

## A Survey on Factors Effecting Menstrualcycle in Vegetarians and Non-Vegetarians

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### ABSTRACT:

Menstruation is a regular physiological process of shredding of the uterus in the female body of the Homosapiens and also the other primates. Menstruation begins in the female once they reach the stage of the Menarche, this stage come in between age of 10-17 years which is the adolescent stage. The main aim of the project is to determine the factors that effecting the menstrual cycle in vegetarians and Non-vegetarians and how much the factors cause changes in physiological functions in vegetarians and Non-vegetarians. Mostly the females suffer with a lot of physiological problems such as stress, mood swings, anger and also irritability and they also experience some of the physiological problems such as the pain in different regions of the body this study mainly focus on how the dietary intake shows its effect on the menstrual cycle of women, for this we took about 300 subjects of vegetarians and non vegetarians and conducted an online survey and collected the data by conducting. Among them 216 women follow mixed diet and 84 of them follow vegetarian diet. Our study revealed that women following the mixed diet experiences lesser pain in arms, stomach, chest, leg, joint, hip during the period cycle when compared to that of vegetarian people. This study was come to know how the dietary intake shows its effects on the menstrual cycle and some remedies to counter its effects. Mixed diet or vegetarian diet whatever the female may take it should have enough supplements and vitamins to provide supplementations for the body to have a healthy menstrual cycle.

**KEYWORDS:** Menstruation, Vegetarians, Non vegetarians, Physiological Pain, Remedies.

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### I. INTRODUCTION:

#### MENSTRURATION: -

Menstruation is a physiological cycle of shredding of the uterus in the female body of the Homosapiens and also the other primates.<sup>1</sup> Menstruation begins in the female once they reach the stage of the Menarche, this stage come in between age of 10-17 years which is the adolescent stage. The main aim of research is to determine the factors that effecting menstrual cycle in vegetarians and Non-vegetarians. The objective is how the factors may alter the physiological changes in the vegetarians and Non-vegetarians and how it can ceased. Menstruation is continued up to the menopausal stage which is reached when the female reaches the age of 50 years, Menstruation condition is interrupted by the pregnancy. Menstruation is a 28days cycle which is done in stages; those stages are explained as follows(Fig-1)

#### STAGES OF MENSTRUAL CYCLE

A women's Menstrual cycle can be divided into 4 stages

- MENSTRUUAL PHASE
- FOLLICULAR PHASE
- OVULATION PHASE
- LUTEAL PHASE

#### MENSTRUAL PHASE

- First phase of the menstrual cycle. in which the shedding of the uterus takes place and the first period of the female occurs.<sup>2</sup>
- The egg from the previous cycle dose not get fertilized due to the hormones oestrogen and the progesterone drops
- As the pregnancy does not occur, there is no need for uterus so the uterus shreds through the vagina by releasing the combination of blood, mucous and tissue of the uterus.

**SYMPTOMS**

Cramps, Tender breast, Bloating, Mood swings, irritability, Headache, Tenderness, low back pain

**PERIOD OF TIME**

3-7 Days

**FOLLICULAR PHASE**

• Follicular phase is the period where the follicular sacs are produced Hypothalamus sends a signal to the pituitary gland to release the follicle stimulating hormone[FSH],The FSH induces the ovaries in the production of the follicles which are the small sacs in which each follicle has an immature egg, nearly 20 follicles are produced eventually the healthiest of all immature egg gets matured getting ready to be fertilized, during this stage there will be an surge in the oestrogen levels that thickens the uterus lining creating nutrient rich environment for embryo.<sup>4</sup>

**PERIOD OF TIME:** - 11-27 days

**OVULATION PHASE**

Ovulation phase is when an egg gets released from a matured ovary. Ovulation phase occurs when there is a release of the luteinizing hormone by the pituitary gland.<sup>5</sup> Ovulation time is the only period when the female gets pregnant. Ovulation can be assessed by the following symptoms

\*Rise in the basal body temperature

\*thicker discharge containing egg whites

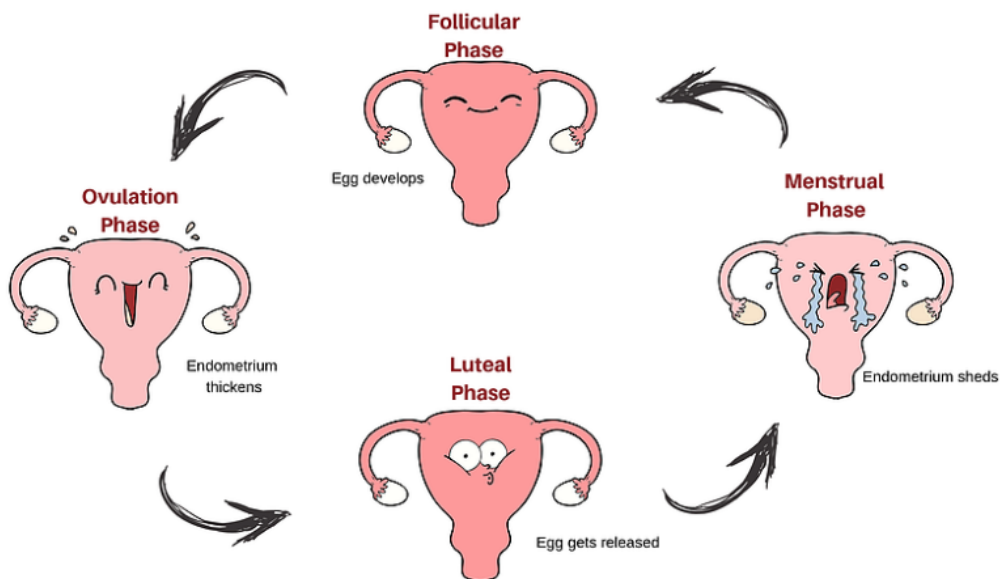
If the released egg doesn't gets fertilised by the sperm, the egg dies or it gets dissolved

**PERIOD OF TIME:-**It occurs on the 14<sup>th</sup> day of cycle

**LUTEAL PHASE**

After the release of egg, it turns in to the corpus luteum. The corpus luteum releases the hormones progesterone, oestrogen. These hormones keep the uterine line thick, which make the uterine thick and makes ready for the fertilised egg to implant. If the female doesn't gets pregnant the corpus luteum will gets shrink .this decreases levels of oestrogen and progesterone which causes onset of your period.<sup>6</sup>

**PERIOD OF TIME:-**The luteal phase last for it 17 days



**FIG-1:** Various phases of menstrual cycle.<sup>7</sup>

**FACTORS AFFECTING THE MENSTRUAL CYCLE:-**

Every women has about 11-13 menstrual periods each year. Due to several disturbances they may have some irregular menstrual cycles, there are many reasons that a menstrual cycle gets affected.<sup>8</sup> Periods are irregular for first couple of years of the menstruation, this is because the body is in the still developing stages of delicate hormonal balance which eventually leads to a regular cycle .some of the most common factors affecting the menstrual cycle are the

\*stress

\*travelling time

\*smoking

- \*over weight
- \*diseases
- \*hormonal problems
- \*various medications
- \*over exercise etc...

**STRESS:**

Stress can cause hormonal changes in the body. It leads to change or delay of the menstrual cycle due to late ovulation. Stress can decrease the pituitary gland functions, which decreases the production of oestrogen. Then it disrupts ovulation.

**TRAVELLING TIME:**

Many times travelling may cause stress (travel -induced stress) .this stress can change the normal hormonal level .travelling indirectly effects the menstrual cycle.

**SMOKING:**

Smoking mainly causes changing the level of hormones like estrogen,<sup>9</sup> progesterone, and testosterone. Which cause absence or delay of monthly cycle.<sup>10,11</sup>

**OVER WEIGHT:**

Over weight women contains extra fat cells.<sup>12</sup> Fat cells produces more estrogens, this formed oestrogen effects the other hormones responsible for menstrual cycle. It leads to abnormal periods.<sup>13</sup>

**DISEASE:**

The diseases like thyroid and PCOD can cease the menstrual cycle.<sup>14</sup>

\*Thyroid disease causes release of too much or too little of the hormone. Based on the level of hormones the cessation of the menstrual cycle occurs.

\*PCOD condition is due to hormonal problems, which forms cyst in the ovaries it leads to periods irregular.

**HARMONAL PROBLEMS:**

Hormones are mainly responsible for the menstrual cycle. The problem of the hormones may leads to cause the period's late.<sup>15</sup>

**EXERCISE:**

Generally exercise helps to reduce pain during periods. But in excess exercise tends to miss the periods by elevating the metabolism.<sup>16</sup>

**VARIOUS MEDICATIONS:**

Normally medications are used to reduce or prevent the disease but many medications can effect the menstrual cycle.

- Ex: Anticoagulants
- Antidepressants
- Antipsychotics
- Corticosteroids
- Tamoxifen etc...<sup>17</sup>

**II. METHODOLOGY:**

An online survey was conducted among the females around the age 18-25 years; the study was conducted by sending an online form through various media like the whatsapp and gmail. This research was conducted so as to know the factors that effect the menstrual cycle in the females.

A form was taken which includes various lists of problems that were daily faced by the females and are asked. In particular to tick a mark for the changes they experience during the menstrual cycle. The form was collected and was separated in to the vegetarians and non-vegetarians, so as to measure the effects and also to know the effects seen in the people with different diets. The form that was sent through online as follows. The data collect was taken and their percentages were calculated using the mathematical techniques. These percentages were then converted to the statistical and bar charts for easy representation and understanding. The questionnaire form used in our study is prepared by our own.

Age:

Age of Menarche:

Marital Status:

Married  UN Married

Height      Weight

What type of Foodie are you

Vegetarian       Non vegetarian

How many hours of sleep do you normally get each night.

Do you exercise daily?

Yes       No

How long do you travel every day to reach college (or) work place?

Do you have hormonal related problems?

Thyroid       PCOD       No

Do you smoke?

Yes       No

Are you an Emotional Person?

Yes       No       May be

Are you aware about menstrual related problems?

Yes       No

Do you think food affects menstrual cycle?

Yes       No       May be

Do you think sleep affects menstrual cycle?

Yes       No       May be

Do you think over exercise affects menstrual cycle?

Yes       No       May be

Do you think stress affects menstrual cycle?

Yes       No       May be

How you get stress free

By listening music       by dancing       Chitchatting with friends       by comedy scenes

Did you consult gynaecologist for menstrual related problems.

Yes       No

Menstrual Period

Regular       Irregular

If irregular

Twice in a month       Once in 3 Months       Once in 6 Months       Once in 9 months   
Once in a year

Never have a bleeding after 1st period

Days between Two periods:

More than 28 days  28 days  Successive Periods Less than 28 days

Period of menses:

1 day  1-3 days  5 days  7 days

Bleeding:

Light  Medium  Heavy bleeding  Spotting

Between the periods:

Yes  No

Pain during menstrual periods:

Yes  No  Some times

Stomach pain

Intense  Less intense  some times

Pain in the hip:

Intense  Less intense  some times

Pain in arms:

Intense  Less intense  some times

Pain in legs:

Intense  Less intense  some times

Pain in joints:

Intense  Less intense  some times

Chest pain:

Intense  Less intense  some times

Days Of severe Pain:

1<sup>st</sup> day  2<sup>nd</sup> day  First 3 days  all the days

Head ache:

Intense  Less intense  some times

Fatigue:

Intense  Less intense  some times

Nausea vomiting:

Intense  Less intense  some times

Dizziness:

Intense  Less intense  some times

Constipation:

Intense  Less intense  some times

Increased Appetite:

Intense  Less intense  some times

Fainting:

Intense  Less intense  some times

Indigestion:

Intense  Less intense  some times

Anxiety:

Intense  Less intense  some times

Confused:

Yes  No  Some times

Depression:

Yes  No  Some times

Forgetfulness:

Yes  No  Some times

Irritability:

Yes  No  Some times

Difficulty in Concentrating:

Yes  No  Some times

Mood Swings:

Yes  No  Some times

Anger:

Yes  No  Some times

Have Symptoms Before marriage:

Yes  No  Some times

Taking Treatment:

Yes  No

Type of Treatment:

Drugs  hormones  others

Taken tablets To Post pone Periods:

Yes  No  Some times

Any other Major Diseases:

Yes  No

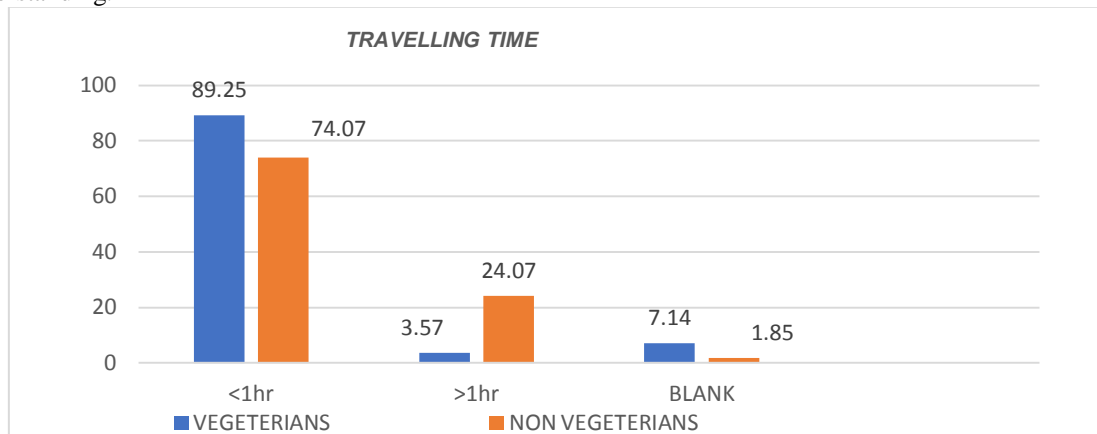
**III. RESULTS:**

Out of the total 300 forms that were collected, 84 of them are of the vegetarian diet and the remaining of them of 216 members follows a mixed non-vegetarian diet. All the subjects that have answered the questionnaire form belong to the age group of 18-25 years. Up on collection of data from various factors, each factor was represented as a column chart. At first the lifestyle patterns of vegetarians and the non-vegetarians are taken in to the consideration, the lifestyle patterns of the subjective are as follows.

At first life style patterns of the vegetarians and non-vegetarians are discussed, the life style patterns that are included are the

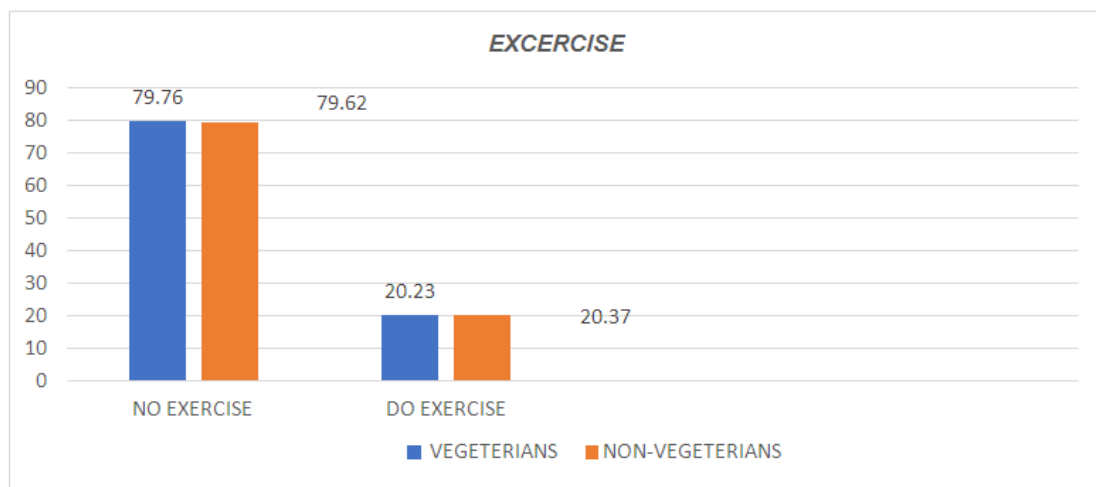
1. Travelling time
2. Exercise
3. Smoking
4. Taking medication
5. Health problems
6. Taking tablets to postpone periods

Data collected from the forms were turned out to percentages which were then converted to bar graphs for easy understanding.



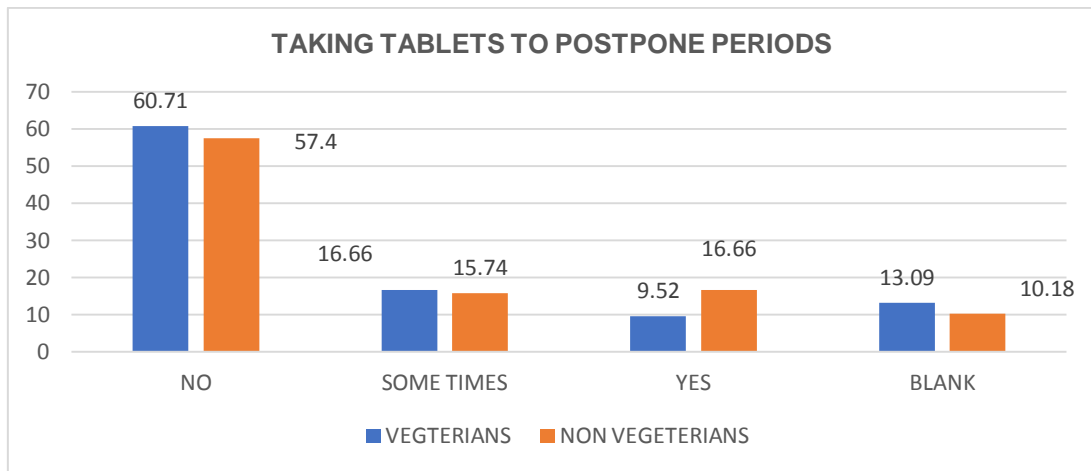
**FIG-2:** Travelling time difference in vegetarians and non vegetarians

FIG-2 shows travelling differences in vegetarians and non-vegetarians. Vegetarians of 89.25% travels less than 1 hour, 3.57% travels more than 1 hour and non-vegetarians of 74.07% travels less than 1 hour, 24.07% travels more than 1 hour.



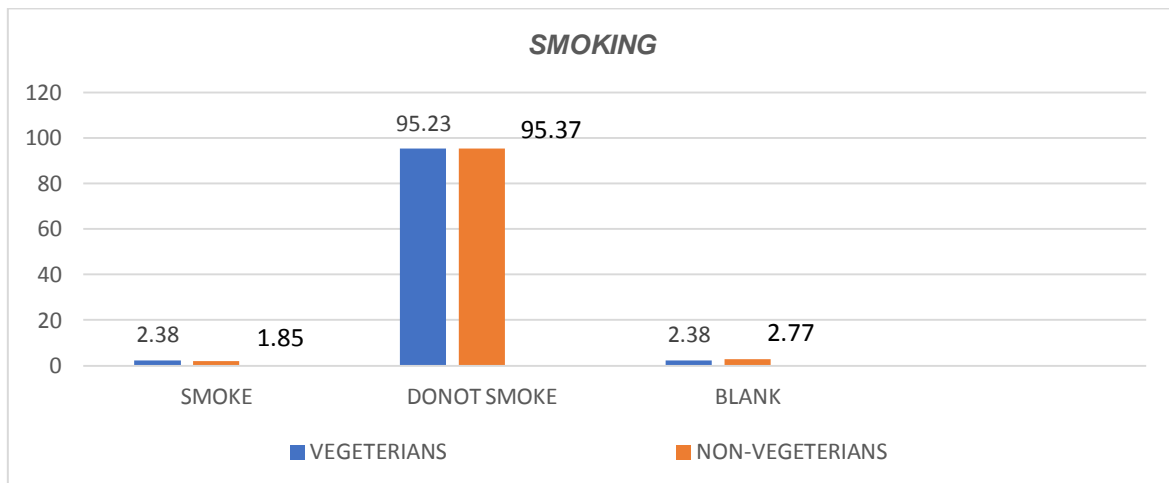
**FIG-3:** Exercise difference in vegetarians and non- vegetarians

FIG-3 shows the exercise difference in vegetarians and non vegetarians. Vegetarians of 20.23% are exercise daily and non vegetarians of 20.37% are exercises daily remaining are not physically active.



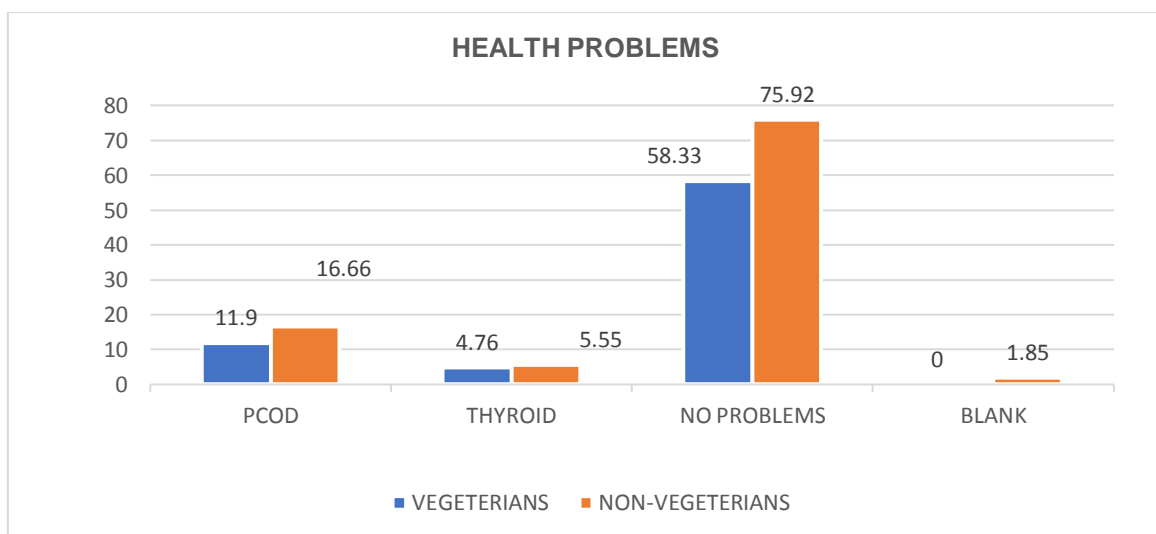
**FIG-4:** Taking tablets to postpone periods in vegetarians and non-vegetarians

FIG-4 Shows taking tablets to postpone periods in vegetarians and non vegetarians. 26.18% of vegetarians are taken tablets to postpone periods and 32.4% of non-vegetarians are taken tablets to postpone periods.



**FIG-5:** Smoking habit in vegetarians and non-vegetarians

FIG-5 Shows smoking habit in vegetarians and non-vegetarians. 2.38% of vegetarians are smokers, 1.85% of non-vegetarians are smokers and remaining are non smokers.

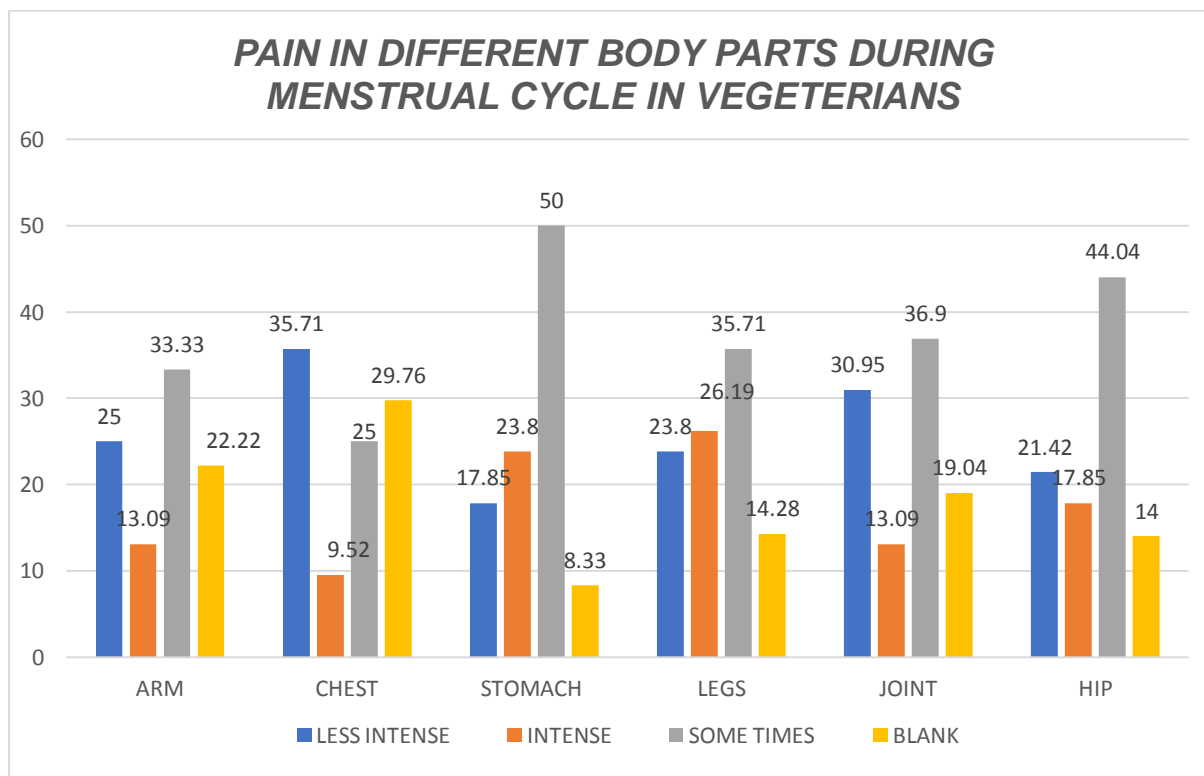


**FIG-6:** Health problems in vegetarians and non-vegetarians



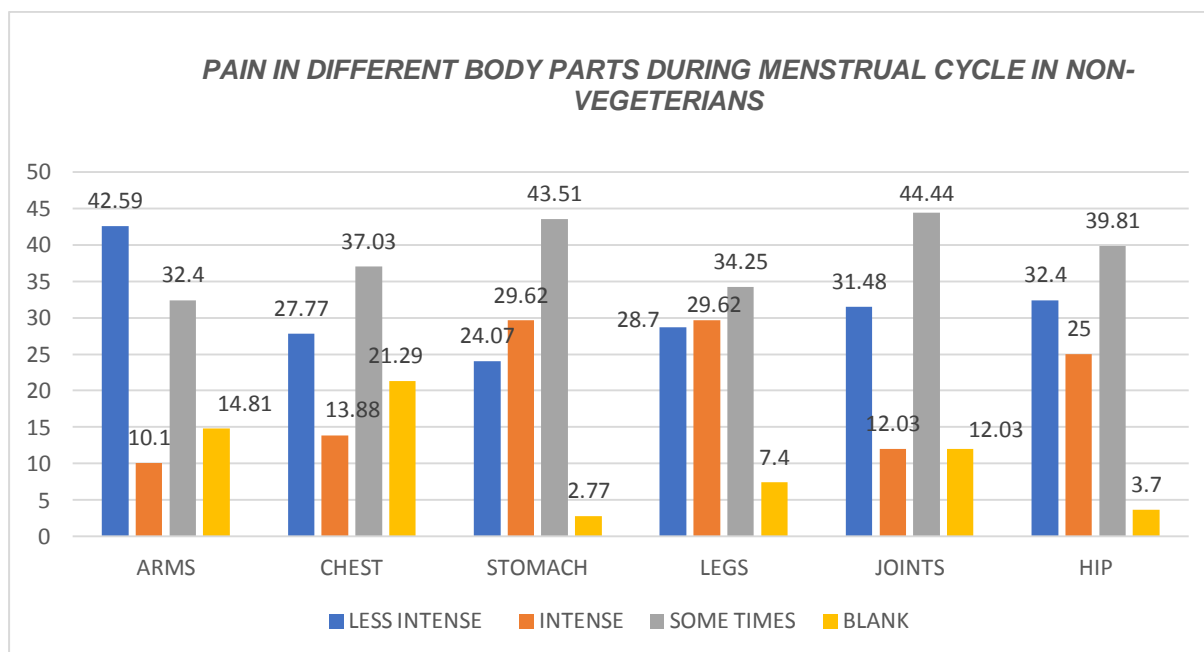
FIG-6 Shows health problems in vegetarians and non-vegetarians. In which vegetarians of 11.9% are suffering with PCOD, 4.76% are suffering with thyroid and 58.33% are not having medical problems. Non-vegetarians of 16.66% are suffering with PCOD , 5.55% are suffering with thyroid and 75.92% are not having medical problems.

Due to effect of their lifestyles patterns they may experience pain in different areas of their body, the pain is categorised as the LESS INTENSE, INTENSE, SOMETIMES and who ever doesn't responded to this represented as the BLANK. The pain experienced by the female are categorised by the vegetarians and non-vegetarians, the data is then represented as the column charts.



**FIG-7:** Pain in different body parts during menstrual cycle in vegetarians

FIG-7 shows pain in different body parts during menstrual cycle in vegetarians. 71.42% are having pain in arm,70.23% are having pain chest,91.65% are having pain in stomach, 85.7% are having pain in legs, 80.94% are having pain in joints and 83.31% are having pain in hip.



**FIG-8:** Pain in different body parts during menstrual cycle in non-vegetarians

FIG-8 Shows pain in different body parts during menstrual cycle in Non- vegetarians. 85.09% are having pain in arms, 78.68% are having pain in chest, 97.2% are having pain in stomach, 92.57% are having pain in legs, 87.95% are having pain in joints, 97.2% are having pain in hip.

Physiological Factors	Vegetarians	Non vegetarians
Headache	34.52%	43.51%
Fatigue	32.14%	38.88%
Nausea	35.71%	37.03%
Dizziness	38.09%	44.43%
Constipation	33.33%	37.03%
Increased appetite	34.52%	39.72%
Fainting	33.33%	37.03%
Indigestion	38.09%	41.58%
Anxiety	49.99%	49.99%
Confusion	48.8%	45.36%
Depression	51.05%	47.21%
Irritability	70.23%	68.51%
Forgetfulness	49.99%	40.73%
Difficulty in concentration	73.8%	65.73%
Mood swings	63.09%	58.33%
Anger	74.99%	72.21%

**Table-1:** physiological factors in vegetarians and non-vegetarians

Apart from the pain in the different parts of the body the females may also exhibit some of the physical and also the physiological changes in the body such as the HEADACHE, FATIGUE, NAUSEA, DIZZINESS, CONSTIPATION, INCREASED APPETITE, FAINTING, INDIGESTION, ANXIETY, CONFUSION, DEPRESSION, IRRITABILITY, DIFFICULTY IN WORK, MOODSWINGS, ANGER. The physiological factors are then mentioned as a tabular column with the percentage of subjects involved in it. (Table-1).

#### **IV. DISCUSSION:**

The article mainly includes the discussion about the menstrual cycle and the changes that occurs in the menstrual cycle due to the dietary intake. A survey was done on the age of 18-24 years and the problems they are facing during the cycle and how the diet they follow show its effect over the problems they face. In this survey 300 women were taken as subjects, among them 216 women follow mixed diet and 84 of them follow vegetarian diet. Our study revealed that women following the mixed diet experiences lesser pain in arms, stomach, chest, leg, joint, hip during the period cycle when compared to that of vegetarian people. In this online survey various factors are taken in to consideration it includes stress, age, over weight, smoking etc... considering high level of stress was associated with high probability of menstrual irregularity<sup>18-21</sup>. Women who began their menstrual cycle at an age of 11 years or younger have an 80% chance of having menopause at the 40 years when compared to those who started menstruating at the age of 13 years<sup>25-26</sup>. In regards to smoking the association between smoking and menopause may be attributed to the development of hypoestrogenic state that is induced by smoking . In our study 2.38% of vegetarians are smokers and 1.85% of non-vegetarians are smokers<sup>22-24</sup>. They are facing menstrual irregularity and pains during cycle. Over weight also alters the menstrual cycle. The effects that the subjects are facing depends on their dietary intake, people facing effects such as pain, cramps, headache etc are tackled using hot packs, medications and sleep. Some of the psychological effects such as depression, mood swings, anxiety, and confusion can be withstood using their own recreational methods such as listening music, watching TV and practicing their own hobbies. All the data collected from the questionaray form are converted to data and are represented as the barographs and bar diagrams.

Psychological factors such as the mood swings, depression, anxiety, confusion show it effects effectively in vegetarian people than the mixed diet people. Our study also shows that there is regularly in cycle in the people of mixed diet and theovulatory cycles are also not observed.

#### **V. CONCLUSION:**

In our study female that are on mixed diet experienced less pain and period cramps when compared to the females of vegetarian diet, they may due to the proteins they obtain from the meat. Proteins are the rich energy source and also helps in increasing the levels of FSH (take part in thickening of endometrium). FSH helps in maintain the cycle length, so the people who include the meat in their diet have an advantage over the vegetarian women over the maintenance of the cycle length and also in the energy availability to withstand the period pains and cramps. Women who takes fish in their diet has a rich source of omega-3-fattyacids aids releasing of egg and also helps to relieve the PMS and also decrease the inflammation during the shredding of the endometrium. Sex hormones such as the oestrogen and progesterone has various functions to do in the female body such as lining of endometrium, maintenance of endometrium apart from these any imbalance of these as to maintain these hormones in a balanced way food supplements such as soybeans, legumes, mushrooms, milk, magnesium rich foods should be taken. Some of the supplements are available and some are available in the plant based materials, so alternatives for these supplements should be opted such as if vegetarians needs proteins which are generally high in meat they should opt for soya supplements, lentils, nuts, pumpkin seeds etc. omega-3- fatty acids which are generally rich in fish also available in flax seeds, spinach, walnuts, chia seeds etc<sup>27</sup>. for the people who follow vegetarian diet. During the menstruation time many females' experiences constipation issues to overcome this issue by taking fibre in their diet which are available mostly in plants such as melons, cucumbers, vegetables, nuts etc. and are not in the meat, so the mixed diet people should have their eyes on fibre foods during their periods to ease the bowel movements<sup>28</sup>. Mixed diet or vegetarian diet whatever the female may take it should have enough supplements and vitamins to provide supplementations for the body to have a healthy menstrual cycle<sup>29</sup>.

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#### **AUTHOR CONTRIBUTION:**

This study is done by the students of A.M Reddy memorial college of pharmacy who are backed up by their friends of the topic for the article was selected by S.prasanth and the whole online survey was conducted through online portals by G.lavanya. whole data was collected and analysed by the G.santosh kumar and S. prashanth has prepared the manuscript with important intellectual input from G.lavanya and J.sravani and the statistical data interpretation was done by G. Santosh kumar. All the authors have approved the final manuscript and provided funding.

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