4. ACUPRESSURE AND ACUPUNCTURE [6]

According to various studies acupuncture regulates neuroendocrine activity and the receptor expression of HPO axis, which increases the NO (nitric oxide) levels and relaxes the smooth muscles and helps in relieving the primary dysmenorrhoea some points may be effective as analgesic points [6]. Also, acupuncture may help in improving circulation and releasing endorphins, which helps in management of primary dysmenorrhoea [6]

According to various research the specific points for treating dysmenorrhoea includes (28)

5. YOGA THERAPY [6]

The aim of yoga therapy in the management of dysmenorrhoea is to reduce the intensity of pain and to improve quality of life by reducing distress during menstruation [6]. Regular yoga practice, which includes asanas pranayama and relaxation techniques, helps to improve the body's vitality [29].
Studies have shown that menstrual irregularities are benefitted by yoga Nidra which reduces anxiety and depression and thereby improves quality of life. A randomized control trial done by Zahra, et, al. On the effect of cobra, cat, and fish poses during luteal phase in women with primary dysmenorrhoea demonstrated that these asanas helped in reducing the severity and duration of primary dysmenorrhoea [29].

4. MATERIALS AND METHODS

SOURCE OF DATA: Subjects attending OPD of GNCYMC&H will be screened through consultation from outpatient departments of GNCYMC&H. Subjects will be recruited only if they satisfy the selection criteria and give consent to participate in the study. Subjects who are eligible and interested in being part of the study will be asked to contact the study investigators for screening interview. Those identified through screening process as potentially eligible subjects are scheduled to meet the study coordinator for consenting process and to undergo basic medical examinations including a complete medical history by study consultant. The study consultant confers the diagnosis of primary dysmenorrhea and excludes those with other systemic illness that may interfere in the study and put the patient at risk.

5. METHODS OF DATA COLLECTION:

A. PRIMARY OUTCOME VARIABLES

Subjective Measures

1. Menstrual symptom questionnaire by Chesney and Donald L tasto [9]
2. WALIDD questionnaire by Wong - Baker
3. Visual analogue scale for pain
4. Pain rating scale

Visual pain analogue scale

Visual analogue scale is a tool used to help a person rate the intensity of certain sensations and feelings, such as pain. The visual analogue scale for pain is a straight line with one end meaning no pain and the

other end meaning the worst pain imaginable. The pain marks a point on the line that matches the amount of the pain he or she feels.0 indicates no pain indicating the worst possible pain.

Sl.no	Scoring	Type of pain
1	0	No pain
2	1-3	Mild pain
3	4-6	Moderate pain
4	7-9	Severe pain
5	10	Pain as bad as it could be

SCORE	INTERPRETATION
0	Without Dysmenorrhea
1 – 4	Mild Dysmenorrhea
5 – 7	Moderate Dysmenorrhea
8 – 12	Severe Dysmenorrhea

Measuring from the left end to the marked point the pain can be quantified.

B. SECONDARY OUTCOME VARIABLE

- Anthropometry
- Autonomic Variables

ASSESMENT DURING STUDY PERIOD:

1. Pre post questionnaire
2. Anthropometric Measurement
3. Autonomic Variables
4. Diagnosis of Dysmenorrhoea

6. SELECTION CRITERIA FOR STUDY

INCLUSION CRITERIA

- Individuals under 16 to 26 years will be included
- Patients who suffer from severe pain during menstruation
- Patients with regular menstrual cycles ranging from 28 to 35 days
- Menstrual pain past 6 months

EXCLUSION CRITERIA

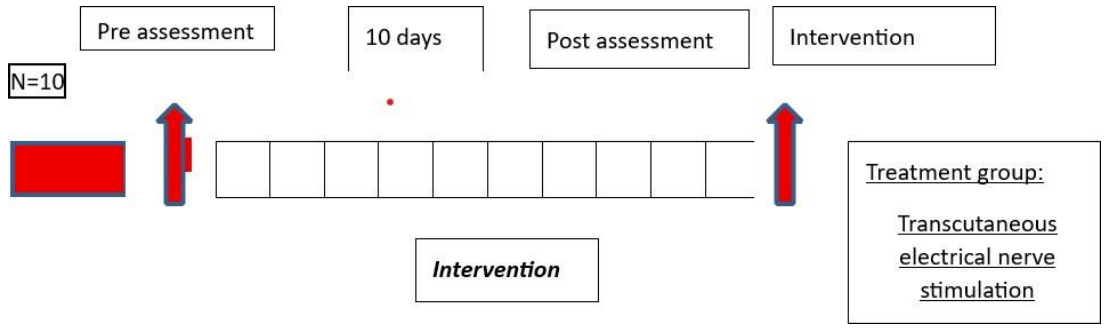
- Patient aged above 26 years were excluded
- Patient suffering from other pelvic pathology
- Patient with irregular menstrual cycle
- Married women

7. STUDY DESIGN.

A pilot study of 10 subjects is selected to undergo Electroacupuncture treatment for 10 days if they satisfy selection criteria and consent to participate in the study.
Duration of intervention: 10 days
Sampling method: simple random sampling based on inclusion criteria Sample size: 10

8. STUDY PLAN

1. Subjects: 10 patients who are attending GNCYMC&H Mysuru with the diagnosis of primary dysmenorrhoea satisfy in the selection criteria will be recruited for the study after they have been given informed consent to participate in the study.



INTERVENTION:

Group (N=10) will receive low frequency electroacupuncture for duration of 20mins for 10days before the onset of menstrual cycle.

Procedure of Intervention

1. Patient is made to lie in supine position and made to relax comfortably.
2. Electrode placement: two leads of the electrode is placed onto the lower abdomen near the appropriate dermatome and superficial nerve proximal to the site of pain.
3. Patient must be told how the machine works and which type of sensation will they experience
4. Keep all the settings to zero then switch on the machine and start increasing the output until the patient perceives a mild buzzing or pulsating sensation.
5. Once the treatment is done the patient can relax for a few minutes
6. The treatment will be given daily for the duration of 20minutes for 10 days in the morning.

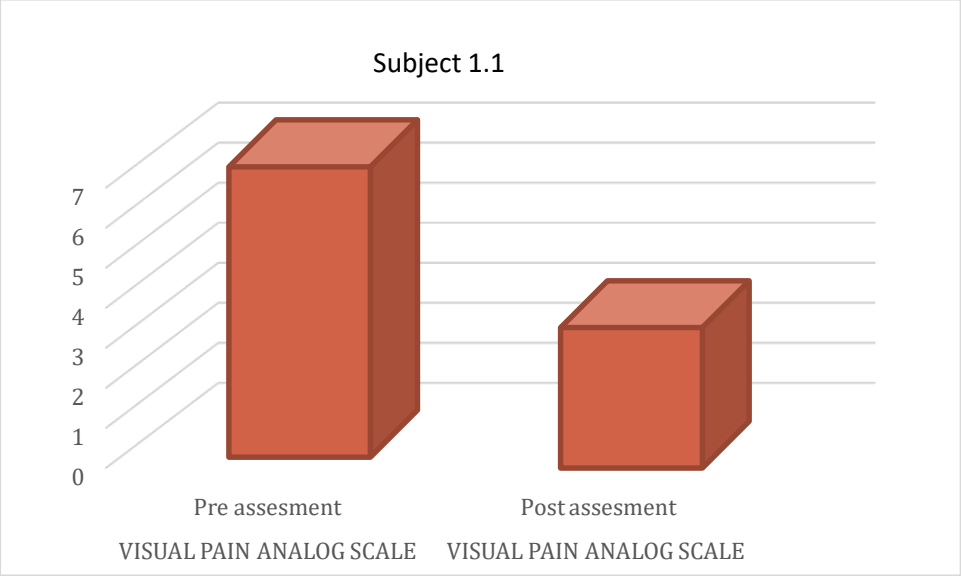
Assessment

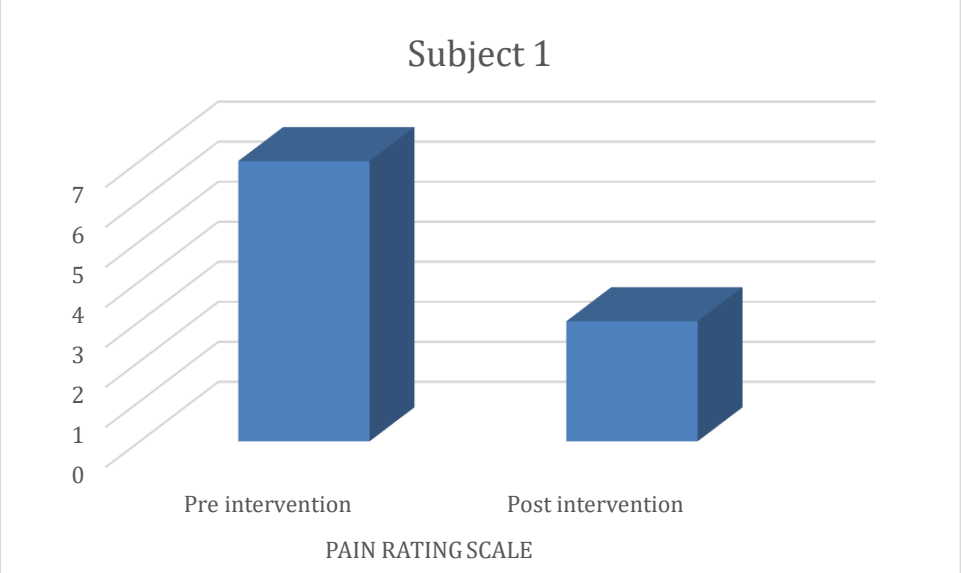
After the completion of said duration the post assessment will be done through the questionnaire and it will be compared with the pre assessment.

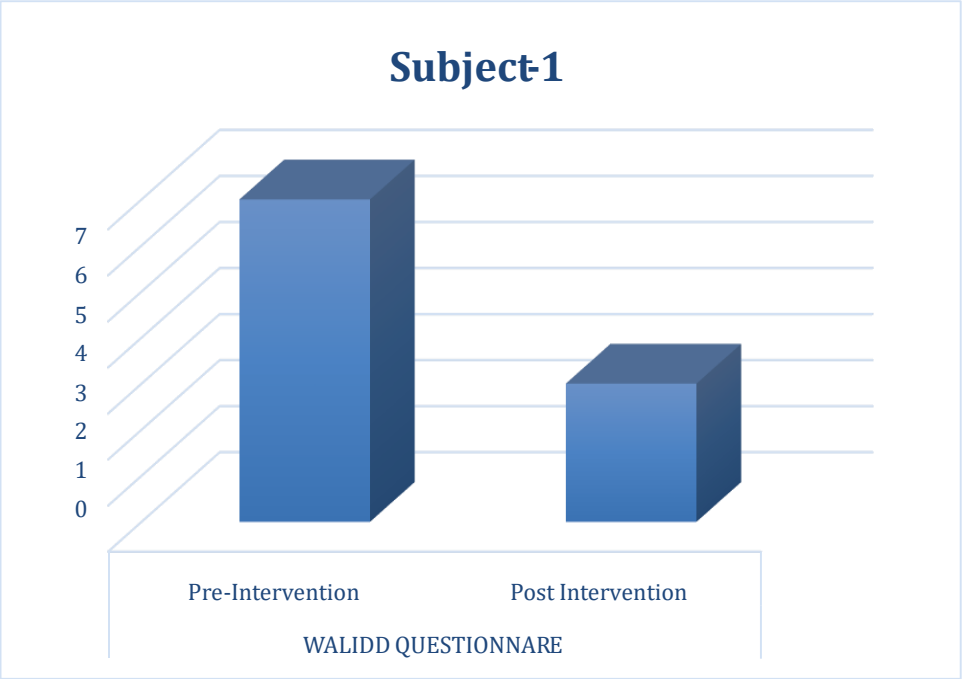
The assessment will be done via

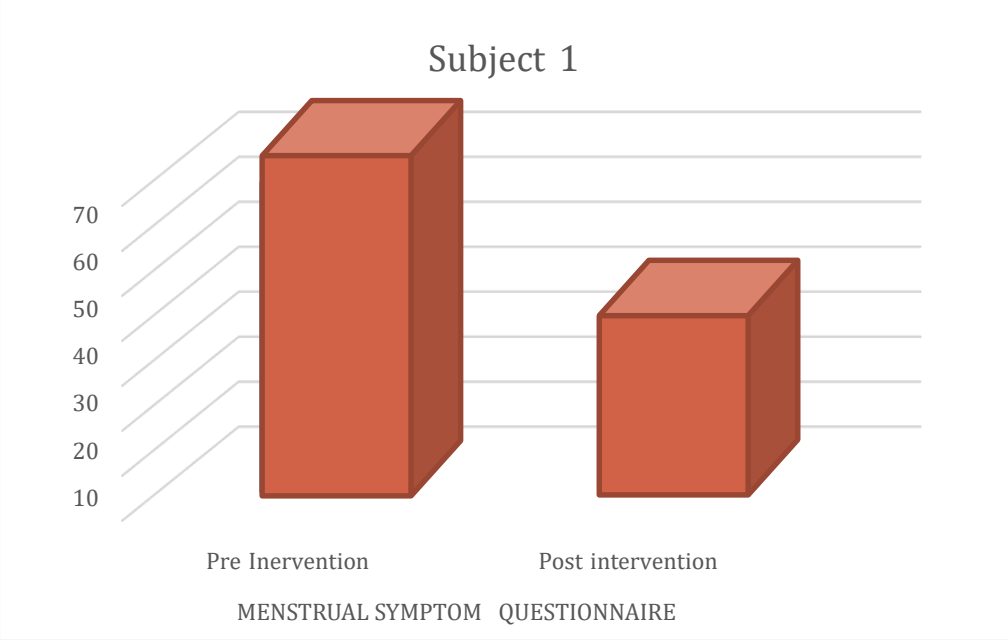
1. Visual analogue scale
2. WALIDD dysmenorrhoea questionnaire
3. Chesney and Donald L tasto dysmenorrhoea symptom questionnaire

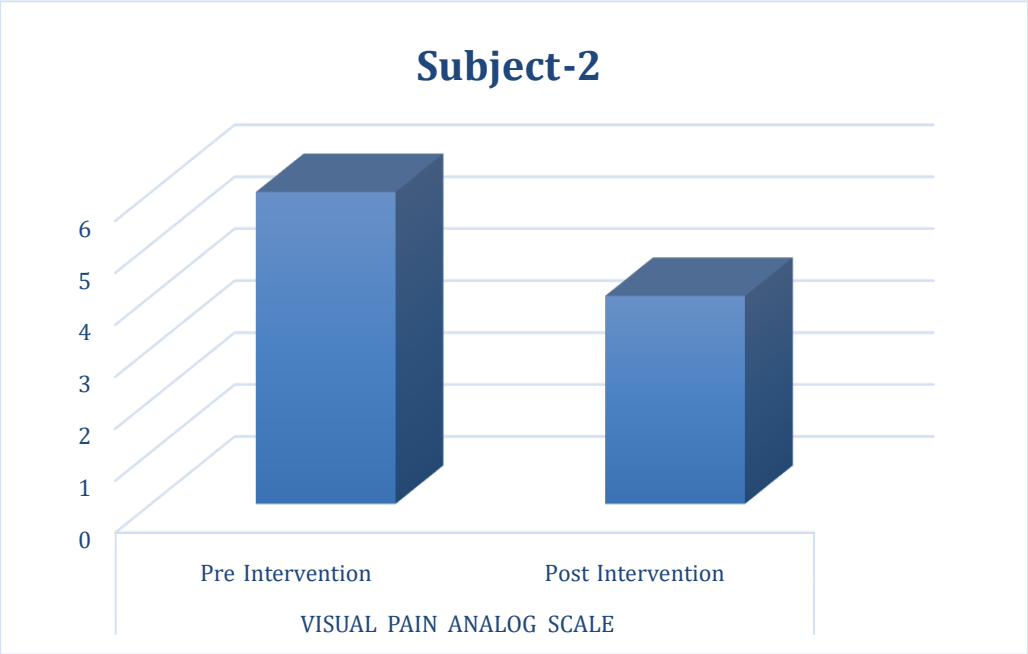
9. STATISTICS

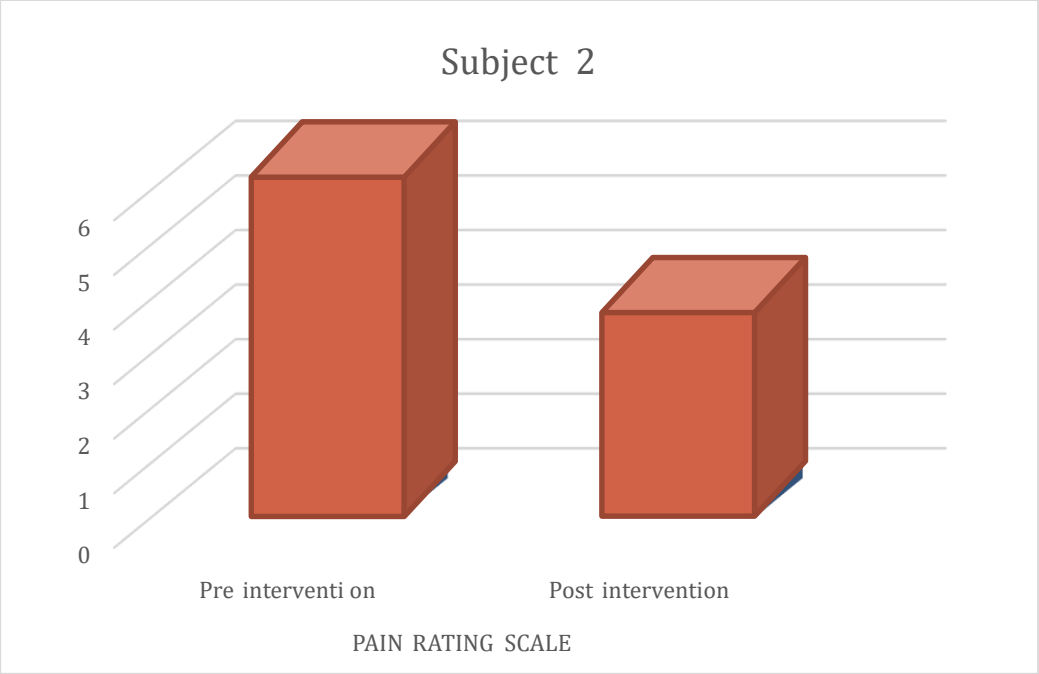


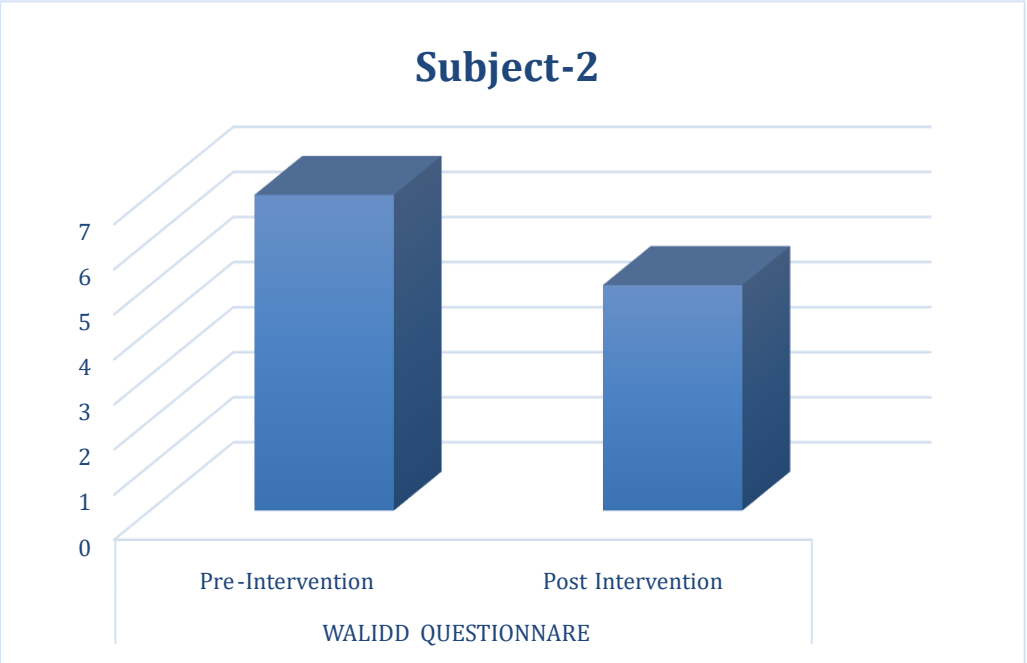


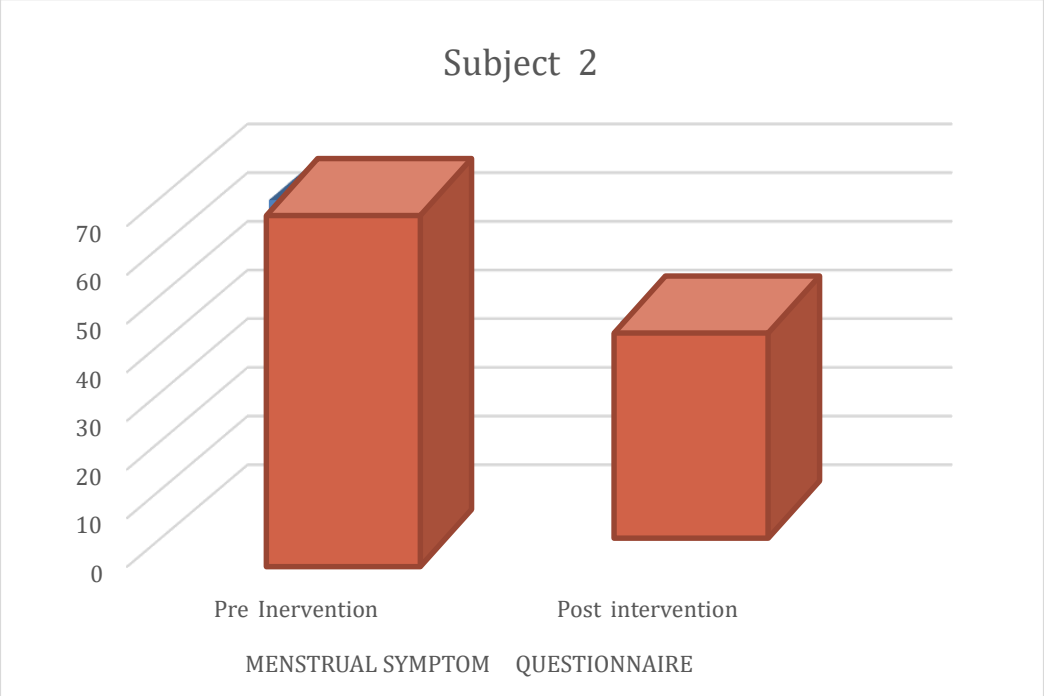

Subject-1
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

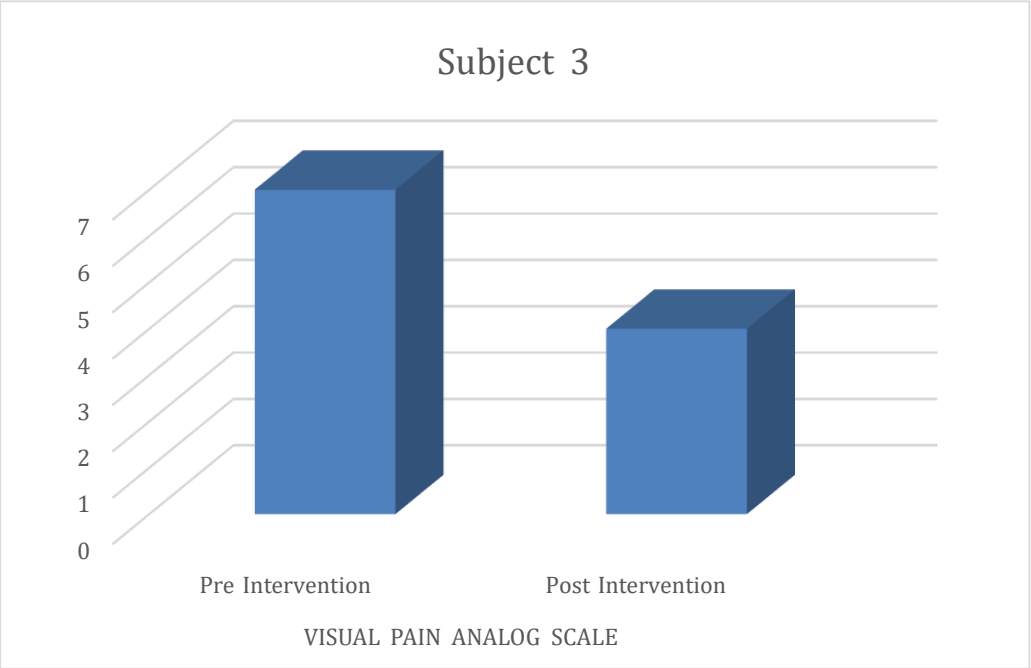

Subject 1
70
60
50
40
30
20
10
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

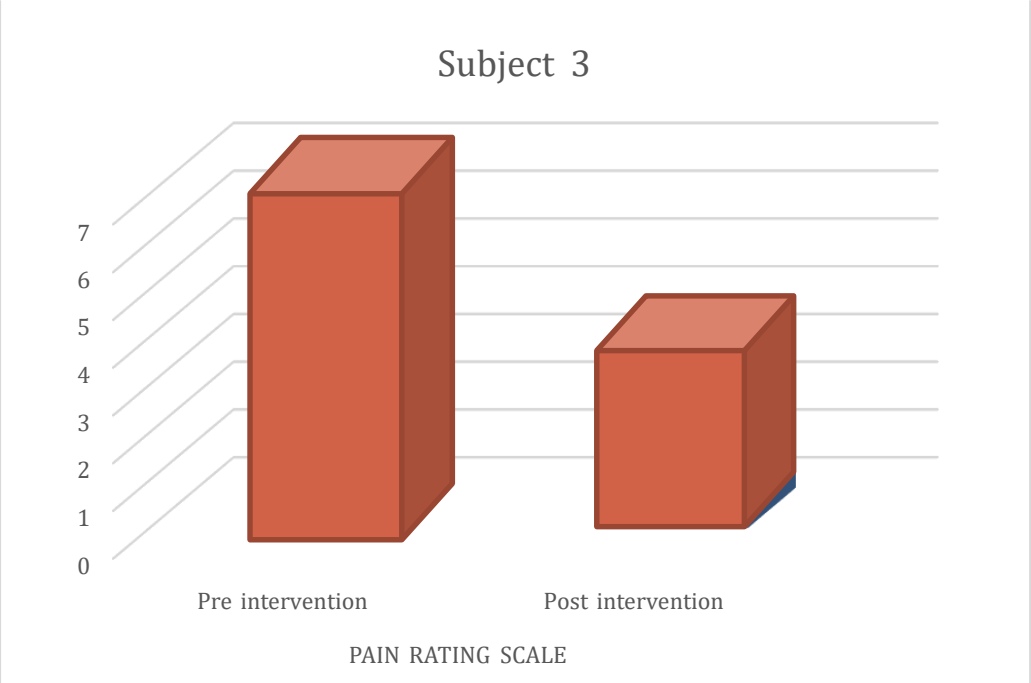

Subject-2
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

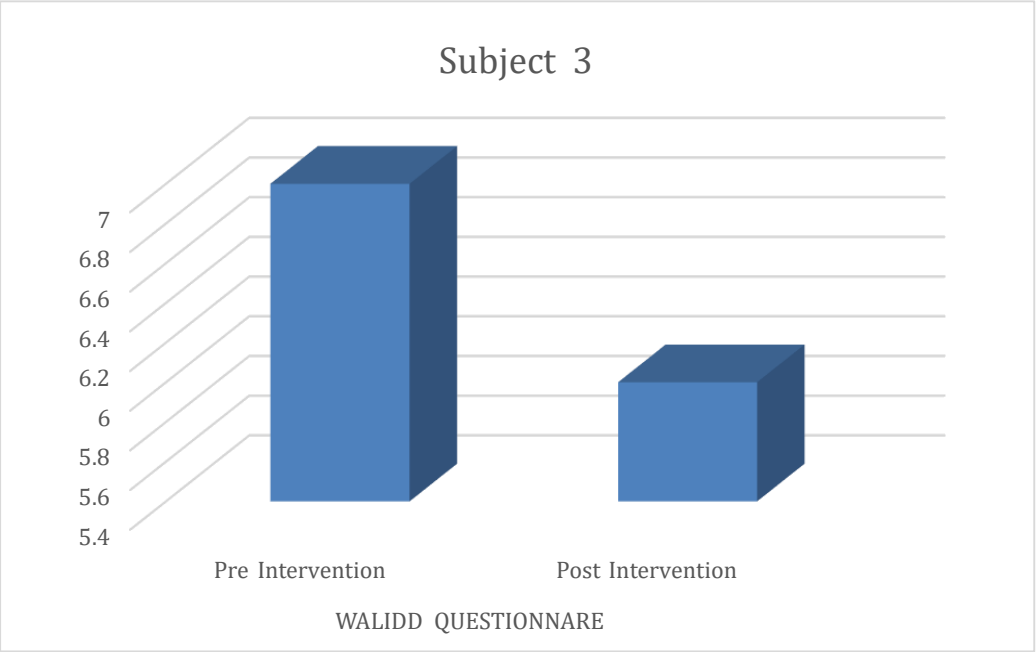

Subject 2
6
5
4
3
2
1
0
Pre interventi on
Post intervention
PAIN RATING SCALE

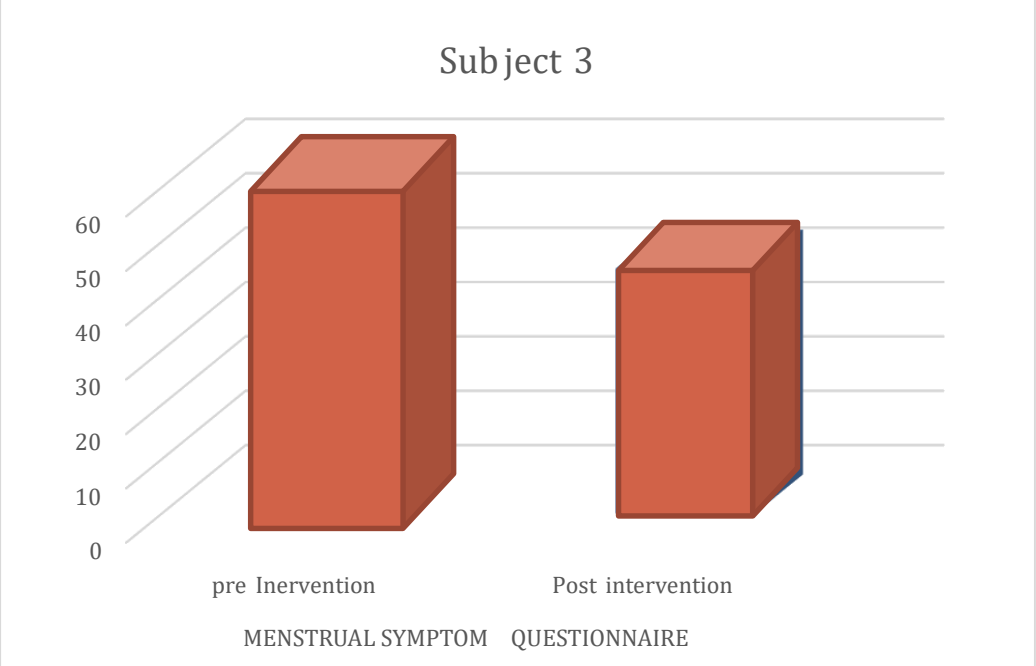

Subject-2
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

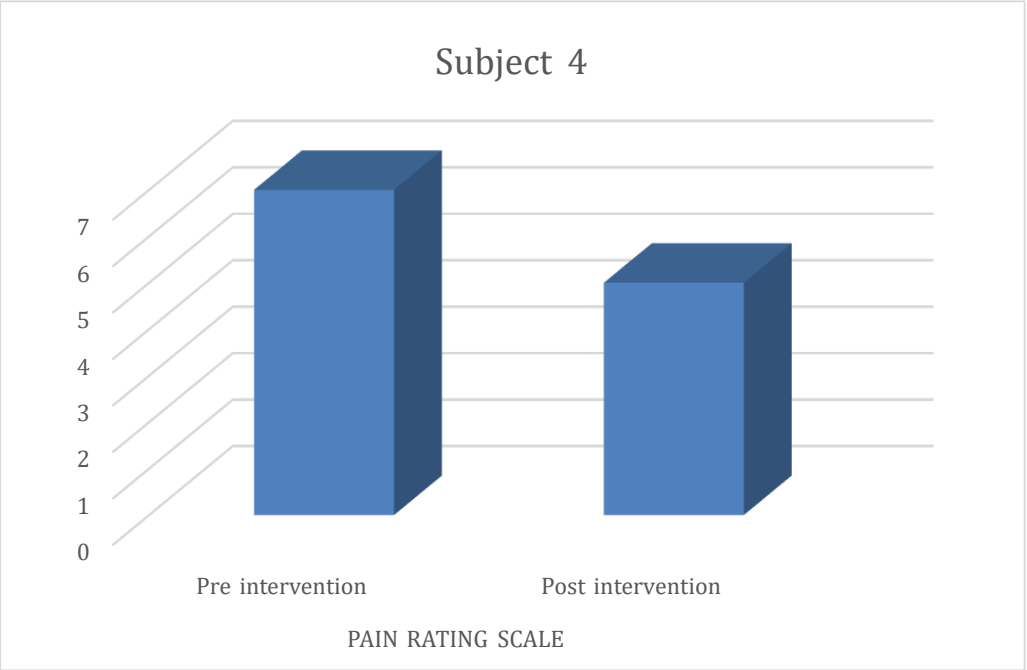

Subject 2
70
60
50
40
30
20
10
0
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

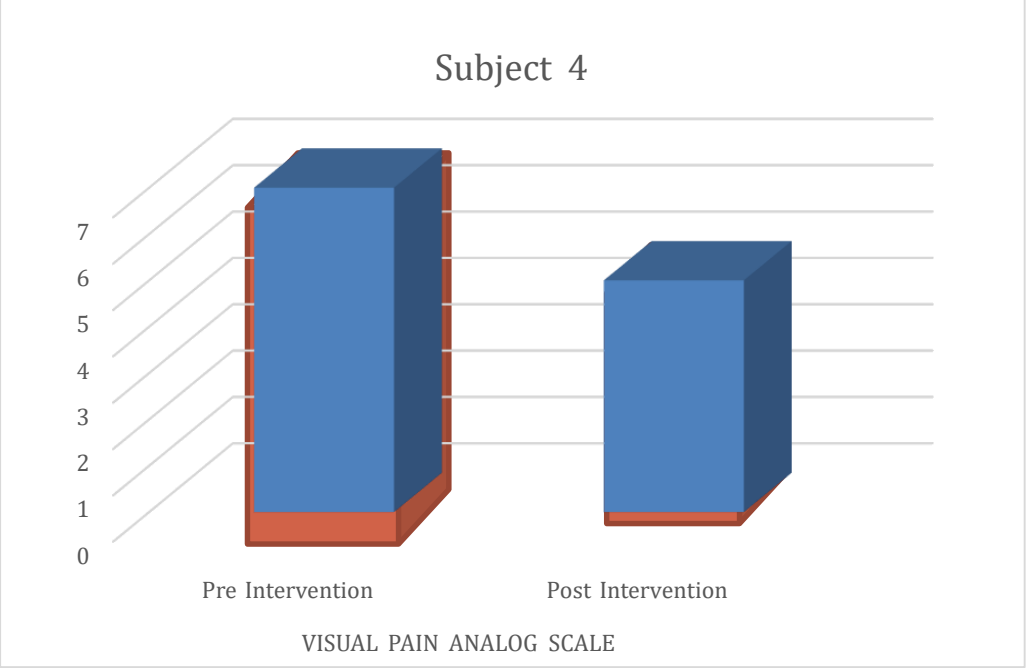

Subject 3
7
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

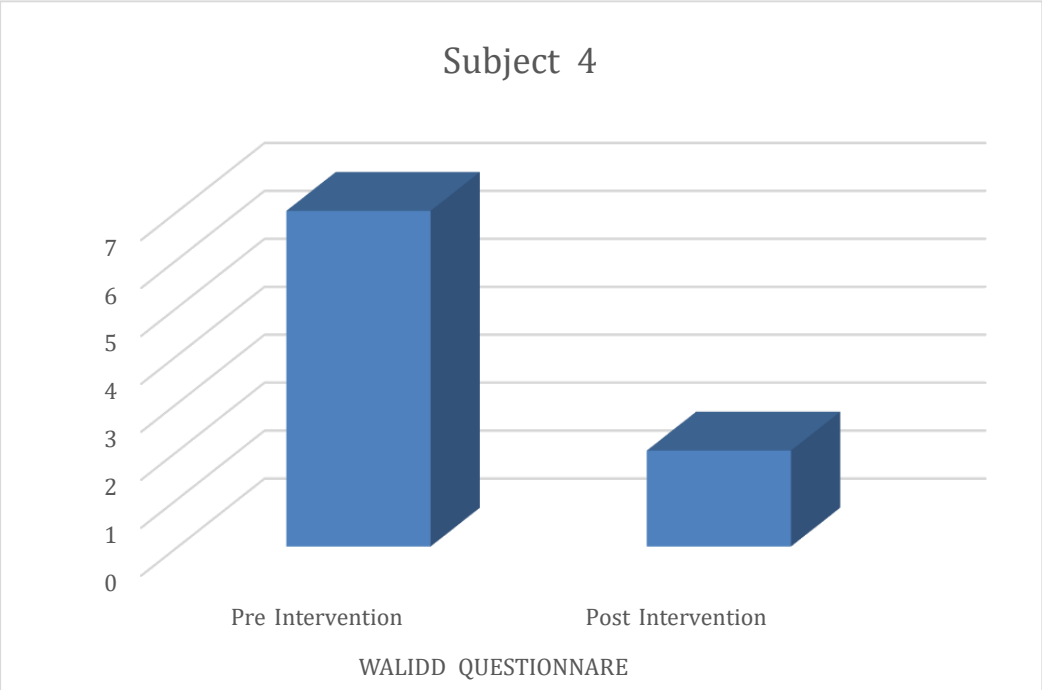

Subject 3
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

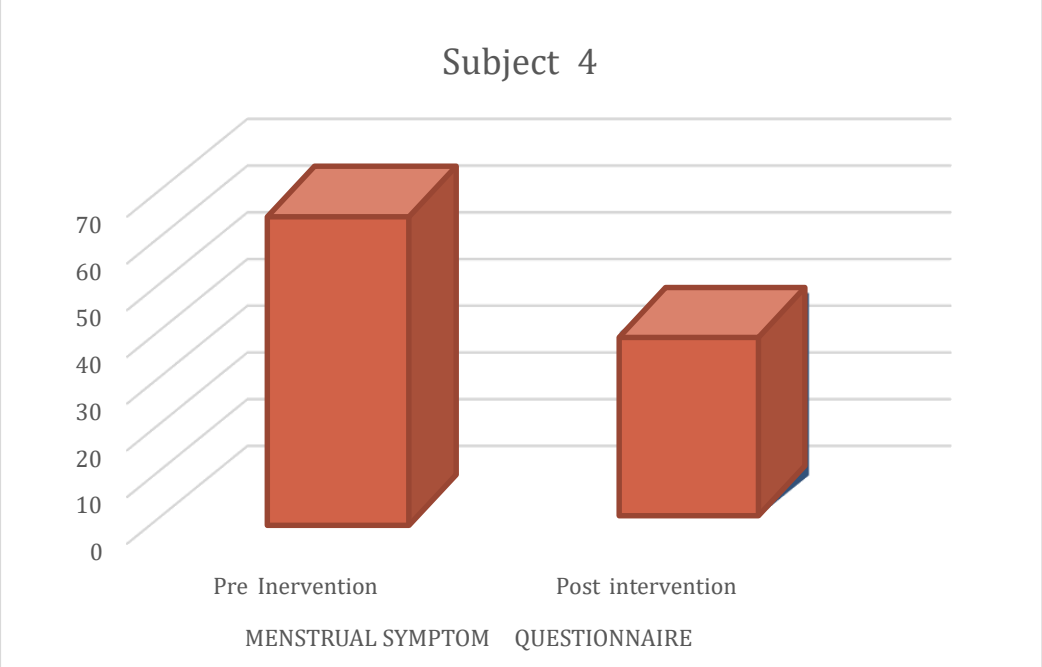

Subject 3
7
6.8
6.6
6.4
6.2
6
5.8
5.6
5.4
Pre Intervention
Post Intervention
WALIDD QUESTIONNARE

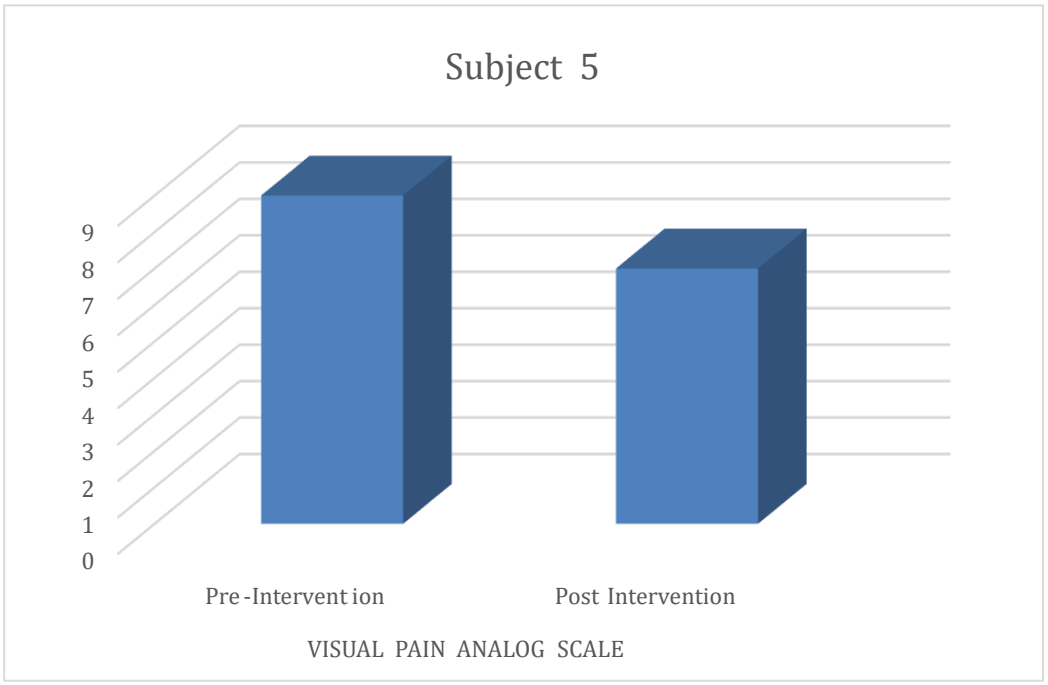

Subject 3
60
50
40
30
20
10
0
pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

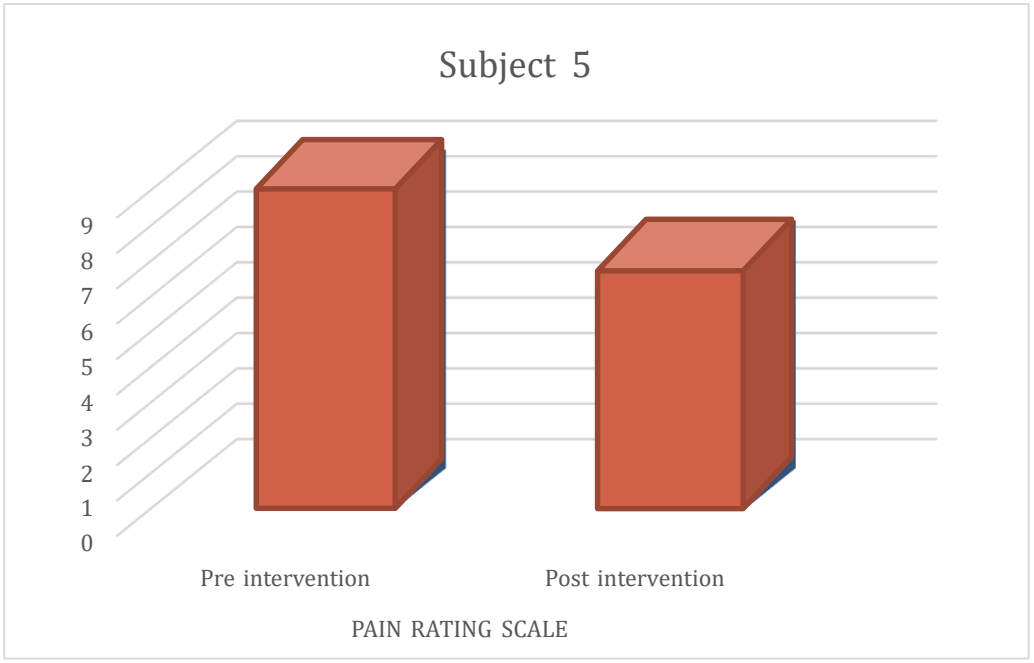

Subject 4
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

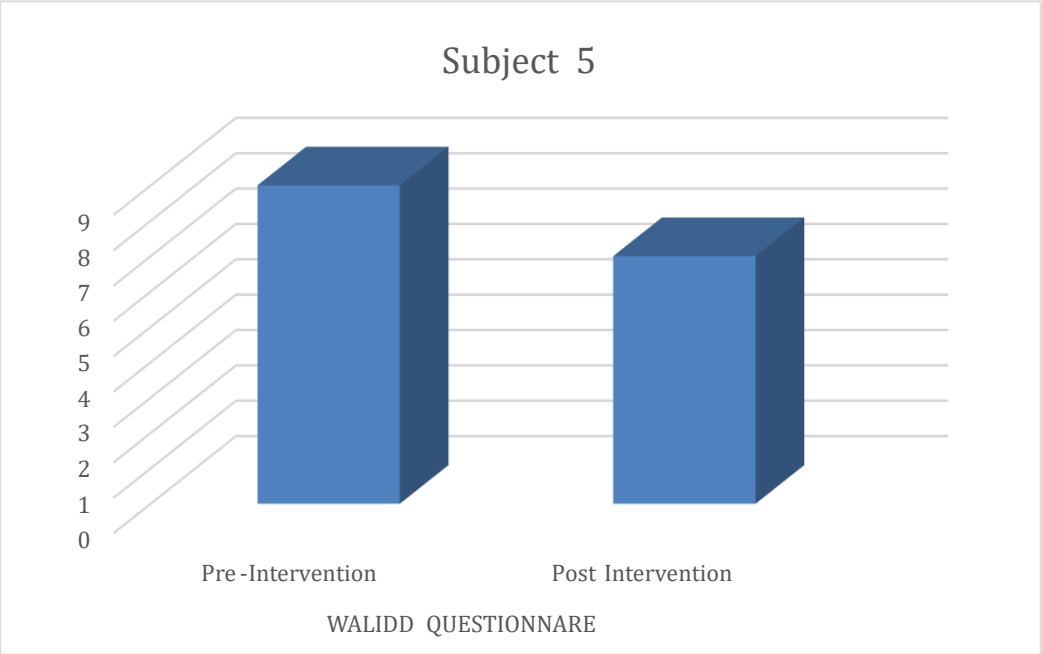

Subject 4
7
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

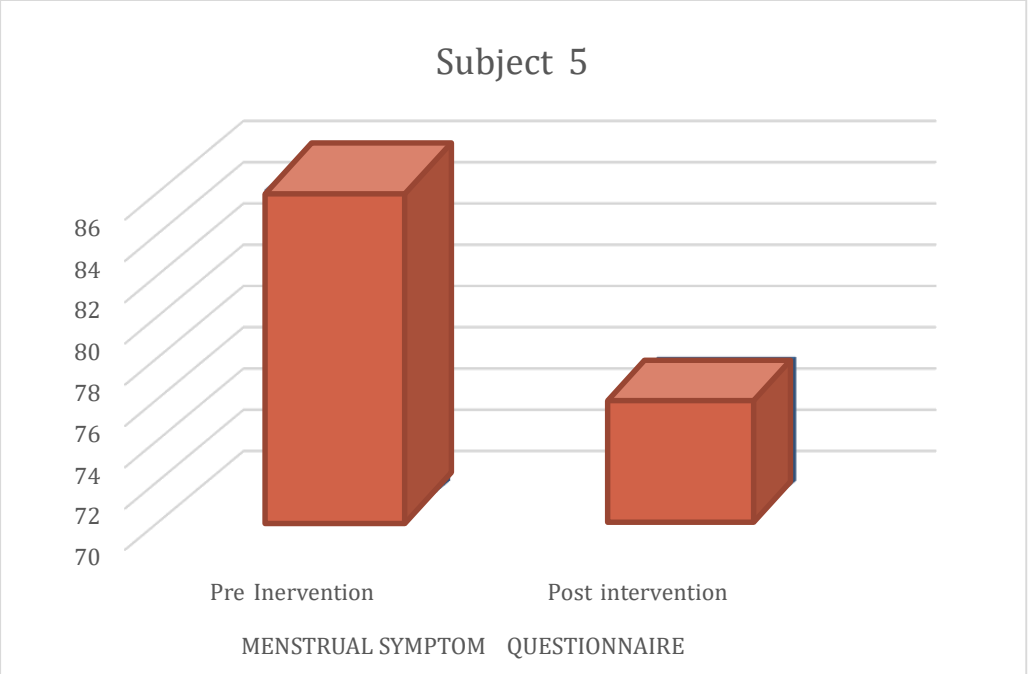

Subject 4
7
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
WALIDD QUESTIONNARE

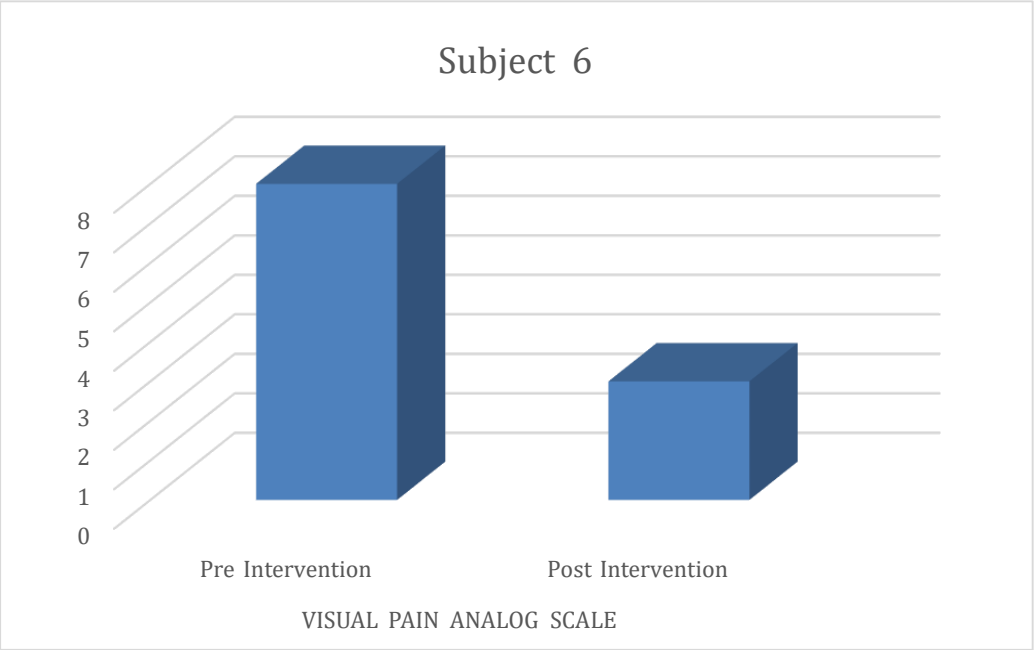

Subject 4
70
60
50
40
30
20
10
0
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

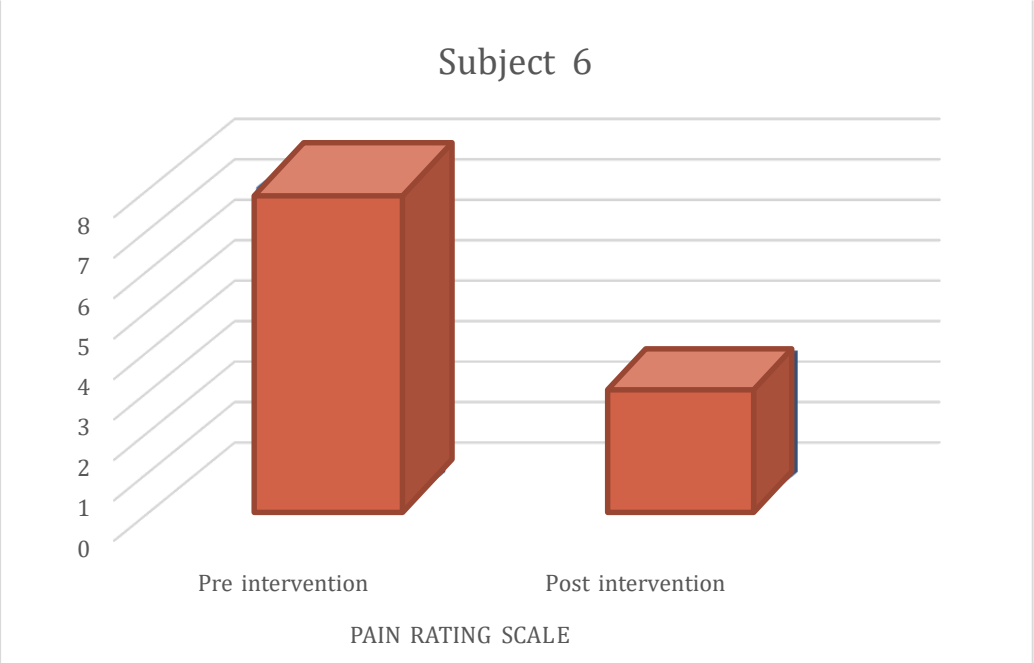

Subject 5
9
8
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

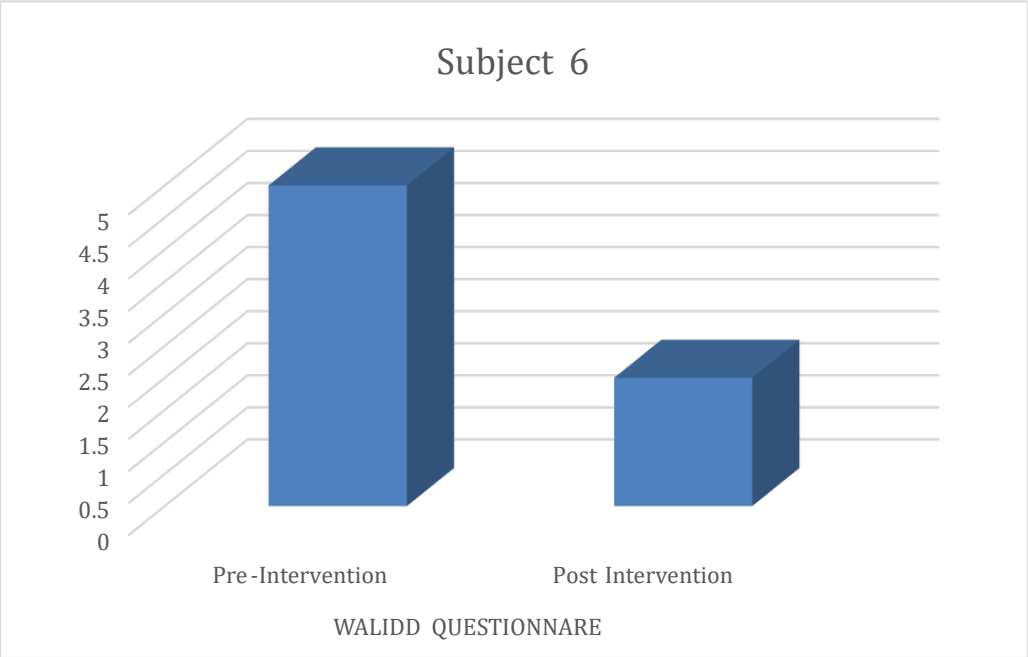

Subject 5
9
8
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

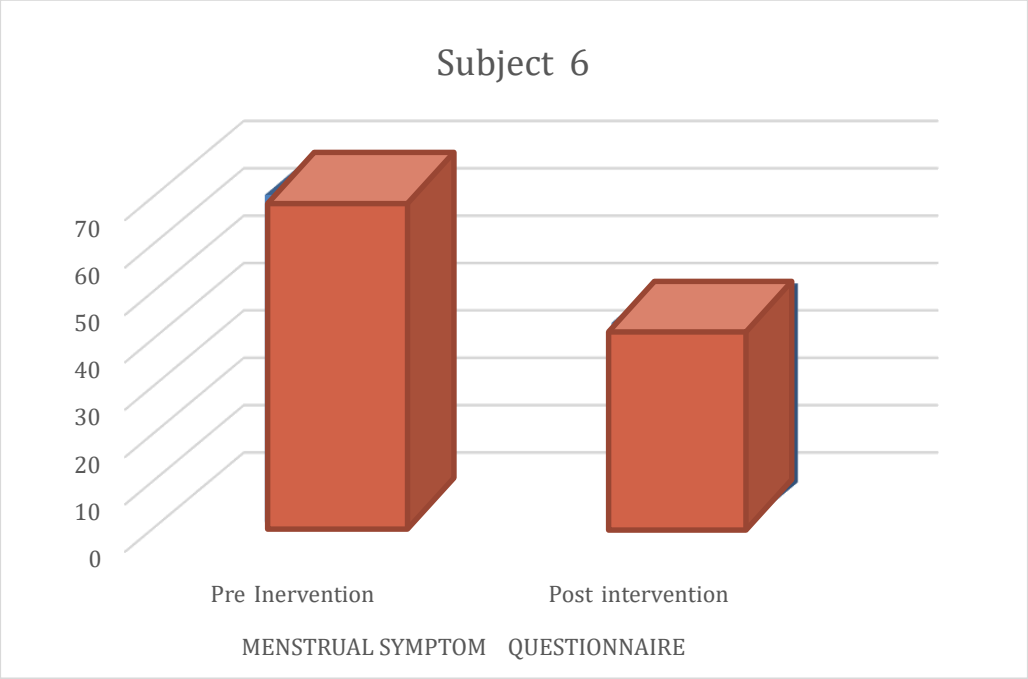

Subject 5
9
8
7
6
5
4
3
2
1
0
Pre -Intervention
Post Intervention
WALIDD QUESTIONNARE

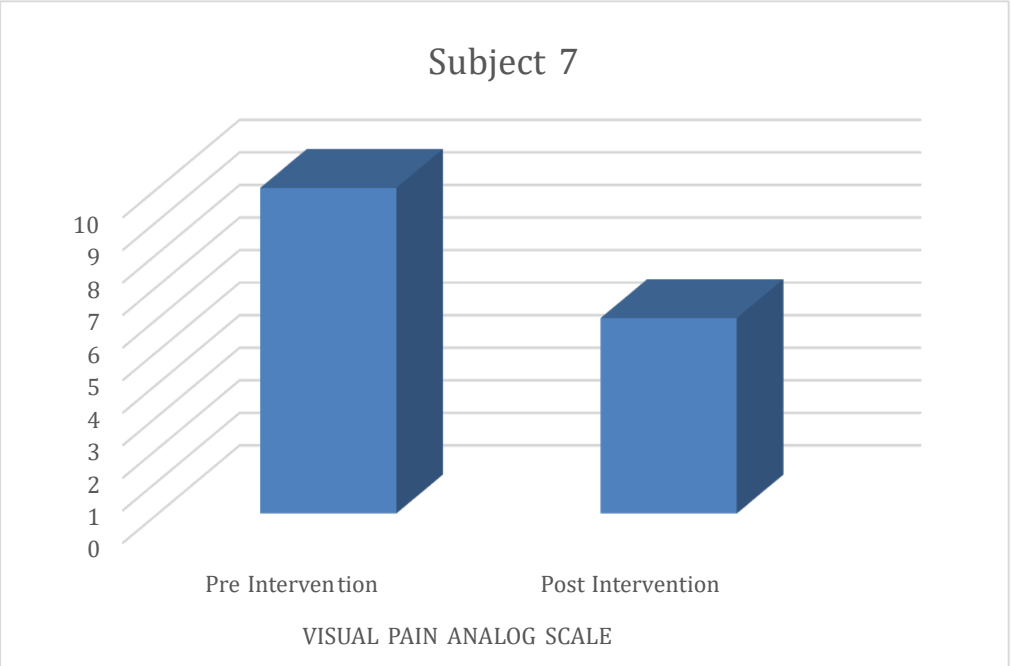

Subject 5
86
84
82
80
78
76
74
72
70
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE


Subject 6
8
7
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

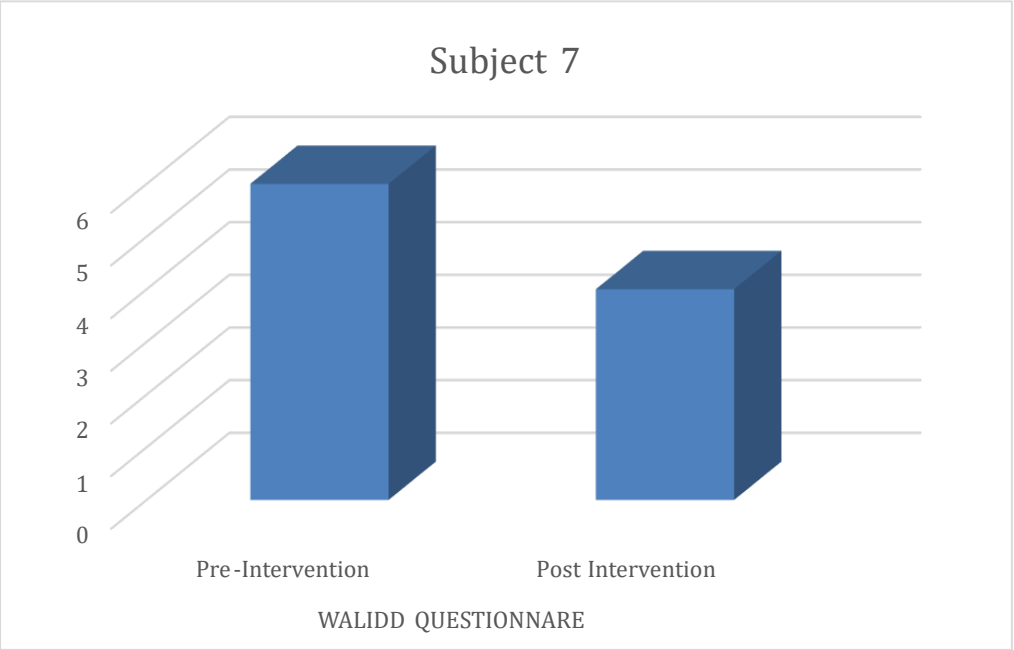

Subject 6
8
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

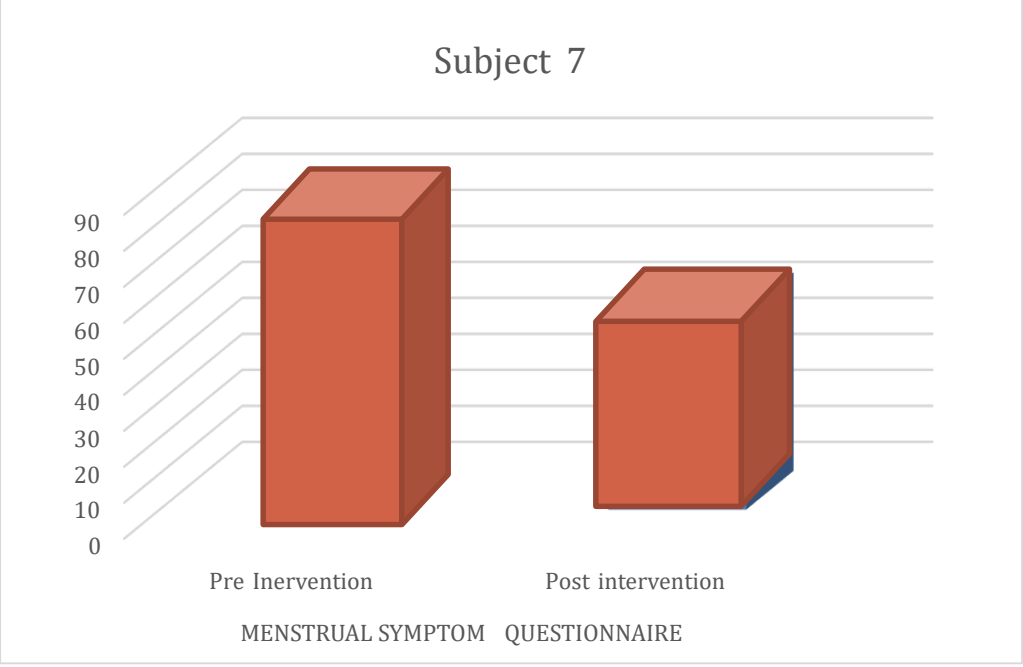

Subject 6
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

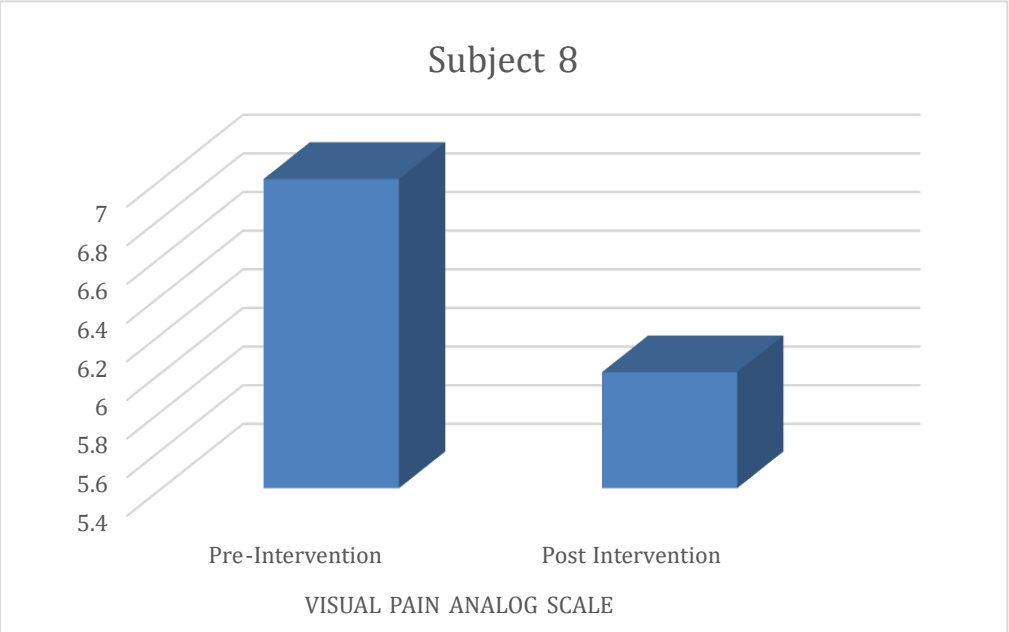

Subject 6
70
60
50
40
30
20
10
0
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

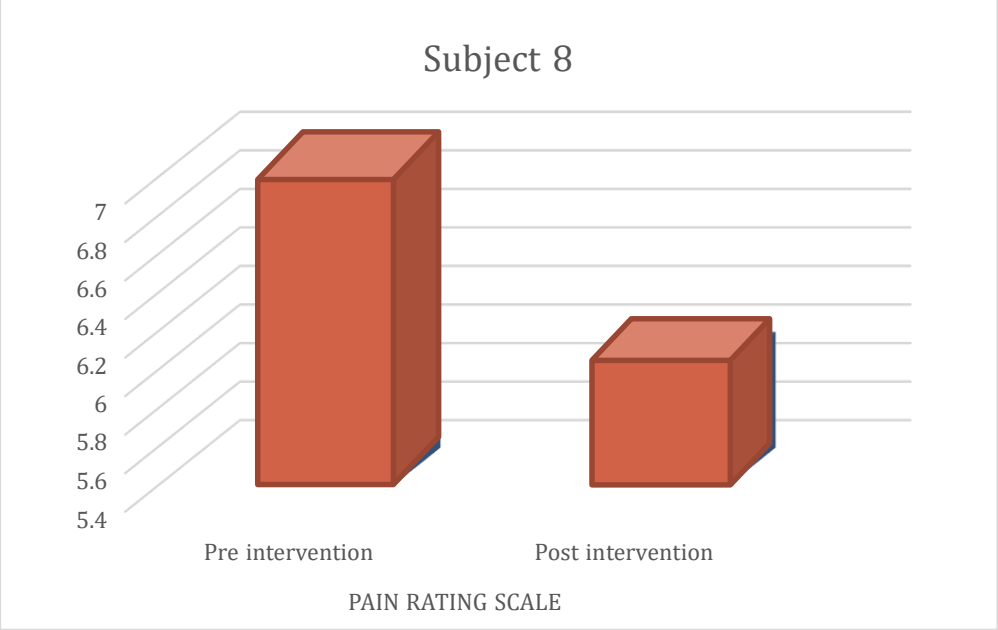

Subject 7
10
9
8
7
6
5
4
3
2
1
0
Pre Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

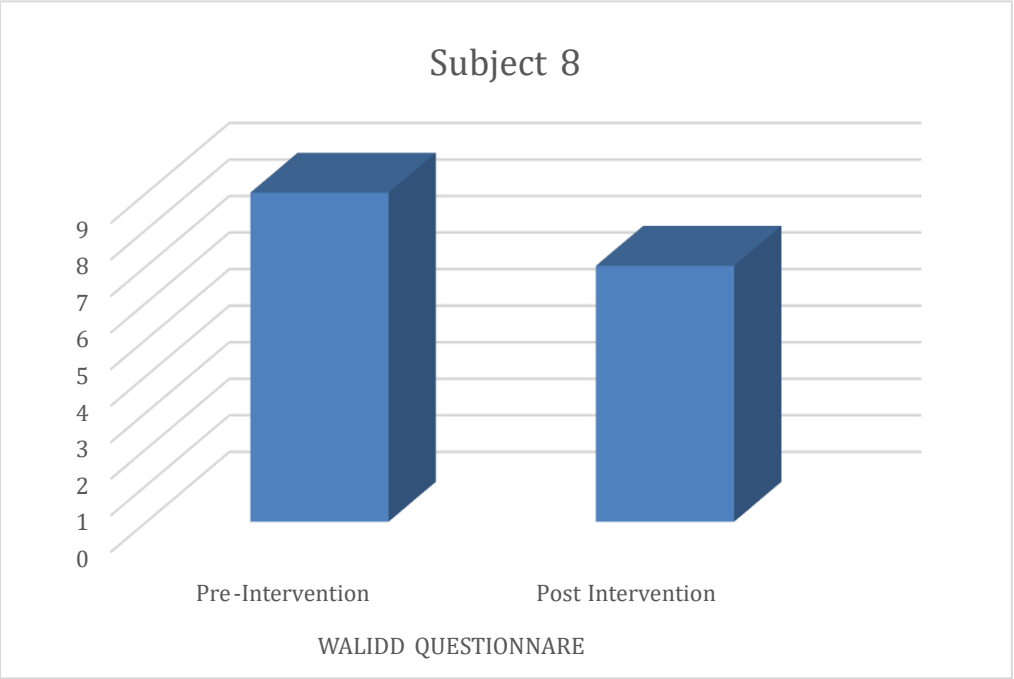

Subject 7
10
9
8
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

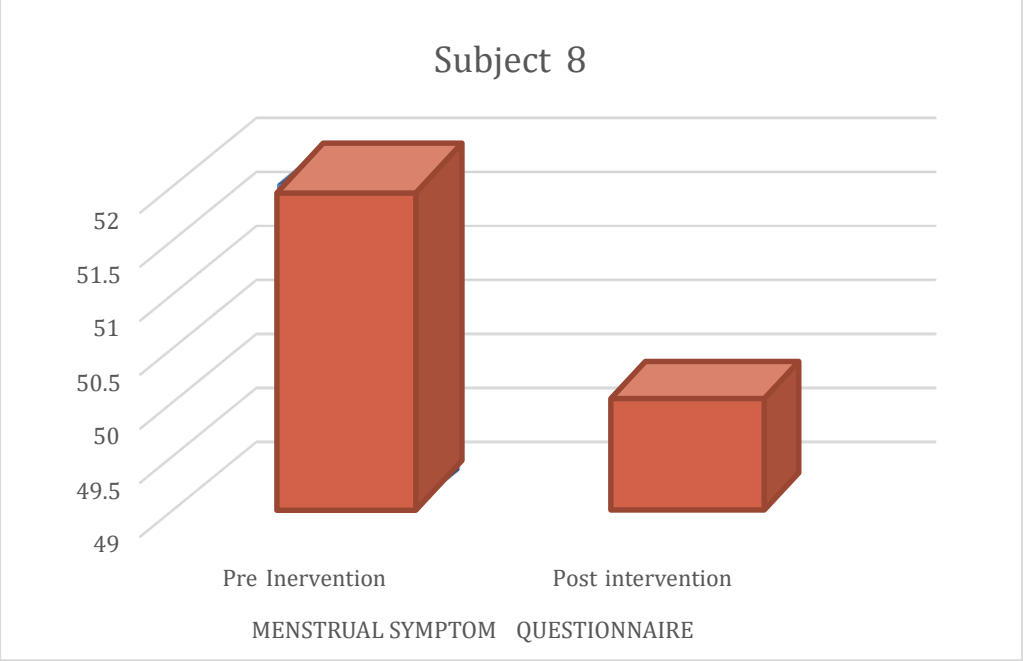

Subject 7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

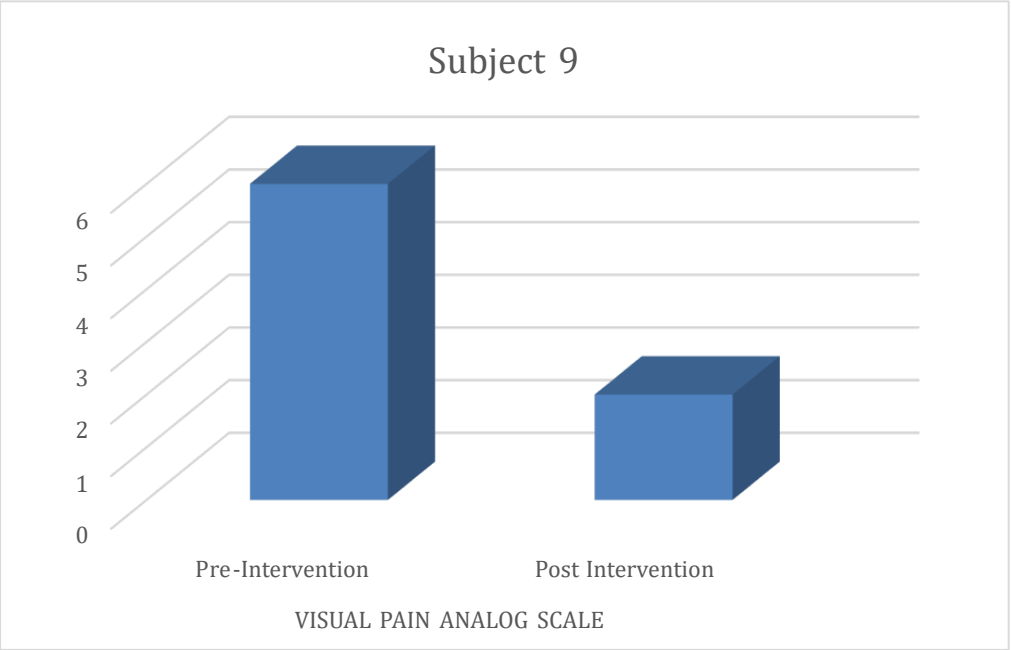

Subject 7
90
80
70
60
50
40
30
20
10
0
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

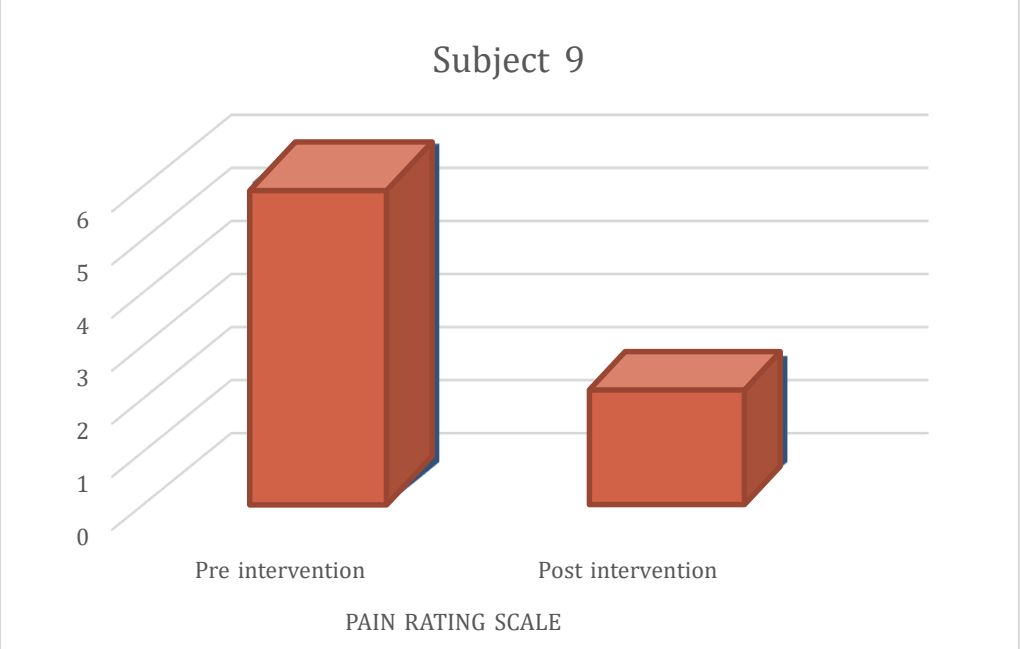

Subject 8
7
6.8
6.6
6.4
6.2
6
5.8
5.6
5.4
Pre-Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

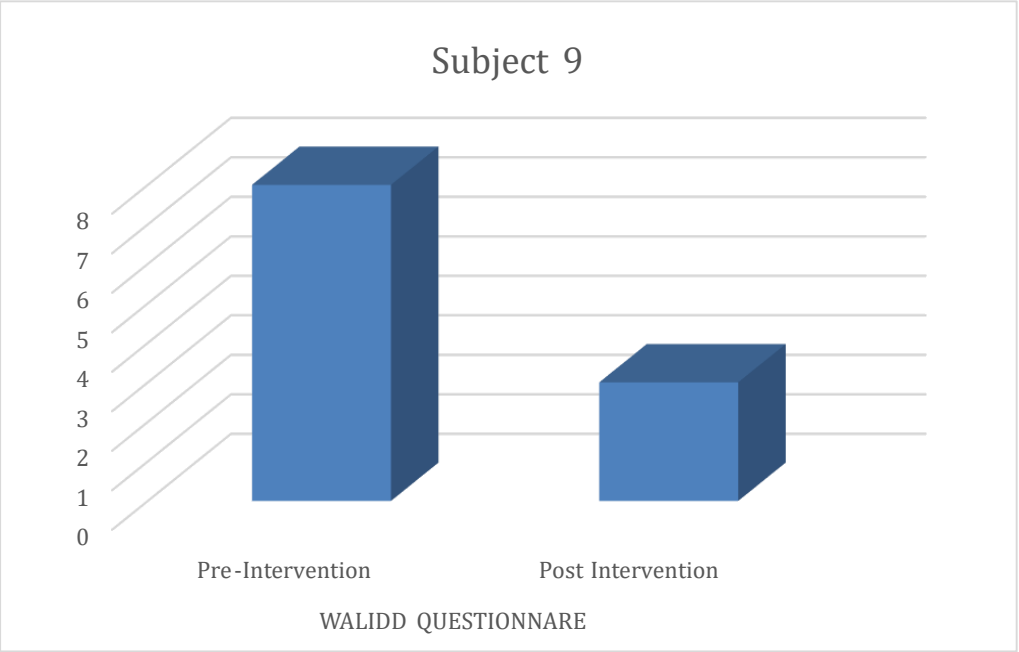

Subject 8
7
6.8
6.6
6.4
6.2
6
5.8
5.6
5.4
Pre intervention
Post intervention
PAIN RATING SCALE

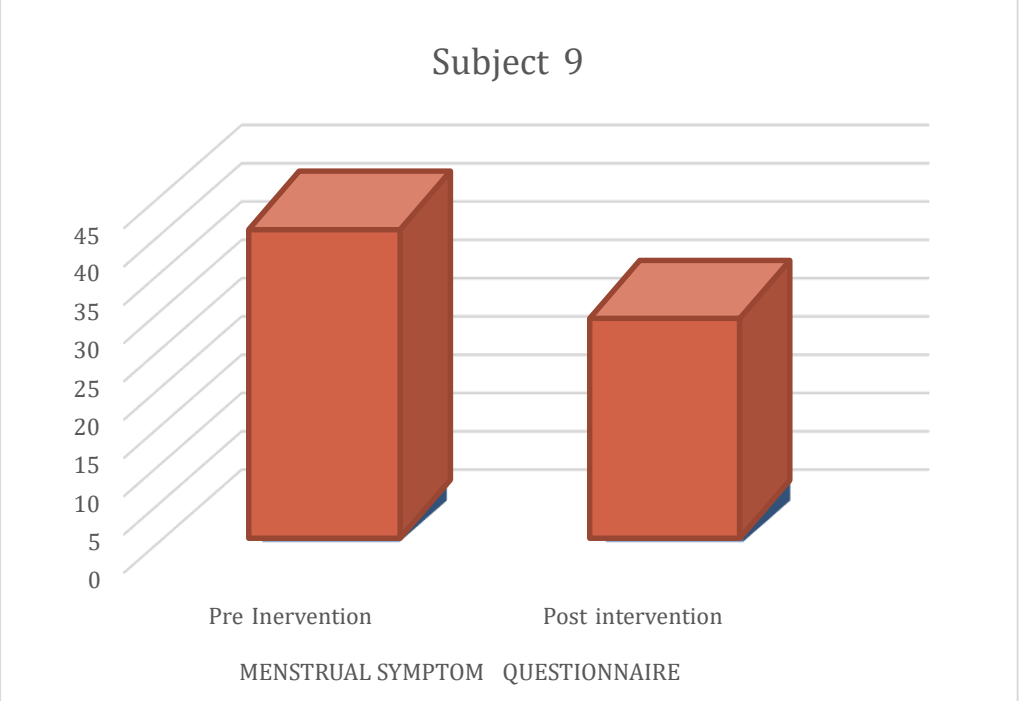

Subject 8
9
8
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

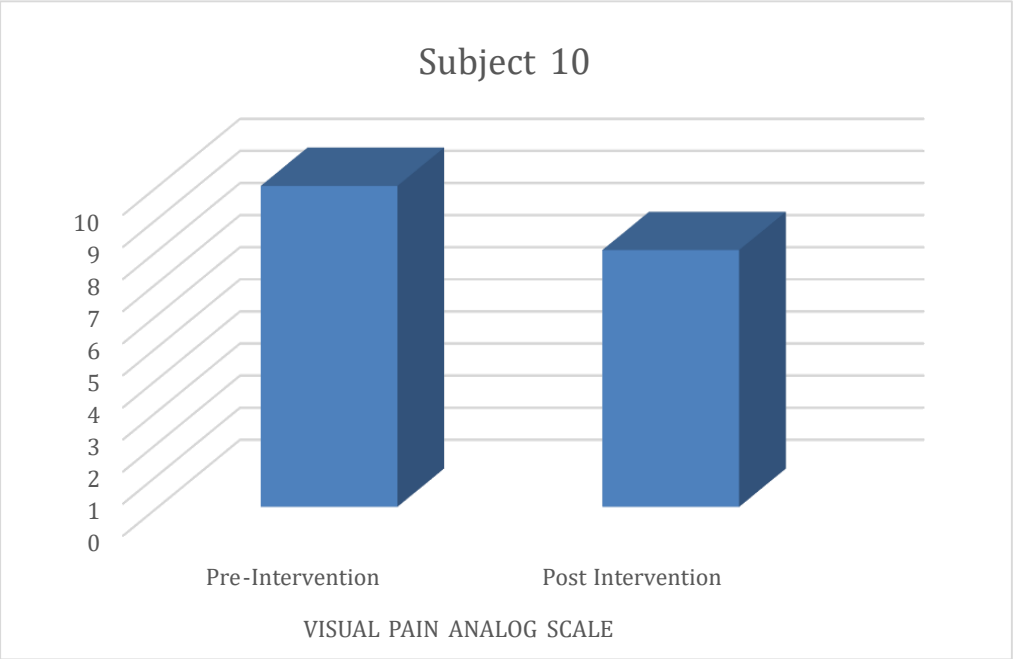

Subject 8
52
51.5
51
50.5
50
49.5
49
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

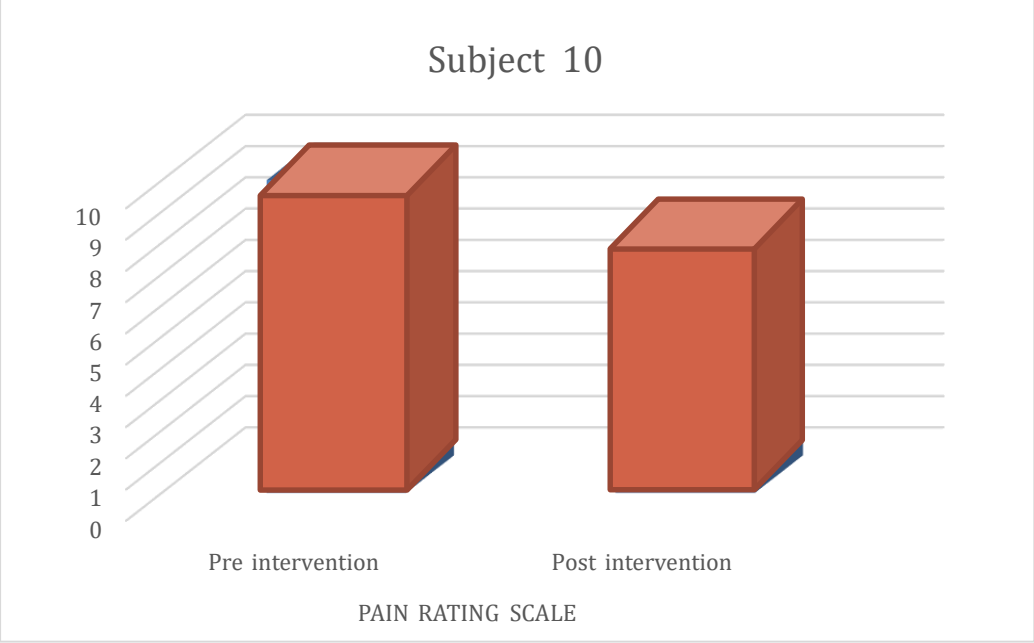

Subject 9
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

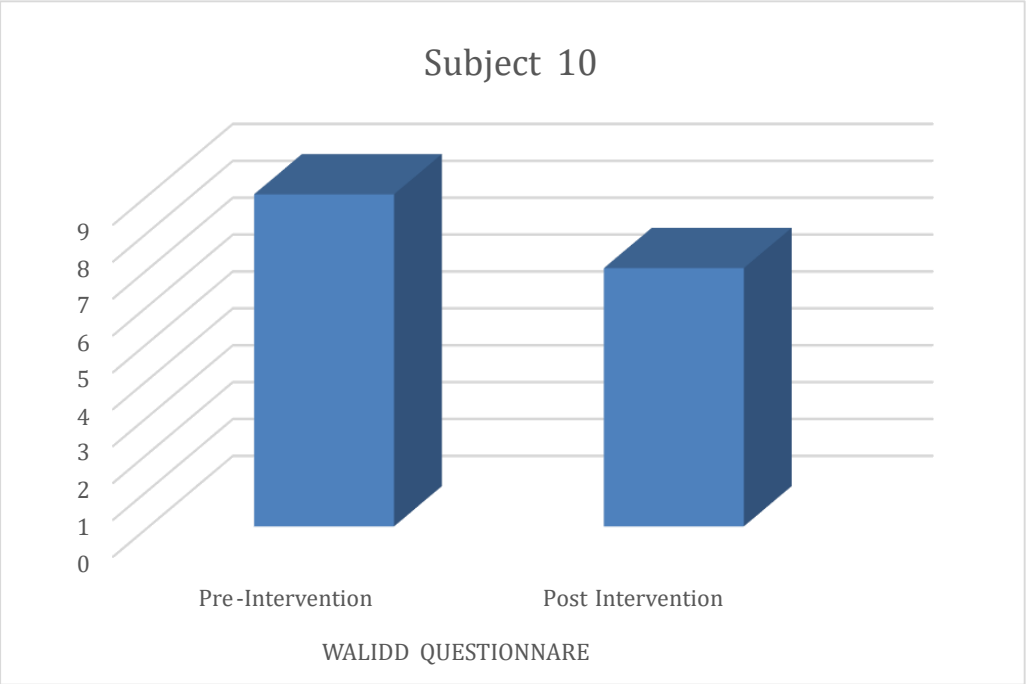

Subject 9
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

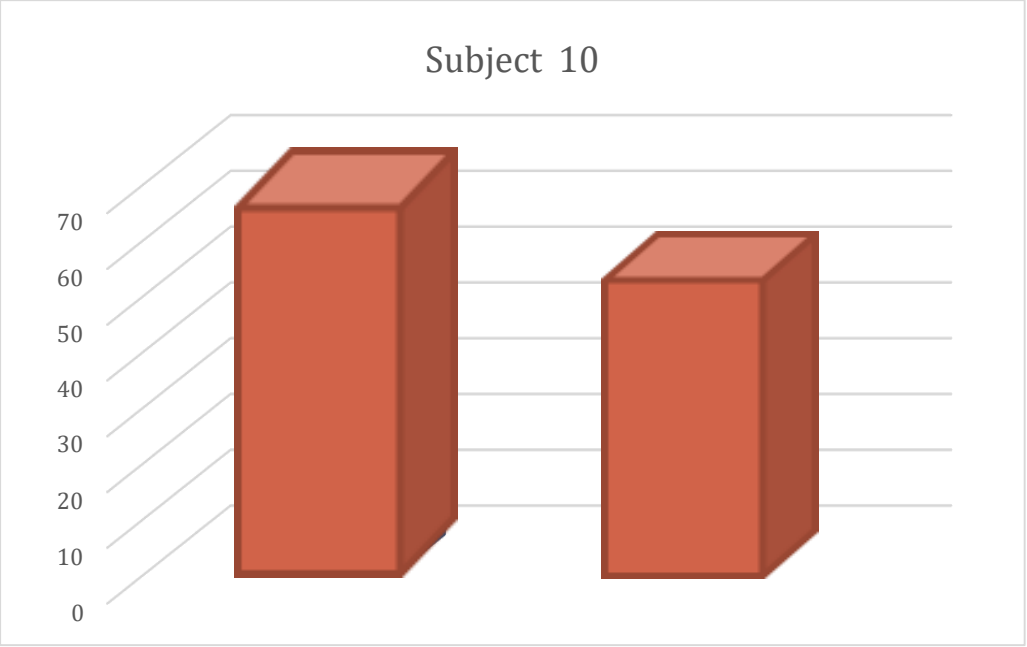

Subject 9
8
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

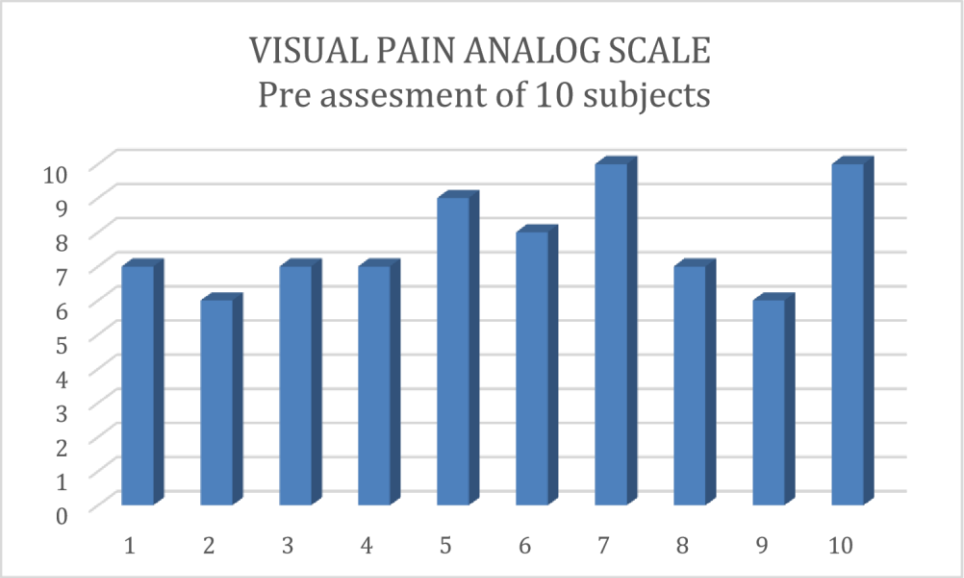

Subject 9
45
40
35
30
25
20
15
10
5
0
Pre Inervention
Post intervention
MENSTRUAL SYMPTOM QUESTIONNAIRE

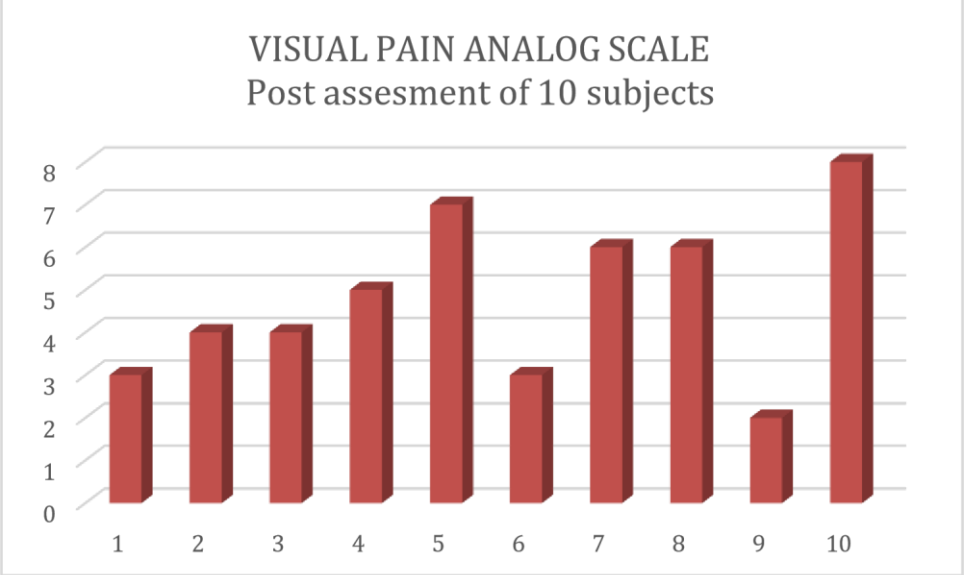

Subject 10
10
9
8
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
VISUAL PAIN ANALOG SCALE

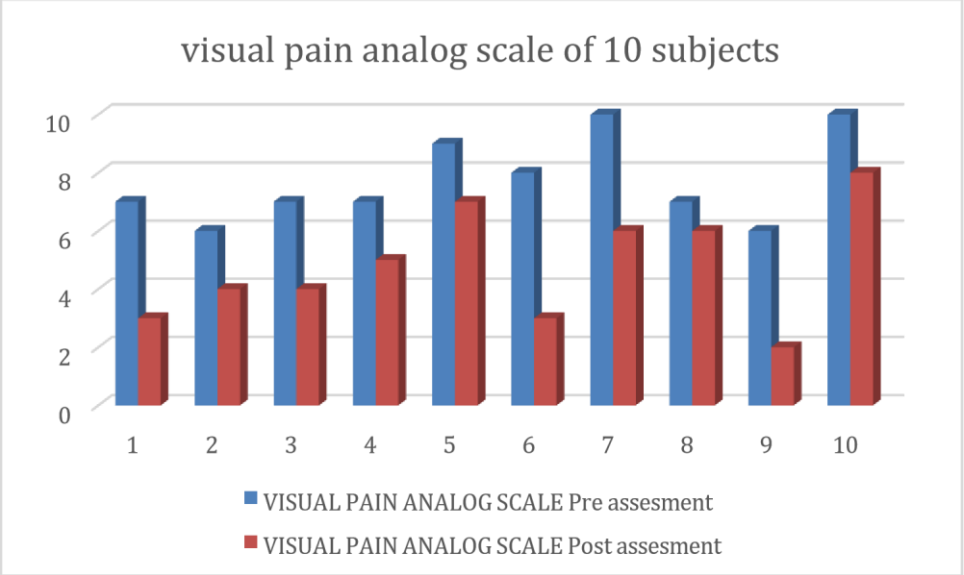

Subject 10
10
9
8
7
6
5
4
3
2
1
0
Pre intervention
Post intervention
PAIN RATING SCALE

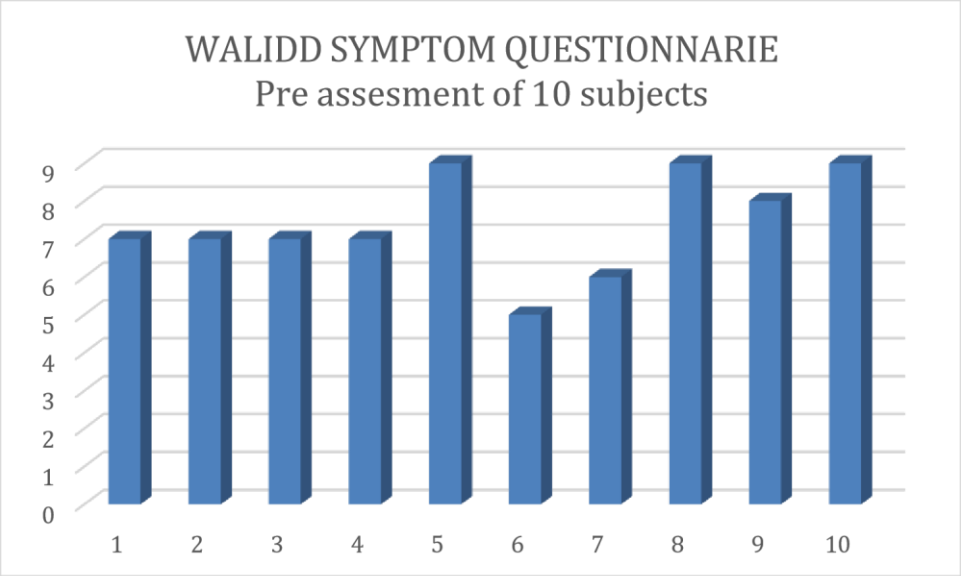

Subject 10
9
8
7
6
5
4
3
2
1
0
Pre-Intervention
Post Intervention
WALIDD QUESTIONNARE

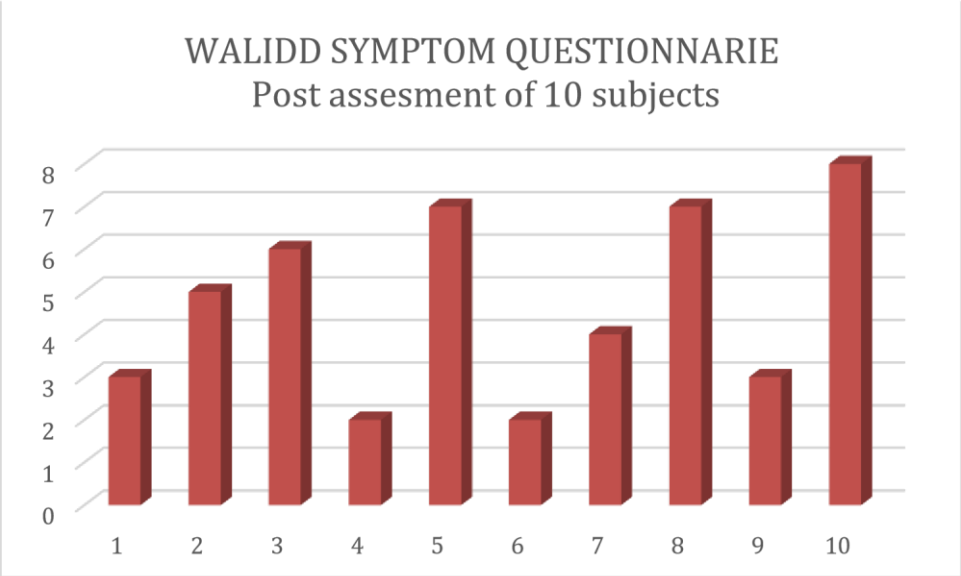

Subject 10
70
60
50
40
30
20
10
0

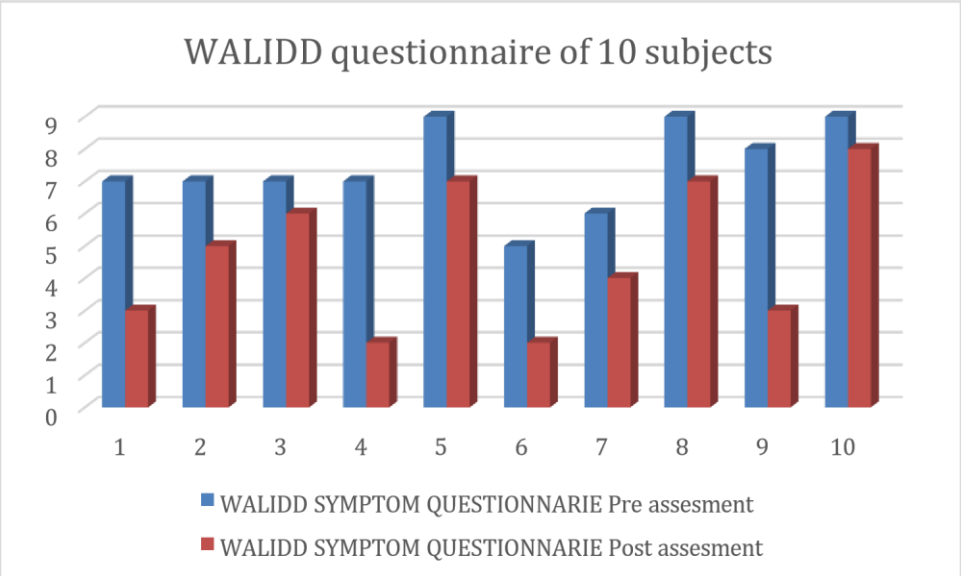

VISUAL PAIN ANALOG SCALE
Pre assesment of 10 subjects
10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10


VISUAL PAIN ANALOG SCALE
Post assesment of 10 subjects
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10


visual pain analog scale of 10 subjects
10
8
6
4
2
0
1 2 3 4 5 6 7 8 9 10
VISUAL PAIN ANALOG SCALE Pre assesment
VISUAL PAIN ANALOG SCALE Post assesment


WALIDD SYMPTOM QUESTIONNARIE
Pre assesment of 10 subjects
0
1
2
3
4
5
6
7
8
9
1
2
3
4
5
6
7
8
9
10


WALIDD SYMPTOM QUESTIONNARIE
Post assesment of 10 subjects
0
1
2
3
4
5
6
7
8
1
2
3
4
5
6
7
8
9
10


WALIDD questionnaire of 10 subjects
0
1
2
3
4
5
6
7
8
9
1
2
3
4
5
6
7
8
9
10
WALIDD SYMPTOM QUESTIONNARIE Pre assesment
WALIDD SYMPTOM QUESTIONNARIE Post assesment

10. RESULT

This report presents the results of paired t-tests conducted to evaluate changes in symptom and pain scores before and after electro acupuncture stimulation in 10 subjects with primary dysmenorrhea. Four assessment tools were used: Chesney and Donald L Tasto Dysmenorrhea Symptom Questionnaire, WALIDD Dysmenorrhea Questionnaire, Pain Rating Scale, and Visual Analogue Scale (VAS). All paired t-tests showed statistically significant reductions in scores post-treatment ($p < 0.001$), indicating the intervention's effectiveness in modulating pain.

This statistical analysis assesses the effectiveness of electro acupuncture stimulation in reducing pain and symptoms associated with primary dysmenorrhea. Paired t-tests were performed on pre- and post-treatment scores from four questionnaires to determine significant changes, with a significance level of $\alpha = 0.05$.

The study included 10 female participants aged 18-23 years. Data were collected before (Day 1) and after (Day 10) the intervention. The following variables were analyzed using paired t-tests:

- Chesney and Donald L Tasto Dysmenorrhea Symptom Questionnaire scores
- WALIDD Dysmenorrhea Questionnaire scores
- Pain Rating Scale scores
- Visual Analogue Scale (VAS) scores

Each paired t-test compared the mean differences between pre-and post-treatment scores.

Paired T-Tests

Thepairedt-testsrevealedsignificantreductionsinallassessedscorespost-treatment. The detailed results are presented in the tables below

Table 1: Paired Samples Statistics and Test for Chesney Questionnaire Scores

	Mean	N	Std. Deviation	Std. Error Mean
	Paired Samples Statistics			
CHESNEYPRE	63.9000	10	12.0227	3.8019
CHESNEY*POST*	43.6000	10	13.4346	4.2484
	Paired Samples Test			
	Mean	Std. Deviation	t	df
Sig. (2-tailed) CHESNEY*PRE* − *CHESNEYPOST* 0.000	20.3000	9.3933	6.834	9

Table 2: Paired Samples Statistics and Test for WALIDD

	Mean	N	Std. Deviation	Std. Error Mean
	Paired Samples Statistics			
WALIDD*PRE*	6.6000	10	0.9661	0.3055
WALIDD*POST*	4.0000	10	1.8856	0.5963
	Paired Samples Test			df
	Mean	Std. Deviation	t	
Sig. (2-tailed) WALIDDPRE – WALIDDPOST 0.000	2.6000	1.3499	6.091	9

Table 3: Paired Samples Statistics and Test for Pain Rating Scale Scores

	Mean	N	Std. Deviation	Std. Error Mean
	Paired Samples Statistics			
PAINpRE	7.0000	10	1.3333	0.4216
PAIN*POST*	4.0000	10	1.8856	0.5963
	Paired Samples Test			df
	Mean	Std. Deviation	t	
Sig. (2-tailed) PAIN*PRE* – *PAINPOST* 0.000	3.0000	1.2472	7.606	9

Table 4: Paired Samples Statistics and Test for Visual Analogue Scale Scores

	Mean	N	Std. Deviation	Std. Error Mean
	Paired Samples Statistics			
VASpRE	7.1000	10	1.1972	0.3786
VAS*POST*	4.5000	10	1.5092	0.4773
	Paired Samples Test			df
	Mean	Std. Deviation	t	
Sig. (2-tailed) VAS*PRE* – *VASPOST* 0.000	2.6000	1.1738	7.005	9

The paired t-tests indicate that electro acupuncture stimulation significantly reduced scores on all four measures: Chesney Questionnaire (mean difference = 20.30, $p < 0.001$), WALIDD Questionnaire (mean difference = 2.60, $p < 0.001$), Pain Rating Scale (mean difference = 3.00, $p < 0.001$), and VAS (mean difference = 2.60, $p < 0.001$). These findings suggest that the intervention effectively modulated pain in subjects with primary dysmenorrhea.

Theinterventionledtostatisticallysignificantimprovementsinallassessedsymptom and pain scores ($p < 0.001$ for all). These results support the efficacy of electro acupuncture stimulation in treating primary dysmenorrhea. Future studies with larger sample sizes may further validate these outcomes.

11. DISCUSSION

Electroacupuncture is one of the most effective treatments of naturopathy in cases of pain management. In this study Electroacupuncture was administered for 10 female patients diagnosed with primary dysmenorrhea. The duration of the treatment was 10 days, by the end of 10th day there was an improvement in the quality of life, reduced intensity and duration of pain in primary dysmenorrhoea patients. It has given effective results.

The aim and objective of our study was to analyse the effect of Electroacupuncture on primary dysmenorrhoea. WE found extensive literature on the effect of Electroacupuncture on primary dysmenorrhoea. In our study the intervention was given for 10 days before the menstrual cycle. The subjects who received Electroacupuncture showed extremely significant pain relief. The mean age of the study group was 20 years. The parameters used for stimulation were that of conventional Electroacupuncture. Naturopathic modalities are proven to be an effective mode of treating chronic disorders. Naturopathy being a drugless system, emphasizes on self-healing capacity of the individual. It promotes haemostatic mechanism in the body of individuals. The treatment modalities such as Hydrotherapy, Acupuncture, Massage therapy, Physiotherapy, fasting therapy and Diet etc emphasizes on healing the patient condition without causing adverse effects.

12. CONCLUSION

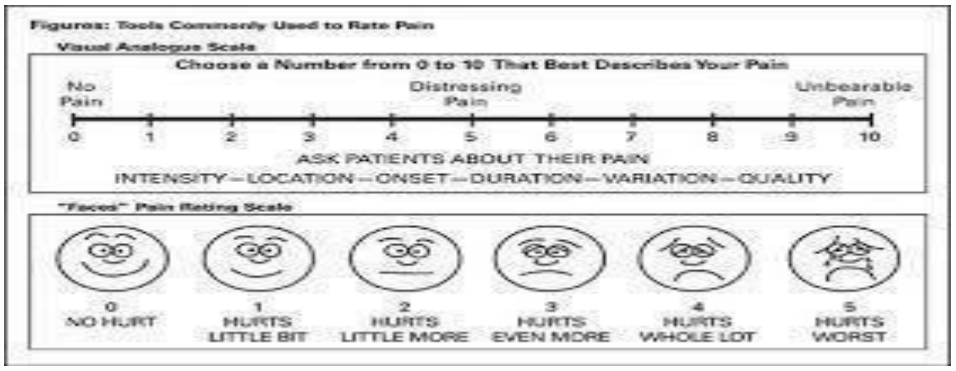
Naturopathic modalities are proven to be an effective mode of treating chronic disorders. Naturopathy being a drugless system, emphasizes on self-healing capacity of the individual. It promotes haemostatic mechanism in the body of individuals. The treatment modalities such as Hydrotherapy, Acupuncture, Massage therapy, Physiotherapy, fasting therapy and Diet etc emphasizes on healing the patient condition without causing adverse effects.

In our study we have used one of the electro physiotherapy modality Electroacupuncture, is of great value in alleviating pain in primary dysmenorrhoea patients. The same has been observed in this study both statistically and clinically. The subjects showed good responses like improvement in visual pain analogue scale, WALIDD symptom questionnaire, i.e., reduction in pain during menstruation, menstrual symptom questionnaire suggest that increase in quality of life. Thus, proving to be effective in conditions of hemiparesis.

13. ANNEXURE

1. Pain rating scale

2. Visual pain analogue scale



3. WALIDD SCALE

Working ability	Location	Intensity (Wong–Baker)	Days of pain
0: None	0: None	0: Does not hurt	0: 0
1: Almost never	1: 1 site	1: Hurts a little bit	1: 1–2
2: Almost always	2: 2–3 sites	2: Hurts a little more – hurts even more	2: 3–4
3: Always	3: 4 sites	3: Hurts a whole lot – hurts worst	3: ≥5

Notes: Score: 0 without dysmenorrhea, 1–4 mild dysmenorrhea, 5–7 moderate dysmenorrhea, 8–12 severe dysmenorrhea. Wong–Baker scale was reclassified to adjust a four-level scale.
Abbreviation: WaLIDD, working ability, location, intensity, days of pain, dysmenorrhea.

Reference

1. Omidvar. S, Amiri. N.F, Bakhtiari. A, et.al, A study on menstruation of Indian adolescent girls in an urban area of South India. Journal of family medicine and primary care. 2018 Vol 7 (4)
2. Aufrichtig, A period pain: why do so many women suffer from menstrual cramps in silence? theguardian.com 2016
3. Dc Dutta's textbook of gynaecology by Hiralal Konar

4. Itani.R, soubra. l, khojah.m. j: primary dysmenorrhoea: pathophysiology, diagnosis, and treatment updates. Korean journal of family medicine,2022 marchPMID;35320895
5. Aliza Aufrichtig, Period pain; why do so many women suffer from menstrual c ramps in silence? Thegaurdian.com 2016
6. Clinical naturopathy - yoga 2nd edition NIN pune, dysmenorrhoea by hindawi s pg. no 617
7. Effects of thermotherapy and trans cutaneous electrical nerve stimulation on patients with primary dysmenorrhoea: a randomized, placebo controlled double blind clinical trial by aline Fernando Perez mercado et al. journal of complementary therapies in medicine
8. Omidvar.s, bakouei.f..et al, primary dysmenorrhoea and menstrual symptoms In Indian female students: prevalence,
9. Gomathy.n, dhanashekhar.r. k, trayambak. d,an effective but forgotten therapy in dysmenorrhoea, journal of south Asian federation of obstetrics and gynaecology, Vol 11,2019.
10. Sultan.c, gaspari. l, paris.f, adolescent dysmenorrhoea, endocrinology dev, pub med ncbi.nlm.nih.gov.in, epub2012
11. Prasad's, naturopathy treatment: the holistic solution for complete wellbeing, kaivalyadhama.kdham.com,2022
12. Rn. Goel, goals' physiotherapy, volI
13. Ammer.k, electrotherapy, wien med wochenchr,1994.
14. Vance.gt, dailey.l. d, sluka.a. using Electroacupuncture for pain control: the state of the evidence. Journal of pain management.
15. Dwivedi. A challenge for female workers in India. Indiatimes.com2022
16. Dysmenorrhoea; painful periods. ACOG (The American college obstetrician and gynaecologist)2020
17. Transcutaneous electrical nerve stimulation for primary dysmenorrhoea: an overview by Michael Elohim gabyzon and leonoid kalichman international journal of women's health
18. Kural.M, Noor, et.al menstrual characteristics and prevalence 0f dysmenorrhoea in college going girls; Journal of family medicine and primary care 2015 July – September; 4(3).
19. Policy statement; description of physical therapy 2019 worldphysiotherapy.com
20. Bakhsh, Algenaimi.E et.al; prevalence of dysmenorrhea among reproductive age group among Saudi women. Women's health journal march 2022
21. M.I Johnson, Electroacupuncture; mechanism clinical application and evidence; journal of pain medicine august 2007
22. Chen.CX barrit efficacy of oral ginger for dysmenorrhea, A systematic review and meta-analysis; evidence based complimentary alternative medicine
23. Marriyam.J.et.al The effect of cinnamon on primary dysmenorrhea; A randomized double blind clinical trial, complimentary and therapeutic medicine 2018
24. Leech, et.al fennel for reducing pain in primary dysmenorrhoea; The nutrient journal
25. Jo. J, et.al heat therapy for primary dysmenorrhea; A systematic revive and meta-analysis; Journal of scientific report nature research 2018
26. Bharathi, et.al; Management of pelvic pain in primary dysmenorrhoea using hot hip bath; pilot study; Journal of alternative therapy and health medicine 2012

27. Valini.M, et.al; The effect of massage therapy on dysmenorrhea caused by endometriosis; Iranian journal of nursing and mid wifery research 2010
28. Zhang.F.sun.; et.al; acupuncture for primary dysmenorrhea; An overview of systematic review; Evidence based complementary and alternative medicine 2018
29. Sang Dol Kim, Yoga for menstrual pain in primary dysmenorrhoea, A meta-analysis of RCTC; Complimentary therapy and clinical medicine
30. KD Tripathi; Essentials of medical pharmacology, 8th edition; Jaypee publications.
31. Facchinetti.F, sgarbi. L,volpe.A et.al ; A comparison of glyceryl trinitrate with diclofenac for the treatment of primary dysmenorrhoea; An open , randomized , crossover trail;Gynecological endocrinology 2002 Feb;16th edition(1).
32. Wong L C, Farquhar C, Roberts H, et.al; Combined oral contraceptive pill as treatment for primary dysmenorrhea; researchgate.net Feb 2009 2nd edition.
33. Schreiber, Barnhart, medroxyprogesterone acetate suppress ovulation by inhibiting LH and FSH surge; Principles of gender specific medicine 2004