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Impact of banana consumption on Premenstrual syndrome among the females in reproductive age group

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Abstract

Background: Menstruation is a normal physiological impact in each girl's life. Premenstrual syndrome (PMS) is a common serious problem characterized by a set of physical, cognitive, affective and behavioral symptoms that occur cyclically during luteal phase of menstrual cycle and resolve quickly with in few days of onset of menstruation. Some degrees of premenstrual problems are experienced especially in the initial years of reproductive life. PMS may cause some women to become more violent and prone to committing crimes like Assault and Suicide. So, PMS affects not only women but also families and societies. Fruits have been recognized as a good source of vitamins and minerals. Some fruits like 'Banana's' offer a great medical benefits, one of the benefits of banana is to decrease the PMS. The present study is conducted with an aim to assess the impact of banana consumption on Premenstrual syndrome among the females in reproductive age group in a selected college of nursing at Guntur district, Andhra Pradesh.

Methodology: A descriptive survey and quasi-experimental study with non-equivalent control group designs are used. One hundred and thirty three females are screened during the month of June-2018. By using purposive sampling technique a sum of 60 females are selected as sample, out of which 30 females are in experimental group and 30 females are in control group. Structured questionnaire and a rating scale are used to collect the data. A pre-test is conducted to the subjects of experimental group and control group before providing the banana. In addition to the routine diet, daily 100 grams of banana is provided to the subjects of experimental group for the period of 3 months i.e., January, February and March 2019. The females of control group had no intervention and they are on their routine diet. Monthly post-test is conducted. The collected data are analyzed by using descriptive and inferential statistics.

Results: The prevalence of PMS is reported to be 50.37% in the present study. The calculated paired 't' values after the first, second and third month consumption of banana ($t = 6.37, 8.32, 7.84$ respectively) are greater than the table value (2.05). This means that there is a reduction in the PMS symptoms among the respondents of the experimental group after the 3 months of banana consumption. The calculated independent 't' values in all the three post-test's ($t = 3.59, df = 58; t = 9.23, df = 58; t = 9.14, df = 58$ respectively) are greater than the table value (2.00); which indicates that the difference in the PMS symptoms among the respondents of experimental group and the control group, which means that the respondents of the experimental group had experienced significantly less PMS symptoms after consumption of banana for three months compared to the respondents of the control group. No significant association between the selected variables and the reduction in the PMS symptoms among the respondents of experimental group and control group.

Conclusion: The present study concludes that daily 100 grams of banana consumption for a period of 3 months had significantly reduced the Premenstrual syndrome. Banana consumption is found to be more effective and it is a simple measure to reduce the symptoms of Premenstrual syndrome.

Keywords: PMS, impact, banana consumption, premenstrual syndrome, females in reproductive age group

Introduction

In women, the reproductive life starts from Menarche and ends with Menopause. Menstruation is a normal physiological impact in each girl's life [1]. But, in some women a change in mood, behavior and appearance of some abnormal vague symptoms is often noticed in second half of the cycle known as Premenstrual Syndrome (PMS) [2]. PMS is a common serious problem characterized by a set of physical, cognitive, affective and behavioral symptoms that occur cyclically during luteal phase of menstrual cycle and

resolve quickly with in few days of onset of menstruation [9]. Approximately 80% of women experience Premenstrual syndrome, while moderate and severe forms of PMS are detected in 25-50% cases [3].

PMS is also found to be related with high suicide and accident rates, poor employment and school attendance, poor academic performance and psychiatric problems, impaired relations with friends, colleagues and family members, poor social life activity and home responsibilities [12].

Mrs. Kumari Chandra, a 21-year-old woman, was accused of pushing three children into a well. While two of them were rescued, one boy drowned. The trial court convicted Chandra for offences of committing murder and attempting to commit murder under the Indian Penal Code. That case was appealed before the Rajasthan High court in August 2018. The Lawyer for the accused stated that, at the time of the incident, Chandra was suffered from Premenstrual Stress Syndrome and argued that Premenstrual Syndrome may cause some women to become more violent and prone to committing crimes like Assault and Suicide [4]. So, Premenstrual syndrome affects not only women but also families and societies.

According to census of India 2011, the population was nearly 1.21 billion, of which 31% are below the age of 15 years and 53% of women are in the reproductive age group (15-49 years) [5]. Some degrees of premenstrual problems are experienced especially in the initial years of reproductive life by majority of young women [6].

As the exact cause of this syndrome is unknown, the treatment should be tailored to meet the specific needs of each patient and typically requires a combination of therapies. Many experts recommend the non-pharmacological measures [7, 8].

One of the conservative approaches to decrease the PMS symptoms is Nutritional supplementation. Whytney and Sizer (2000) stated that nutritional factors play a vital role in reducing the symptoms of PMS. Consumption of foods contains lots of vitamin E, vitamin B, potassium, calcium, iron and magnesium helps in controlling the symptoms of PMS [9].

Fruits and Vegetables are important components of healthy diet [10]. Especially Fruits has been recognized as a good source of vitamins and minerals [11]. Some fruits like 'Banana's' offer a great benefits, in addition to all of that, most people enjoy eating Banana's as well [10].

They are one of the most affordable fruits in the market place and can be found year-round nearly everywhere in the World [10].

Study conducted by Lilin Turlina, *et al.* stated that the bananas offer great medical benefits. One of the benefits of banana is to decrease the premenstrual syndrome. The study also recommended that women of childbearing age are advised to consume banana every day to get rid from the symptoms of Premenstrual Syndrome [9].

Very few studies are being conducted in this area. As the sufferers of Premenstrual Syndrome are increasing day by day, it has become one of the major problems of women of reproductive age group. Hence, the investigator felt the need to assess the impact of banana consumption on Premenstrual Syndrome among the females in reproductive age group to reduce the intensity and severity of symptoms in premenstrual phase.

Objectives of the study

1. To assess the prevalence of premenstrual syndrome among females in reproductive age group.
2. To find the impact of banana consumption on premenstrual syndrome among females in reproductive age group.
3. To compare the symptoms of premenstrual syndrome among females in reproductive age group in the experimental group and the control group, in both pre-test and post-test.
4. To identify the association between the premenstrual syndrome and the selected variables among the females in reproductive age group in post-test.

Research Methodology

Research Approach

In the view of the nature of the problem selected for the study quantitative research approach was found to be suitable to assess the impact of banana consumption on premenstrual syndrome among the females in reproductive age group.

Research Design

The study was conducted in two phases

- In the first phase, a descriptive survey was conducted to identify the subjects who are suffering with premenstrual syndrome.
- In the second phase, quasi experimental study with non-equivalent control group design was used.

Target Population

Females in the age group of 17 years to 24 years.

Accessible Population

Females between the age group of 17-24 years studying at selected college of nursing.

Sample

The sample size for the present study consists of 60 female nursing students. Out of 60, 30 students were in experimental group and 30 students were in control group.

Sampling Technique

Purposive sampling technique was used to select the sample.

Setting of the study

The study was conducted at selected college of nursing, chinakakani, Guntur (dt), Andhra Pradesh.

Tool for data collection

Tool for data collection was developed and used by the researcher. The tool consists of two sections.

Section A

It consists of 7 questions on demographic data of the respondents based on the study variables.

Section B

A structured rating scale consists of 47 questions, out of which 24 items on physiological symptoms, 13 items on behavioral symptoms and 10 items on psychological symptoms, making a total of 47 items.

| Score | Level of PMS symptoms |
|------------|-----------------------|
| 1-47 | No PMS |
| 48-94 | Mild PMS |
| 95-141 | Moderate PMS |
| 142-188 | Severe PMS |
| 189-235 | Very severe PMS |
| Never | 1 |
| Rarely | 2 |
| Sometimes | 3 |
| Very often | 4 |
| Always | 5 |

Content Validity: Content validity was obtained from 4 nursing experts in the field of Obstetrics and Gynaecological nursing and 2 Gynaecologists. The suggested modifications were in-corporated in the tool.

Reliability of the tool: Reliability of the tool was measured by using test-retest method, 10 respondents were selected and asked to answer the structured rating scale on two separate occasions. Karl Pearson’s correlation coefficient ‘r’ was computed to find out the reliability. The reliability (r) for the items of rating scale was 0.86. The positive correlation value indicated that the tool was reliable.

Collection of the Data

Data were collected personally by the researcher after obtaining permission from the authorities. The study was conducted in 2 phases.

- **Phase I:** survey was conducted during the month of June 2018.
- In phase II based on the Inclusion criteria, 60 females in reproductive age group were selected as sample. There were 30 females in experimental group and 30 females in control group. A formal written permission was obtained from authorities of selected college of nursing. The purpose of the study was explained, and a written consent was obtained from the subjects of experimental group.
- A pre-test was conducted to the subjects of experimental group and control group before providing the banana. In addition to the routine diet, the researcher personally provided 100 grams of banana to the subjects of experimental group for the period of 3 months. The females of control group had no intervention and they were on their routine diet.
- Monthly post-test was conducted to both the groups by using the same rating scale. The investigator personally has collected the information from the subjects during the months of January, February and March 2019. The collected data were edited, coded, classified and analyzed by using descriptive and inferential statistics.

Table 2: Frequency and Percentage Distribution of Level of PMS Symptoms in Experimental Group and Control Group

| Level of PMS | Pre-test | | Post-test 1 | | Post-test 2 | | Post-test 3 | |
|-------------------------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|
| | Experimental group f (%) | Control group f (%) | Experimental group f (%) | Control group f (%) | Experimental group f (%) | Control group f (%) | Experimental group f (%) | Control group f (%) |
| No Symptoms (1-47) <20% | - | - | - | - | 1 (3.33%) | - | 5 (16.67%) | - |
| Mild Symptoms (48-94) 21-40% | - | - | 18 (60.00%) | 6 (20.00%) | 23 (76.67%) | 2 (6.67%) | 18 (60.00%) | 2 (6.67%) |
| Moderate Symptoms (95-141) 41-60% | 24 (80.00%) | 25 (83.33%) | 9 (30.00%) | 15 (50.00%) | 5 (16.67%) | 10 (33.33%) | 6 (20.00%) | 13 (43.33%) |
| Severe Symptoms (142-188) 61-80% | 4 (13.33%) | 5 (16.67%) | 3 (10.00%) | 9 (30.00%) | 1 (3.33%) | 17 (56.67%) | 1 (3.33%) | 12 (40.00%) |
| Very Severe Symptoms (189-235) >80% | 2 (6.67%) | - | - | - | - | 1 (3.33%) | - | 3 (10.00%) |

Results

Section-A: characteristics of study sample

Age: Majority of the females (19 i.e.63.3%) in experimental group and in the control group (21 i.e. 70.0%) were in the age group of 19-20 years.

Age at Menarche: Majority of the females (16 i.e. 53.33%) in experimental group and control group (17 i.e.56.67%) had attained menarche between the age group of 13-14 years.

Pattern of menstrual cycle: Majority of the females (19 i.e.63.33%) in experimental group and control group (26 i.e.86.67%) were with regular menstrual cycles.

Disturbing changes in mood or body: All the females of experimental group (30 i.e.100.0%) and control group (30 i.e.100.0%) were experiencing disturbing mood or body changes before menstruation.

Duration of PMS: Majority of the females (12 i.e.40.00%) in experimental group and control group (14 i.e.46.67%) were suffering from PMS for 1-3 years.

Nature of PMS: Majority of the females (15 i.e. 50.00%) in the experimental group and control group (22 i.e.73.33%) were experiencing PMS one day before their menstruation.

Family history of PMS: Comparatively more number of females (19 i.e. 63.33%) in the experimental group had positive family history of PMS, when it comes to control group, only 12 (40.00%) had positive family history of PMS.

Positive family history of PMS: Almost equal number of respondents both in the experimental group (10 i.e. 52.63%) and control group (6 i.e. 50.00%) had the history of their mothers suffering with PMS.

Food habits: Majority of the females in experimental group (10 i.e. 33.33%) were preferring fruits and whereas in control group majority (10 i.e. 33.33%) were preferring to have chicken more in their diet.

Section-B: Impact of banana consumption on PMS

Table 1: Prevalence of PMS among the Females of Reproductive Age Group

| Total no. of females screened | With PMS | Without PMS | Percentage |
|-------------------------------|----------|-------------|------------|
| 133 | 67 | 66 | 50.37% |

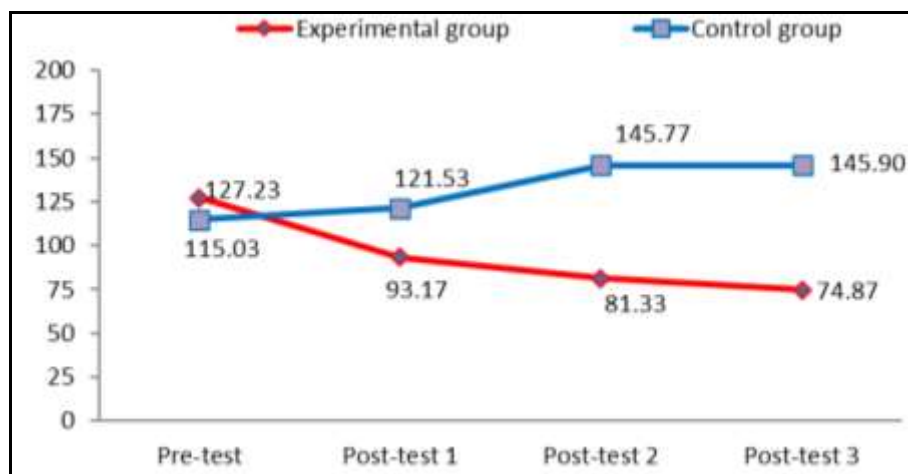
Symptoms of PMS among the experimental group after three months of Banana consumption

The PMS scores of the respondents in the experimental group before and after the consumption of banana for three months were analyzed after each month of banana consumption. In the pre-test the mean PMS score of the respondents was 127.23 with a SD of 31.35; the PMS scores have shown a steady and constant reduction after each month of regular consumption of banana *viz.* The mean score after first month consumption was 93.17 (SD = 30.48), after second month's consumption was 81.33 (SD = 24.77) and after third month's consumption was 74.87 (SD = 27.00). The calculated paired 't' values after the first, second and third month consumption of banana ($t = 6.37, 8.32, 7.84$ respectively) are greater than the table value (2.05). Which means that the reduction in the PMS symptoms among the respondents of the experimental group after the 3 months consumption of banana was significant.

Symptoms of Premenstrual syndrome among

experimental group and control group

The PMS symptoms experienced by the respondents in the experimental group was less in all the three post-test's ($\bar{X} = 93.17, SD = 30.48; \bar{X} = 81.33, SD = 24.77; \bar{X} = 74.87, SD = 27.00$ respectively), compared to the number of PMS symptoms experienced by the respondents in the control group, which in fact shows a steady rise in all the three post-test's ($\bar{X} = 121.53, SD = 30.69; \bar{X} = 145.77, SD = 29.14; \bar{X} = 145.90, SD = 32.91$ respectively). The calculated independent 't' values in all the three post-test's ($t = 3.59, df = 58; t = 9.23, df = 58; t = 9.14, df = 58$ respectively) were greater than the table value; which indicates that the difference in the PMS symptoms among the respondents of experimental group and the control group was significant, which means that the respondents of the experimental group had experienced significantly less PMS symptoms after consumption of banana for three months compared to the respondents of the control group.



Graph 1: Graphical representation of Mean scores of Experimental group and Control group

The obtained chi square values between the post-test 3 and age ($\chi^2=9.82$), age at menarche ($\chi^2=3.23$), pattern of menstrual cycle ($\chi^2=5.26$), duration of PMS ($\chi^2=7.51$), nature of PMS ($\chi^2=5.87$), family history ($\chi^2=2.82$), food habits ($\chi^2=15.09$) were not significant at 0.05 level significance association between the selected variables and the reduction in the PMS symptoms among the respondents of experimental group.

The obtained chi square values between the post-test 3 and age ($\chi^2=4.84$), age at menarche ($\chi^2=6.58$), pattern of menstrual cycle ($\chi^2=1.65$), duration of PMS ($\chi^2=8.99$), nature of PMS ($\chi^2=3.53$), family history ($\chi^2=3.02$), food habits ($\chi^2=13.79$) were not significant at 0.05 level significance association between the selected variables and the reduction in the PMS symptoms among the respondents of control group.

Discussion

In the present study a sum of 133 females are screened, out of which 65 (48.88%) with mild PMS, 59 (44.36%) with moderate PMS, 7 (5.26%) with severe PMS, followed by 1 (0.75%) with no PMS and 1 (0.75%) with very severe PMS.

Majority of the females are with mild to moderate PMS symptoms. The prevalence of PMS is reported to be 50.37% in the present study. Similar observations made by S Geeta *et al.*, conducted a descriptive study to assess the prevalence of PMS and its effect on their social and academic life among 1st, 2nd and 3rd year MBBS girls. The findings of the study showed that prevalence of PMS was 65%.

The PMS scores have shown a steady and constant reduction after each month of regular consumption of banana *viz.* Which means that the reduction in the PMS symptoms among the respondents of the experimental group after the 3 months consumption of banana was significant. Similar observations made by Lilin Turlina *et al.*, they stated that there was decrease PMS symptoms in the experimental group after eating banana in the final assessment.

The respondents of the experimental group has experienced significantly less PMS symptoms after consumption of banana for three months compared to the respondents of the control group. Similar to this, a study conducted by Lilin Turlina *et al.*, they stated that there was significant difference of PMS syndrome in control group and experimental group.

Conclusion

The following conclusions are made based on the study results.

1. The findings of the study revealed that, in pre-test majority of the subjects in experimental group and control group had the moderate level of Premenstrual syndrome symptoms.
2. Daily 100 grams of banana consumption for a period of 3 months had significantly reduced the Premenstrual syndrome.
3. The reduction in the PMS symptoms among the respondents of the experimental group after the 3 months consumption was significant.
4. The respondents of experimental group has experienced significantly less PMS symptoms after consumption of banana for 3 months compared to the respondents of the control group.
5. Banana consumption is found to be more effective and it is a simple measure to reduce the symptoms of Premenstrual syndrome.
6. There is no significant association between the reduction of Premenstrual syndrome symptoms among the females of reproductive age group with selected variables after the post test-3.

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Conflict of Interest

Not available

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Not available

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