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Research Paper

Impact of intervention with ginger aliquot and ajwain powder on dysmenorrhoea in young adult women (14-25 years) of Ajmer city (Rajasthan)

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■ **ABSTRACT :** The present study was carried with the objective to assess the relief in dysmenorrhoea attained by the consumption of two indigenous foods namely ginger aliquot and ajwain powder. The study was carried on a sample of 90 subjects who were divided into two groups namely test and control, with 45 subjects in each group. The Test group were administered ginger aliquot or ajwain powder according to the subject's willingness to consume, whereas the control did not receive any food item, and were only a platform for comparison. The intervention was for two cycles of menstruation and the subjects began consuming the relieving agents from the first day of menstruation. A questionnaire was the tool of study to collect information from the subjects. The information collected was both general and specific in nature. The general information included age, educational status, type of family of the subjects, while the specific information was in reference to the haemoglobin levels, clinical signs and symptoms, beliefs about food and their relation to menstrual cycle. The menstrual pattern which is specific for each female was also assessed. The last part of the questionnaire was the judgement of relief experienced by the subjects after the intervention trial. The analysis of the data obtained was done in the form of percentages. The results revealed that majority of the subjects in both the groups were anaemic when compared with the standards given by WHO. Some of the subjects reflected clinical signs and symptoms of anaemia. Pallor face was seen in 28.88 per cent and 22.22 per cent of subjects in control and test, respectively and pale conjunctiva in 35.55 per cent and 33.33 per cent of the subjects in control and test, respectively. Other signs like patches on cheeks, pale palms were also looked for in both control and test group. Signs of anaemia like headache, easy fatigue, and loss of appetite were also studied in the subjects, and some subjects in both control and test group were suffering from the above due to anaemia. Majority of the subjects in the control (66.66%) and more than half (55.55%) in the test group said that they avoided specific foods during menstruation. Sour and heat producing foods were such. The analysis of data obtained for the specific information reflected that majority in the control and the test group starting menstruating between the age of 12-16 years. The gap between two cycles was normal that is 28-30 days in 62.22 per cent of the subjects in the control and 66.66 per cent of the test group, respectively. The duration of pain that is dysmenorrhoea was 48 hours in 88.88 per cent and 80.00 per cent of the subjects in the control and test group, respectively

and majority that is 62.22 per cent and 77.77 per cent of the subjects in control and test groups had a regular cycle. The last part of the study was the assessment of ginger aliquot and ajwain powder on relief in dysmenorrhoea. The results revealed that out of 15 samples consuming ginger aliquot nine (9) felt moderate relief from cramping abdominal pain and from amongst the 30 sample units consuming ajwain 24 experienced a moderate relief in pain. The two values made the percentage of subjects experiencing relief equal to 60 per cent and 80 per cent after receiving ginger aliquot and ajwain powder, respectively. In conclusion it can be said that both ginger and ajwain can be used as home remedies for dysmenorrhoea in young adult women. They are both safe, non toxic and have great medicinal and therapeutic properties.

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Menstruation is a function peculiar to women and higher Apes. It may be defined as periodic and cyclical shedding of progestational endometrium accompanied by loss of blood. It takes place at approximately 28 day interval between menarche and the menopause. The first four days are accompanied with menstruation when two thirds to four fifths of the endometrium is shed. During the remaining twenty four days, the histological cycle consists basically of a proliferative and a secretory phase (Jeffcoate, 2001).

Associated with the monthly cyclical production of estrogens and progesterone is an endometrial cycle in the lining of uterus that operates through the following stages: first proliferation of uterine endometrium; second development of secretory changes in the endometrium and third desquamation of the endometrium which is called menstruation (Guyton and Hall, 2001).

Proliferative phase (Estrogen phase), occuring before ovulation :

At the beginning of each monthly cycle, most of the endometrium has been desquamated by menstruation. After menstruation only a thin layer of endometrial stroma remains and the only epithelial cells that are left, are those located in the remaining deeper portions of the glands and crypts of endometrium. Under the influence of estrogens, secreted in increasing quantities by the ovary during the first part of the monthly ovarian cycle, the stromal cells and the epithelial cells proliferate rapidly. The endometrial surface is re-epithelialized within 4 to 7 days after the beginning of menstruation. Then, during the next week and a half that is before ovulation occurs, the endometrium increases greatly in thickness, owing to increasing numbers of stromal cells and due to progressive growth of the endometrial glands and new blood vessels into the endometrium (Guyton and Hall, 2001).

Secretory phase (Progestational phase) of the endometrial cycle, occuring after ovulation :

During most of the latter half of the monthly cycle, after ovulation has occured, progesterone and estrogen together are secreted in large quantity by the corpus luteum. The estrogens causes slight additional cellular proliferation in the endometrium during this phase of the endometrial cycle, whereas progesterone causes marked swelling and secretory development of the endometrium. The glands increase in tortuosity, an excess of secretory substances accumulate in the glandular epithelial cells. Also the cytoplasm of the stromal cells increases, lipid and glycogen deposits increase greatly in the stromal cells, and the blood supply to the endometrium further increases in proportion to the developing secretory activity, the blood vessels becoming highly tortuous. At the peak of the secretory phase, about 1 week after ovulation, the endometrium has a thickness of 5-6 millimetres.

The whole purpose of all these endometrial changes is to produce a highly secretory endometrium that contains large amounts of stored nutrients, to provide appropriate conditions for implantation of a fertilized ovum during the latter half of the monthly cycle. From the time a fertilized ovum enters the uterine cavity from the fallopian tube, until the time the ovum implants, the uterine secretions called "Uterine Milk", provide

Nutrition for the early dividing ovum (Guyton and Hall, 2001).

Menstruation :

If the ovum is not fertilized, about 2 days before the onset of the monthly cycle, the Corpus Luteum in the ovary suddenly involutes, and the ovarian hormones estrogen and progesterone, decrease to low level of production. Then Menstruation follows.

Menstruation is caused by the reduction of estrogens and progesterone, especially Progesterone, at the end of the monthly ovarian cycle. The first effect is decreased stimulation of the endometrial cells by these two hormones, followed rapidly by involution of the endometrium itself to about 65 per cent of its previous thickness. Then during the 24 hours, preceeding the onset of menstruation the tortuous blood vessels leading to the mucosal layers of the endometrium become vasospastic, presumably because of some effect of the involution, such as release of a vasoconstrictor types of prostaglandins that are present in abundance at that time. The vasospasm, the decrease in nutrients to the endometrium, and the loss of hormonal stimulation cause beginning necrosis in the endometrium, especially of the blood vessels. As a result blood at first seeps into the vascular layer of the endometrium and the haemorrhagic areas grow rapidly over a period of 24 to 36 hours. Gradually the necrotic outer layers of the endometrium seperate from the uterus at the sites of the haemorrhages. Until about 48 hours after the onset of menstruation, all the superficial layers of the endometrium have desquamated, the mass of desquamated tissues and blood in the uterine cavity, plus contractile effects of prostaglandins or other substances in the decaying desquamate, all acting together, initiate uterine contractions that expel the uterine contents. During normal menstruation, approximately 40 millilitres of blood and an additional 35 millilitres of serous fluid are lost. The menstrual fluid is normally non clotting because a fibrinolysin is released along with the necrotic endometrial material. If excessive bleeding occurs from the uterine surface, the quantity of fibrinolysin may not be sufficient to prevent clotting. The presence of clots during menstruation, is often a clinical evidence of uterine pathology.

Within 4 to 7 days after menstruation starts, the loss of blood ceases because, by this time, the endometrium has become re-epithelialized (Guyton and Hall, 2001).

Disorders of menstruation :

Amenorrhoea :

This denotes the absence of menstruation. It may be physiological or pathological.

Oligomenorrhoea :

In some women, the pattern of menstruation extends to cycle lengths, exceeding 35 days, without any impairment of their fertility.

Hypomenorrhoea :

In some women, menstruation lasts for only one to two days, and the blood loss is scanty.

Polymenorrhoea :

Women with polymenorrhoea suffer from shortened cycles. Menorrhagia often goes hand in hand. This complaint is generally found in adolescent girls and in perimenopausal women.

Metrorrhagia :

This term is issued to define any cyclic bleeding from the genital tract. Metrorrhagia may be physiological occuring at the time of ovulation when hormonal changes triggering ovulation take place (Shaw's, 2004).

Dysmenorrhoea :

Dysmenorrhoea means cramping pain accompanying menstruation (Shaw's, 2004).

Types :

Primary dysmenorrhoea :

It refers to the one that is not associated with identifiable Pelvic pathology. It is now clear that the pathogenesis of pain is attributable to a biochemical derangement. It affects more than 50 per cent of post pubescent women in the age group of 18-25 years.

Secondary dysmenorrhoea :

It refers to the one associated with the presence of organic pelvic pathology that is fibroids, adenomyosis, endometriosis.

Varities :

Dysmenorrhoea has also been described under three

Table A : Haemoglobin levels to diagnose anaemia (g/ lit.)

Subject	Haemoglobin levels			
	Non-anaemic	Mild anaemia	Moderate anaemia	Severe anaemia
Children 12-14	120 or Higher	110-119	80-109	<80
Women non-pregnant (15 years and above)	120 or Higher	110-119	80-109	<80
Pregnant	110 or Higher	100-109	70-99	<70
Men (15 years and above)	130 or Higher	110-129	80-109	<80

(WHO, 2011)

clinical varities.

Spasmodic dysmenorrhoea :

It is the most prevalent and manifests as cramping pains, generally most pronounced on the first and second day of menstruation.

Congestive dysmenorrhoea :

It manifests as increasing pelvic discomfort and pelvic pain, a few days before menses begin. Thereafter, the patient rapidly experiences relief in symptoms. This variety is commonly seen in pelvic inflammatory disease or pelvic endometriosis and fibroids.

Membranous dysmenorrhoea :

It is a special group in which the endometrium is shed as a cast at the time of menstruation. The passage of the cast is accompanied by painful uterine cramps (Shaw's, 2011).

Clinical features :

Primary dysmenorrhoea is widely prevalent, more than 70 per cent of teenagers and 30-50 per cent of Menstruating women suffer from varying degrees of discomfort (Shaw's, 2011). Its prevalence is higher amongst the more intelligent and sensitive working class women. Both the local and systemic symptoms are apparently the result of increased levels of prostaglandins in the menstrual fluid. This produces vasoconstriction in the uterine vessels, causing uterine contractions which produce pains. The prostaglandin is also responsible for the nausea, vomiting, backache, diarrhoea, giddiness, syncope and fainting that accompanies menstruation.

Primary dysmenorrhoea occurs in ovulatory cycles hence, it makes its appearance a few years after menarche, at least 6-12 months of painless periods. It is the most intense on the first day of menses and progressively lessens with menstrual flow. It often lessens with passage of time and after childbirth (Shaw's, 2011).

Dysmenorrhoea is associated with menorrhagia. menorrhagia leads to blood loss, and may make a female anaemic. Thus sources of iron should be consumed regularly in diet. Many of the females become anaemic due to excessive blood loss, or even during normal menstruation due to poor consumption of Iron in diet. In the present study haemoglobin status of the subjects was measured and they were classified as normal or anaemic according to criteria's given by WHO (Table A).

Ginger : an introduction :

Ginger is a herb with white or yellow flowers and dark green leaves and a thick root. It is a commonly used Spice. The botanical name is *Zingiber officinale* (*http/enwikipedia.org*). Apart from being commonly employed in cooking Ginger has many therapeutic uses. Some of them are :

- As an aid to digestion
- Alleviating high blood pressure.
- Helping to relieve nausea and vomiting
- As a cure to inflammation
- Helping to reduce pain in arthritis, muscle aches, and migraine.
- Reliving dysmenorrhoea (*http//food matters.tv.*)

Composition of ginger :

- Gingerols
- Shagols
- Ginger Oil- A-Pinene, B-Pinene, Camphene, Cineole, Linalool, Borneol and Zinziberene.
- Antioxidants
- Protein, Calcium, Iron, Vitamin C, Choline, Folic Acid, Inositol, Manganese, Vitamin B5, Silicon, Niacin (Shirin *et al.*, 2010).

Ginger and dysmenorrhoea :

Ginger a natural substance can be used to control

dysmenorrhoea. It can be administered in the form of ginger aliquot. The mechanism by which ginger relives spasmodic dysmenorrhoea is as follows:

Ginger contains constituents with anti inflammatory properties. The original discovery of ginger's inhibitory effects on prostaglandin biosynthesis in the early 1970s has been repeatedly confirmed. This discovery identified ginger as an herbal medicinal product that shares pharmacological properties with non-steroidal anti-inflammatory drugs. Ginger suppresses prostaglandin synthesis through inhibition of cyclooxygenase-1 and cyclooxygenase-2. An important extension of this early work was the observation that ginger also suppresses leukotriene biosynthesis by inhibiting 5-lipoxygenase. This pharmacological property distinguishes ginger from non-steroidal anti-inflammatory drugs. This discovery preceded the observation that dual inhibitors of cyclo-oxygenase and 5-lipoxygenase may have a better therapeutic profile and have fewer side effects than non-steroidal anti-inflammatory drugs. The characterization of the pharmacological properties of ginger entered a new phase with the discovery that a ginger extract derived from *Zingiber officinale* (family *Zingiberaceae)* inhibits the induction of several genes involved in the inflammatory response. These include genes encoding cytokines, chemokines, and the inducible enzyme cyclooxygenase-2. This discovery provided the first evidence that ginger modulates biochemical pathways activated in chronic inflammation. Identification of the molecular targets of individual ginger constituents provides an opportunity to optimize and standardize ginger products with respect to their effects on specific biomarkers of inflammation. Such preparations will be useful for studies in experimental animals and humans. (Grzanna *et al*., 2005).

Ajwain :

Ajwain botanically called *Trachyspermum ammi*, and Bishops weed in english is an aanual herb (60-90 cms.) tall. It is native of Egypt. In India it is grown in Rajasthan also. Ajwain contains fibre (11.9%), carbohydrate (38.6%), tannins, glycosides, moisture (8.9%), protein (15.4%), fat (18.1%), saponins, flavones, mineral matter (7.1%). The mineral matter is composed of the minerals calcium, phosphorus, iron. Vitamin B3 is also present (Pruthi, 1992).

Ajwain has 2-4 per cent essential oil, of which thymol is the major constituent (35-60%) (Ishikawah *et al*., 2001). Thymol acts as antispasmodic (Joshi *et al*., 2000).

Health benefits of ajwain :

- Ajwain cures stomach disorders. A paste of crushed fruits is applied externally for relieving colic pains (Anonymous, 1976).
- A hot dry fomentation of fruits is applied on chest for Asthma (Singh *et al*., 2003)
- Ajwain stimulates digestion (Vasudevan *et al*., 2000).
- It acts as an antispasmodic and Bronchodilator (Gilani *et al.*, 2005)
- Ajwain reduces aggregation of platelets in human blood (Srivastava *et al.*, 1988).
- Ajwain also acts as a carminative agent (Bentely, 1995)
- The seed cures abdominal pains (Krishnamoorthy and Madalageri,1999)
- Ajwain Seeds soaked in lemon juice and almonds cure amenorrhoea (Shome *et al*., 1996)

Objectives of the study :

- Assessment of haemoglobin levels of subjects under study.
- Observation of clinical signs and symptoms to judge anaemia in the subjects.
- Study of beliefs about foods and their relation to menstrual cycle prevalent in the subjects.
- Collection of information about specific facts related to menstrual cycle, specific for each female.
- Studying the impact of ginger aliquot and ajwain powder as an aid to relieve dysmenorrhoea.

■ RESEARCH METHODS

Research methodology is a systematic way for finding the answer to any research problem. It is correct method and steps followed which leads a researcher to authentic conclusions. Research principles recommend specific steps to be followed, while dealing with any research investigation. But the steps are unique and sequential for each research problem so as to reach to correct conclusions. In a similar manner the present study was carried out in specific sequential steps so as to arrive at logical, rational and useful results, which have been

enumerated below.

Step 1 - Selection of area
Step 2- Selection of sample
Step 3 - Selection of product to be administered
Step 4 - Development of tools and collection of data
Step 5 - Analysis of data.

Selection of area :

The area selected for the study was the city of Ajmer. Three different areas were selected in Ajmer to make up a mixed sample.

Selection of sample :

A sample formed appropriately is the core of any research study. For the current investigation young adult women, as well as teenagers (that is from age of 14-25 years) were selected to form the sample on which the study was carried out. To carry out the study two groups were formed, test and control. The test group was the one to which either ajwain or ginger was given to test their effectiveness in relieving dysmenorrhoea, while the control was the one to which neither the above nor any drug was given.

For selecting the subject for either the test or control an inclusion and exclusion criteria were followed.

Inclusion criteria :

Those subjects who were suffering from abdominal pain to such an extent during first one or two days or menstrual period that their daily schedule gets hampered.

Exclusion criteria :

Subject possessing the following characteristics were not included in the sample.

- If taking any medication to relieve dysmenorrhoea
- Presence of any pathogenic cause underlying the problem of dysmenorrhoea in the subject.
- If married.

Selection of product to be administered :

Commonly used natural food items, if serve any therapeutic purpose can be a boon to human beings. It is so because synthetic drugs have their own side effects and gradually make a person dependent on their consumption to relieve any problem. Thus in the present study two natural food items, ginger and Ajwain were studied for their capability to relieve dysmenorrhoea.

To administer ginger to the subjects it was made in the form of ginger aliquot while ajwain was delivered in powdered form to the subjects. To prepare the ginger aliquot a 0.5 inch piece of fresh ginger was boiled in 1 cup of water. Before consumption, honey and lemon were added as tastemakers. For ajwain 5 grams of ajwain were ground, made into powder form and then administered to the subjects. The ginger aliquot was to be taken one cup (100 ml) twice a day while the ajwain powder once daily, both from the first day of menstruation. The intervention was carried for two months that is the effect was observed on two cycles.

Development of tools and collection of data:

A questionnaire was framed to collect information both general and specific from the subjects.

The data related to the study was obtained under six phases:

Phase I :Collection of general information :

This included collection of data like the respondent's name, age, socio – economic status, educational status, grade of study. The collection of such information helps to build an environment in which research can be carried out comfortably helping to build a rapport between the researcher and the subject.

Phase II : Assessment of haemoglobin levels :

The subjects were assessed for their haemoglobin levels by Sahli·s method to detect whether any of the subjects were suffering from anaemia.

Phase III : Assessment of clinical signs and symptoms detecting the presence of anaemia :

A close observation was done to judge the presence of any clinical sign or symptom which was indicative of anaemia in the subjects under study.

Phase IV : Assessment of beliefs about specific foods and their relation to the menstrual cycle :

India is land of customs and traditions. Foods are associated with specific occasions and there are beliefs about food and their relation to specific events. The present study aims to judge a type of these beliefs, of relation of foods to menstrual cycle.

Phase V : Acquisition of specific information about Menstrual pattern peculiar to each subject :

Menstruation is a normal physiological phenomena but each woman has her own rhythm. Thus to know about the specific pattern of each subject, specific questions in reference to the menstrual cycle were framed, and made a part of the questionnaire to seek answers to them and gain accurate information.

Phase VI: Administration of the relieving agents namely ginger aliquot and ajwain powder for two cycles :

The ajwain powder and the ginger aliquot were then administered to the subjects for two cycles starting from the first day to judge their effect on dysmenorrhoea.

Phase VII :Assessment of the impact of ginger aliquot and ajwain powder :

The impact of ginger aliquot and ajwain powder was judged by asking the patients, about the relief they experienced after consumption of these two agents. For this too, questions were framed and included in the questionnaire, so accurate data could be obtained and the results could be analysed correctly.

Phase VIII : The results were then calculated in the form of percentages to gain an overall idea about each aspect that was to be judged through the study.

■ RESEARCH FINDINGS AND DISCUSSION

The present study, impact of intervention with ginger aliquot and ajwain powder on dysmenorrhoea in young adult women (14-25 years) was carried out on a sample of 90 subjects who were suffering from spasmodic dysmenorrhoea that is menstrual cramps. The subjects were divided into two groups namely test and control, with the number of subjects in each group being equal to 45. The subjects in the test group were fed either ainger aliquot or ajwain powder. The selection of any one food item was left on the choice of the subject. The control group were not administered any relieving agent and formed the basis of comparison only. It was deemed that the abdominal pain they would be suffering from would be relieved with time as happens in a normal physiological cycle. A questionnaire was framed to collect information from the subjects both general and specific. In the end results were calculated in form of percentages.

In reference to the age 66.67 per cent of the subjects were a teenager that is were in the age group of 14-17 years while 33.33 per cent of the subjects were in the age group of 18-25 years. The results were similar for the control as well as the test group. The results are shown in Table 1.

The haemoglobin levels of the subjects were measured to judge whether the subjects were healthy or were suffering from anaemia. The basis of anaemia judgement were the standards of haemoglobin given by World Health Organisation (WHO) for normal as well as values for the diagnosis of anaemia*. The results revealed that in the control group only 15.56 per cent of the subjects had haemoglobin levels within the normal range while the majority that is 84.43 per cent could be labelled as anaemic.

In the Test group also majority of the subjects (73.32%) were anaemic and only 26.67 per cent had normal haemoglobin levels. The results are shown in Table 2.

Succeeding the measurement of haemoglobin levels was the observation of clinical signs and symptoms indicative of anaemia amongst the members of control and test group. The results reflected the presence of a pale conjunctiva for 35.56 per cent of the subjects, while a pallor face presentation was observed amongst 28.89 per cent of the subjects. Presence of a pale tongue was noticed in 33.33 per cent of the subjects while the palms appeared to be pale in 17.78 per cent of the subjects. Brown patches on cheeks could be seen in 13.33 per cent of the subjects in the control group.

In the test group, a pale conjunctiva and pallor face was observed in 33.33 per cent of and 22.22 per cent of the subjects, respectively. Apart from the above pale tongue, pale palms, and brown patches on cheeks were observed for 26.67 per cent, 11.11 per cent and 8.89 per cent of the subjects, respectively. The results are shown in Table 3.

Table 1 : Age of the subjects under study (Control and test)

Age (years)	Number		Percentage	
	Control	Test	Control	Test
14-17	30	30	66.67%	66.67%
18-25	15	15	33.33%	33.33%

Apart from the clinical signs, the subjects were also questioned about the experience of symptoms that may occur due to anaemia. In the control group it was 22.22 per cent of the subjects who were experiencing headache, 44.44 per cent experienced being fatigued easily, while 28.89 per cent were suffering from a loss of appetite. For the test group experience of headache, easy fatigue, and loss of appetite was observed in 17.78 per cent, 33.33 per cent and 22.22 per cent of the subjects, respectively. The results are shown in Table 3.

In reference to the beliefs about food and their relation to menstrual cycle a majority of the subjects that is 66.67 per cent, reported to be avoiding certain foods during menstruation. "sour" and "heat producing foods" were the types that were avoided by these subjects. The number of subjects falling into the category of firm belief about such ideas was 30 making the percentage equal to 66.67 per cent. The same subjects (66.67%) avoided such foods during the days of menstrual period. Some (44.44%) avoided them even before the onset of menstruation.

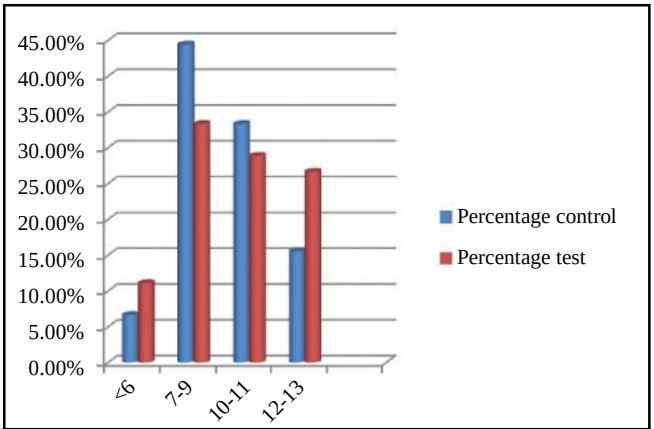

Fig. 1 : Graphical representation of haemoglobin levels of subjects under study

For the members of the test group a similar pattern was observed. To be precise, 55.56 per cent of the subjects said to be avoiding certain specific foods during menstruation. When questioned in depth, all of them that is 55.56 per cent of the subjects believed in avoiding sour foods during such days. This was because touching them was prohibited during these days (like pickles). Although it is a myth and no scientific evidence exists to support such ideas. A similar percentage and the same subjects (55.56%) believed that foods produce heat in the body and they avoided it during the period. It was so because they had a belief that such foods enhance blood loss. A small percentage (33.33%) avoided such foods even before the onset of Menstruation, for the same reason. The results are shown in Table 4.

Menstruation is a normal phenomenon, but irregularities occur and peculiarities do exist. Thus in the present study specific questions which were related

Table 2 : Haemoglobin (Hb) levels of subjects chosen for the study (Control and test)

Haemoglobin level (g/dl)	Number		Percentage	
	Control	Test	Control	Test
<6	3	5	6.67%	11.11%
7-9	20	15	44.44%	33.33%
10-11	15	13	33.33%	28.89%
12-13	7	12	15.56%	26.67%
Total	n=45	n=45	100%	100%

Table 3 : Clinical signs and symptoms to judge the presence of anaemia in subjects (Control and test group)

Clinical sign and symptom	Number		Percentage	
	Control	Test	Control	Test
Presence of pale conjunctiva	16	15	35.55%	33.33%
Pallor face	13	10	28.89%	22.22%
Pale tongue	15	12	33.33%	26.67%
Pale palms	8	5	17.78%	11.11%
Brown patches on cheeks	6	4	13.33%	8.89%
Experience of headache	10	8	22.22%	17.78%
Experience of easy fatigue	20	15	44.44%	33.33%
Loss of appetite	13	10	28.89%	22.22%

to the menstrual pattern of each subject were asked. The results revealed that majority of the subjects (77.78% in the control group and 82.22% in the test group) started menstruating between the age of 12-16 years, a few experienced menarche at an age less than 12 years which is generally not considered normal. The gap between two menstrual cycles was 28-30 days for 62.22 per cent in the control group and 66.67 per cent in the test group, respectively. A gap of 30-35 days which is also acceptable was observed in 37.78 per cent and 33.33

Table 4 : Beliefs about food and their relation to menstrual cycle (Control and test group)

Belief	Number		Percentage	
	Control	Test	Control	Test
Avoiding any specific food during the menstrual cycle				
Yes	30	25	66.67%	55.56%
No	15	20	33.33%	44.44%
If Yes type of food avoided				
Sweet	0	0	0%	0%
Sour	30	25	66.67%	55.56%
Salty	0	0	0%	0%
Bitter	0	0	0%	0%
Foods produce heat in the body				
Yes	30	25	66.67%	55.56%
No	15	20	44.44%	44.44%
Avoiding heat producing foods before the period				
Yes	20	15	44.44%	33.33%
No	10	10	22.22%	22.22%
Avoiding heat producing foods during the period				
Yes	30	25	66.67%	55.56%
No	0	0	0%	0%

Table 5 : Information about specific facts related to menstrual cycle

Age at menarche	Number		Percentage	
	Control	Test	Control	Test
<12 yrs	10	8	22.22%	17.78%
12-16 Yrs	35	37	77.78%	82.22%
Total	n=45	n=45	100%	100%
Gap between two menstrual cycles				
28-30 days	28	30	62.22%	66.67%
30-35	17	15	37.78%	33.33%
Total	n=45	n=45	100%	100%
Experience of pain				
Yes	45	45	100%	100%
No	0	0	0%	0%
Total	n=45	n=45	100%	100%
Duration of pain				
24 Hours	5	9	11.11%	20%
48 Hours	40	36	88.89%	80%
Total	n=45	n=45	100%	100%
Regularity of cycle				
Yes	28	35	62.22%	77.78%
No	17	10	37.78%	22.22%
Total	n=45	n=45	100%	100%

Table 6 : Relief in dysmenorrhoea after consumption of the two indigenous agents, ajwain and ginger

Administration of food item	No. of samples	No of subjects experiencing relief	Percentage	Extent of relief
Ajwain powder	30	24	80%	Moderate
Ginger aliquot	15	9	60%	Moderate

per cent of the subjects in the control and test group, respectively. Painful menstrual cramps were experienced by majority of the subjects in the control and the test group for 48 hours, with the percentage being equal to 88.89 per cent in the control group and 80 per cent in the test group, respectively. Very few that is 11.11 per cent subjects in the control group and 20 per cent subjects in the test group experienced pain for 24 hours only. Majority of the subjects in both the test and control group had a regular cycle (62.22% in control and 77.78% in test group, respectively). it was only 37.78 per cent subjects in control and 22.22 per cent subjects in the test group who had an irregular rhythm. It is to be mentioned that the irregularity occurred in the gap between two menstrual cycles or in the duration of blood loss. The results are shown in Table 5.

The last, but the most important part of the study was the assessment of the impact of ginger aliquot and ajwain powder on dysmenorrhoea in the subjects. After administering the natural therapeutic agents and observing their effect on two cycles, 9 subjects (60%), out of fifteen consuming ginger aliquot reported moderate relief in pain, while 24 (80%) subjects out of thirty consuming ajwain powder expressed moderate relief in dysmenorrhoea. Thus the two food items can be used as remedies for abdominal cramping pain during menstruation. The results have been tabulated in Table 6

Summary and conclusion:

The present study impact of intervention with ginger aliquot and ajwain powder on dysmenorrhoea in young adult women (14-25 years) was carried to assess if natural food items namely ginger and ajwain could relieve dysmenorrhoea. Dysmenorrhoea or painful menstruation is a problem encountered by many females, which reduces their work efficiency disturbing their daily activities. It is a problem that handicaps many females for at least two days on an average. Many other features like diarrhoea, backache, and feeling of nausea are also associated with abdominal pain. All the above problems make females almost sick and they end up taking medicines to cure these problems especially abdominal pain. But natural home remedies, if can perform the same functions would be a better choice, having no side effects or the problem of making a person dependent on them. They are available in all Indian homes and have numerous other health benefits also.

Thus, it can be concluded that ginger and ajwain can be used as natural home remedies for relieving dysmenorrhoea. They are safe and effective therapies with no side effects and hence can go a long way in providing long term relief from this common yet widely prevalent problem of dysmenorrhoea.

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