EFFECTIVENESS OF MINT JUICE VERSUS LEMON JUICE ON DYSMENORRHOEA

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## Research Article

# EFFECTIVENESS OF MINT JUICE VERSUS LEMON JUICE ON DYSMENORRHOEA

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### ABSTRACT

**Introduction:** Dysmenorrhoea is one of the common problem experienced by many adolescent girls. To reduce the level of dysmenorrhoea as a part of complementary medicine mint and lemon juice was help full. Mint contains menthol oil which has anti spasmodic action on smooth muscle, considered to be caused by calcium channel blockade which reduces uterine contraction and menstrual cramps. Lemon acts as diuretic and reducing the bloating effect and menstrual cramps.

**Objective:** To compare the effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls.

**Material and methods:** A Quantitative study was conducted in Narayana College of Nursing, Nellore, Andhra Pradesh state (India) from 4-2-15 to 18-3-15 .The study sample included 200 adolescent girls selected by simple random sampling technique.

**Results and discussion:** The results reveal that with regard to comparison of effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls in experimental group. In experimental group I the mean score is 6.30 with SD of 4.34 and in experimental group II the mean score is 5.20 with SD of 3.35.The calculated value of Z- test is 10.26 and table value is 2.42 and highly significant at the level of $p<0.01$. The above result indicates that mint juice is more effective in reducing dysmenorrhoea among adolescent girls than compared to lemon juice.

**Conclusion:** The study concludes that mint juice and lemon juice were effective on reducing dysmenorrhea. Comparing to lemon juice, mint juice is more effective on reducing dysmenorrhea.

## INTRODUCTION

Adolescence is a transition period from childhood to adulthood and is characterized by physical, endocrinal, emotional and mental growth with a change from complete dependence to relative independence. Almost a quarter of India's population comprises of girls below 20 years.[1]

Most adolescent girls experience dysmenorrhoea in the first three years after menarche. Young adolescent girls ages 18-20 years are most likely to report painful menses. Between 50% to 80% of girls report some level of discomfort associated with menses and 10 to18% report severe dysmenorrhoea. It has been estimated that up to 10% of girls have severe pain which interfere with their functioning for 1-3 days a month.[2]

Mint is one of the herbs it grows like a weed is perfectly safe for use and is an excellent remedy for reducing symptoms related to digestion. It is well known for its properties related to indigestion, stomach cramps, menstrual cramps, flatulence, stomach upset, nausea, vomiting and colic in children. Mint (menthe x piperita) has the action of analgesic, anti spasmodic action and having presence of calcium antagonism effect.[3]

Lemons are extremely popular fruits, it is beneficial when consumed lemon water. This citrus fruit is a rich source of vitamin – C, it also contains minerals like calcium, phosphorus, magnesium and little amounts of proteins and carbohydrates. The lemon helps to reduce the bloating effect by acting as diuretic. It also acts like antiemetic by decreasing vomitings.[4]

So the researcher felt the need to conduct a study on the effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls.

### Need for the study

According to the GEO International in (2014), India is the second most population country which total population about 22.5% occupy by adolescence group and 12 % of the total

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population is comprises with age group of 17-19 years. The prevalence of dysmenorrhoea at worldwide ranges from 15.8 to 89.5 %. The prevalence of dysmenorrhoea in India ranges from 16.8 to 81%. The prevalence of dysmenorrhoea in Andhra Pradesh varies from 33.2 to 79.67%.[5]

Mint contains menthol oil which has anti spasmodic action on smooth muscle, considered to be caused by calcium channel blockade and lemon has anti bloating effect and reduces vomiting. So, based on these findings the investigator felt that there is a need to reduce the intensity of dysmenorrhoea among adolescent girls by administering mint juice and lemon juice.

Since studies on effect of mint juice versus lemon juice are scanty from this region of Nellore, Andhra Pradesh, India and there is no reported community based study in Nellore city of this region. So an attempt is being made to find out the effectiveness of mint juice versus lemon juice on dysmeorrhoea among adolescent girls.

### Objectives

- To determine the prevalence of dysmenorrhoea among adolescent girl's.
- To evaluate the effectiveness of mint juice on dysmenorrhoea among adolescent girls.
- To evaluate the effectiveness of lemon juice on dysmenorrhoea among adolescent girls.
- To compare the effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls.
- To associate the effectiveness of mint juice on dysmenorrhoea with their selected socio demographic variables of adolescent girls.
- To associate the effectiveness of lemon juice on dysmenorrhoea with their selected socio demographic variables of adolescent girls.

## MATERIALS AND METHODS

### Research Approach

A Quantitative research approach was adopted to evaluate the effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls.

### Research Design

The factorial research design was adopted to assess the effectiveness of mint juice versus lemon juice.

### Setting of the Study

Study was conducted in Narayana Nursing hostel at Nellore, Andhra Pradesh.

### Sample

The samples selected for this study was adolescent girls between 17-19 years of age and staying in Narayana and Sree Narayana Nursing Hostel, Nellore.

### Sampling Method

Probability simple random sampling technique was used to select the subjects.

### Ethical Clearance

Ethical clearance was obtained from the Institutional Ethical committee of Narayana Medical College Hospital, Nellore.

### Pilot study

Pilot study was conducted in Narayana Nursing hostel at Nellore, Andhra Pradesh. From 20-1-15 to 27-1-15. After obtaining permission from the Principal, Narayana College of Nursing, consent was attained from study participants, subjects were selected by using Probability simple random sampling technique. Data was collected by using Wong- Baker Faces Pain Rating scale and checklist on symptoms of dysmenorrhoea to assess the level of dysmenorrhoea among adolescent girls.

### Data Collection Procedure

After getting permission from Principal, Narayana College of Nursing and consent was attained from study participants data collection procedure was carried out for a period of 6 weeks from4-2-15 to 18-3-15.The sample consists of I year and II year Nursing students in Narayana and Sree Narayana Nursing Hostel at Nellore. probability simple random sampling was used to select the subjects. The time scheduled for data collection was 2 times at 9am to 5pm in a day during their first day of menstrual cycle. Wong-Baker Faces Pain Rating scale and Checklist on symptoms of dysmenorrhoea were used to collect the data.

### Data Analysis

The data was analyzed in terms of objectives of the study by using descriptive statistics and inferential statistics.

### Descriptive Statistics

Mean, frequency, percentage and standard deviation.

### Inferential Statistics

Z test to assess the effectiveness of mint juice on dysmenorrhoea among adolescent girls, to assess effectiveness of lemon juice on dysmenorrhoea among adolescent girls and to compare the effectiveness of mint juice versus lemon juice. chi –square test to find the association between the effectiveness of mint juice and their selected socio demographic variables among adolescent girls and to find out the association between the effectiveness of lemon juice and their selected socio demographic variables among adolescent girls

## RESULTS AND DISCUSSION

### Frequency and percentage distribution of dysmenorrhea among adolescent girls in group-I based on checklist on symptoms of dysmenorrhoea.

**FIG:1** Shows that with regard to severity of dysmenorrhoea. Compare pre test and post test score in experimental group in pre test 12 (24%) had mild dysmenorrhoea, 38 (76%) had moderate dysmenorrhoea in experimental group. During post test score 28 (56%), had mild dysmenorrhoea, 22 (44%) had moderate dysmenorrhoea. Compare pre test and post test score in control group in pre test 28 (56%) had mild dysmenorrhoea and 22 (44%) had moderate dysmenorrhoea. And post test scores, 20 (40%) had mild dysmenorrhoea and 30 (60%) had moderate dysmenorrhoea.
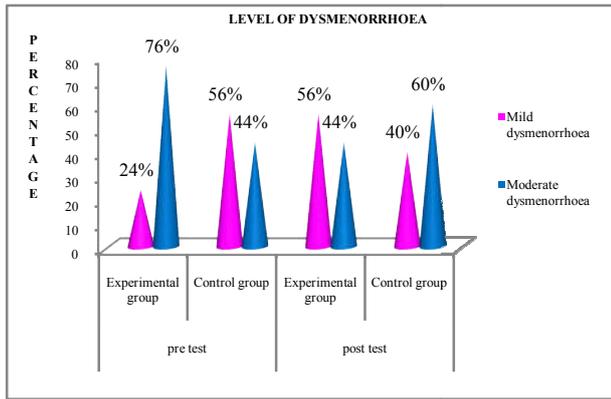
**Fig1** Percentage distribution of level of dysmenorrhoea among adolescent girls

***Frequency and percentage distribution of dysmenorrhea among adolescent girls in group-II based on checklist on symptoms of dysmenorrhoea.***
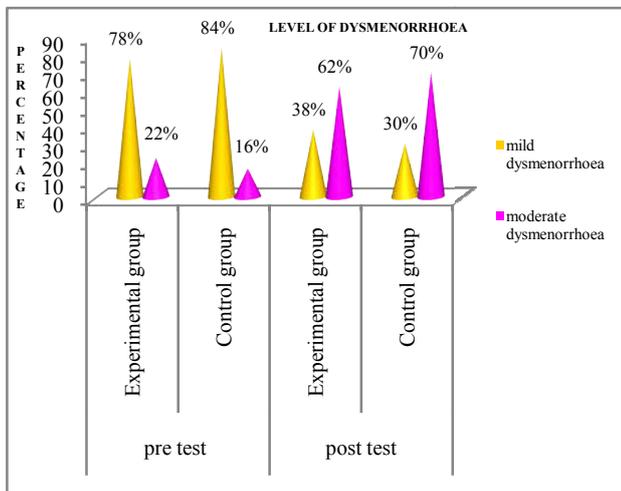


**Fig2** Percentage distribution of level of dysmenorrhoea adolescent girls.

**FIG:2** shows that with regard to severity of dysmenorrhoea. Compare pre test and post test scores in experimental group in pre test 39(78%) had mild dysmenorrhoea, 11(22%) had moderate dysmenorrhoea in experimental group. During post test scores 19(38%), had mild dysmenorrhoea, 31(62%) had moderate dysmenorrhoea. Compare pre test and post test scores in control group in pre test 42(84%) had mild dysmenorrhoea and 8(16%) had moderate dysmenorrhoea. And post test scores, 15(30%) had mild dysmenorrhoea and 35(70%) had moderate dysmenorrhoea.

***Frequency and percentage distribution of dysmenorrhea among adolescent girls in group-I based on Wong-Baker Faces Pain Rating Scale.***

**FIG:3** Shows that with regard to level of dysmenorrhoea. Compare pre test and post test scores in experimental group in pre test 3 (6%) had hurts just a little bit, 7 (14%) had hurts a little bit more, 25 (50%) had hurts even more and 15 (30%) had hurts a whole lot. And post test scores 20 (40%) had hurts just a little bit, 19 (36%) had hurts a little bit more, 8 (16%) had hurts even more and 3 (6%) had hurts a whole lot. Compare pre test and post test scores in control group in pre test 19 (38%) had

hurts just a little bit, 9 (18%) had hurts a little bit more, 3 (6%) had hurts even more and 19 (38%) had hurts a whole lot. And post test scores 15 (30%) had hurts just a little bit, 20 (40%) had hurts a little bit more, 12 (24%) had hurts even more and 3 (6%) had hurts a whole lot.
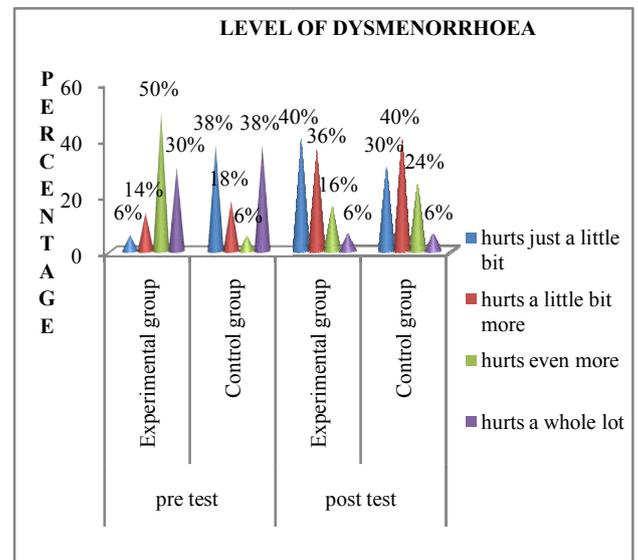


**Fig3** Percentage distribution of level of dysmenorrhoea adolescent girls

***Frequency and percentage distribution of dysmenorrhea among adolescent girls in group-II based on Wong-Baker Faces Pain Rating Scale***
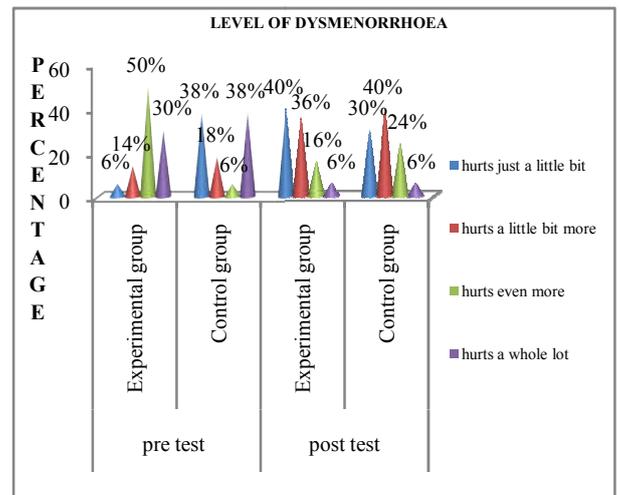


**Fig4** Percentage distribution of level of dysmenorrhoea adolescent girls

**Table: 4** Shows that with regard to level of dysmenorrhoea. Compare pre test and post test scores in experimental group in pre test 10(20%) had hurts just a little bit, 5(10%) had hurts a little bit more, 10(20%) had hurts even more and 25(50%) had hurts a whole lot. And post test scores 20(40%) had hurts just a little bit, 20(40%) had hurts a little bit more, 6(12%) had hurts even more and 4(8%) had hurts a whole lot. Compare pre test and post test scores in control group in pre test 18(36%) had hurts just a little bit, 10(20%) had hurts a little bit more, 16(32%) had hurts even more and 6(12%) had hurts a whole lot. And post test scores 21(42%) had hurts just a little bit, 20(40%) had hurts a little bit more, 2(4%) had hurts even more and 7(14%) had hurts a whole lot.

**Table 1** Effectiveness of mint juice on dysmenorrhea among adolescent girls based on checklist on symptoms of dysmenorrhoea

| Mint juice | Mean Score | S.D | Z- test |
|---|---|---|---|
| **Experimental group** | | | C= 13.47 |
| Pre test | 14.2 | 4.14 | T= 2.42 |
| Post test | 6.30 | 4.34 | **S**\*\* p<0.01 |
| **Control group** | | | C= 1.88 T= 1.96 |
| Pre test | 13.8 | 4.21 | **NS** P<0.05 |

**Table: 1** Shows the effectiveness of mint juice on dysmenorrhoea among adolescent girls. In experimental group the pre test mean score is 14.2 with standard deviation of 4.14. The post test mean score is 6.30 with Standard deviation of 4.34. The calculated value of 'Z' test is 13.47 and table value is 2.42 and highly significant at the level of p<0.01.The calculated value is greater than the table value. So the null hypotheses ($H_{01}$) is rejected and research hypotheses ($H_1$) is accepted. This indicates mint juice is effective in reducing dysmenorrhoea among adolescent girls.

Where as in control group of the pre test mean score was 13.8 with standard deviation of 4.21. The post test mean score is 4.26 with Standard deviation of 2.70. The calculated value of 'Z' test is 1.88 and table value is 1.96 at p <0.05(df=49). It reveals that the calculated value is lesser than the table value. So the null hypotheses ($H_{01}$) accepted and research hypotheses ($H_1$) is rejected. This indicates mint juice is effective in reducing dysmenorrhoea among adolescent girls.

**Table 2** Effectiveness of lemon juice on dysmenorrhea among adolescent girls based on check list on symptoms of dysmenorrhoea

| Lemon juice | Mean Score | S.D | Z- test |
|---|---|---|---|
| **Experimental group** | | | C= 9.47 |
| Pre test | 5.27 | 4.28 | T= 2.42 |
| Post test | 5.20 | 3.35 | **S**\*\* p<0.05 |
| **Control group** | | | C= 1.74 T= 1.96 |
| Pre test | 4.96 | 2.62 | **NS** P<0.05 |

**Table: 2** Shows the effectiveness of lemon juice on dysmenorrhoea among adolescent girls. In experimental group the pre test mean score is 5.27 with standard deviation of 4.28. The post test mean score is 5.20 with Standard deviation of 3.35. The calculated value of 'Z' test is 9.47 and the table value was 2.42 and significant at the level of p<0.05 (df=49). The calculated value is greater than the table value, so the null hypotheses ($H_{02}$) is rejected and research hypotheses ($H_2$) is accepted. This indicates lemon juice is effective in reducing dysmenorrhoea among adolescent girls.

Where as in control group of lemon juice. The pre test mean score was 4.96 with standard deviation of 2.62. The post test mean score was 3.40 with Standard deviation of 1.85. The calculated value of 'Z' test was 1.74 and table value was 1.96 at the level of p<0.05 (df=49). It reveals that the calculated value is lesser than the table value, so the null hypotheses ($H_{02}$) accepted and research hypotheses ($H_2$) is rejected. This

indicates lemon juice is effective in reducing dysmenorrhoea among adolescent girls.

**Table 3** Effectiveness of mint juice on dysmenorrhea among adolescent girls based on Wong-Baker Faces Pain Rating Scale.

| Mint juice | Mean score | S.D | Z- test |
|---|---|---|---|
| **Experimental group** | | | C= 7.63 |
| Pre test | 4.52 | 2.21 | T= 2.42 |
| Post test | 6.07 | 3.64 | **S**\*\* p<0.01 |
| **Control group** | | | C= 2.84 T= 1.96 |
| Pre test | 3.36 | 1.92 | **NS** P<0.05 |

**Table: 3** Shows the effectiveness of mint juice on dysmenorrhoea among adolescent girls. In experimental group the pre test mean score is 4.52 with standard deviation of 2.21. The post test mean score is 6.07 with Standard deviation of 3.64.The calculated value of 'Z' test is 7.63 and table value is 2.42 and highly significant at the level of p<0.01.The calculated value is greater than the table value. So the null hypotheses ($H_{01}$) is rejected and research hypotheses ($H_1$) is accepted. This indicates mint juice is effective in reducing dysmenorrhoea among adolescent girls.

Where as in control group of the pre test mean score was 3.36 with standard deviation of 1.92. The post test mean score is 5.18 with Standard deviation of 2.25. The calculated value of 'Z' test is 2.84 and table value is 1.96 at p <0.05 (df=49). It reveals that the calculated value is lesser than the table value. So the null hypotheses accepted ($H_{01}$) and research hypotheses ($H_1$)is rejected. This indicates mint juice is effective in reducing dysmenorrhoea among adolescent girls.

**Table 4** Effectiveness of lemon juice on dysmenorrhea among adolescent girls based on Wong-Baker Faces Pain Rating Scale.

| Lemon juice | Mean Score | S.D | Z- test |
|---|---|---|---|
| **Experimental group** | | | C= 3.31 |
| Pre test | 4.04 | 1.92 | T= 2.42 |
| | | | **S**\*\* p<0.01 |
| Post test | 5.9 | 2.47 | C= 2.74 |
| **Control group** | | | T= 1.96 |
| Pre test | 2.92 | 1.06 | **NS** P<0.05 |

**Table: 4** Shows the effectiveness of lemon juice on dysmenorrhoea among adolescent girls. In experimental group the pre test mean score is 4.04 with standard deviation of 1.92. The post test mean score is 5.9 with Standard deviation of 2.47. The calculated value of 'Z' test is 3.31 and table value is 2.42 and highly significant at the level of p<0.01.The calculated value is greater than the table value. So the null hypotheses ($H_{02}$) is rejected and research hypotheses ($H_2$) is accepted. This indicates lemon juice is effective in reducing dysmenorrhoea among adolescent girls.

Where as in control group of the pre test mean score was 2.92 with standard deviation of 1.06. The post test mean score is 3.94 with Standard deviation of 1.73. The calculated value of 'Z' test is 2.74 and table value is 1.96 at p <0.05(df=49). It reveals that the calculated value is lesser than the table value. So the null hypotheses ($H_{02}$) accepted and research hypotheses

$(H_2)$ is rejected. This indicates lemon juice is effective in reducing dysmenorrhoea among adolescent girls.

**Table 5** Comparison of mint juice versus lemon juice on dysmenorrhoea among adolescent girls based on check list on symptoms of dysmenorrhoea.

| Group | Experimental group (N=50) | | Z- test |
|---|---|---|---|
| | Mean | S.D | |
| Mint juice Group | 6.30 | 4.34 | C= 10.26 T= 2.42 |
| Lemon juice Group | 5.20 | 3.35 | S** at p<0.01 |

**Table: 5** Shows the comparison of effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls in experimental group. In experimental group I the mean score is 6.30 with SD of 4.34 and in experimental group II the mean score is 5.20 with SD of 3.35.The calculated value of Z- test is 10.26 and table value is 2.42 and highly significant at the level of p<0.01. So the null hypotheses $(H_{03})$ is rejected and research hypotheses $(H_3)$ is accepted.

The above result indicates that mint juice is more effective in reducing dysmenorrhoea among adolescent girls than compared to lemon juice.

**Table: 6** Comparison of mint juice versus lemon juice on dysmenorrhoea among adolescent girls based on Wong-Baker Faces Pain Rating Scale.
(N=100)

| Group | Experimental group (N=50) | | Z- test |
|---|---|---|---|
| | Mean | S.D | |
| Mint juice Group | 6.07 | 3.64 | C= 7.19 T= 2.42 S** at p<0.01 |

**Table: 6** Shows the comparison of effectiveness of mint juice versus lemon juice on dysmenorrhoea among adolescent girls in experimental group. In experimental group I the mean score is 6.07 with SD of 3.64 and in experimental group II the mean score is 5.9 with SD of 2.47.The calculated value of Z- test is 7.19 and table value is 2.42 and highly significant at the level of p<0.01. So the null hypotheses $(H_{03})$ is rejected and research hypotheses $(H_3)$ is accepted.

The above result indicates that mint juice is more effective in reducing dysmenorrhoea among adolescent girls than compared to lemon juice.

In associating the effectiveness of mint juice on dysmenorrhoea among adolescent girls based on checklist on symptoms of dysmenorrhoea in experimental group-I and their selected socio demographic variables like age, age at menarche, family history of dysmenorrhea and on an average interval between each menstrual cycle is significant at the level of P < 0.05 and the variables like education, religion, family income, type of diet, duration of menstrual cycle, pattern of menstruation, flow of menstruation and BMI are not significant at the level of P < 0.05.

In associating the effectiveness of mint juice on dysmenorrhoea among adolescent girls in control group-I and their selected socio demographic variables like age, age at menarche, family history of dysmenorrhea and pattern of menstruation are significant at the level of P < 0.05 and the variables like education, religion, family income, type of diet, on an average interval between each menstrual cycle, duration of menstrual cycle, flow of menstruation and BMI are not significant at the level of P<0.05. Research hypotheses $(H_4)$ is accepted and null hypotheses $(H_{04})$ is rejected this indicates that the mint juice is effective in reducing the dysmenorrhoea among adolescent girls.

In associating the effectiveness of lemon juice on dysmenorrhoea among adolescent girls based on check list on symptoms of dysmenorrhea in experimental group-II and their selected socio demographic variables like age, age at menarche, family history of dysmenorrhoea, pattern of menstruation, flow of menstruation and BMI are significant at the level of P<0.05 and the variables like education, religion, family income, type of diet, on an average interval between each menstrual cycle and duration of menstrual cycle are not significant at the level of P<0.05.

In associating the effectiveness of lemon juice on dysmenorrhoea among adolescent girls in control group-II and their selected socio demographic variables like age, age at menarche and type of diet are significant at the level of P<0.05 and the variables like education, religion, family income, family history of dysmenorrhea, on an average interval between each menstrual cycle, duration of menstrual cycle, pattern of menstruation and BMI are not significant at the level of P<0.05. Research hypotheses $(H_5)$ is accepted and null hypotheses $(H_{05})$ is rejected this indicates that the lemon juice is effective in reducing the dysmenorrhoea among adolescent girls.

In associating the effectiveness of mint juice on dysmenorrhoea among adolescent girls based on Wong-Baker Faces Pain Rating Scale in experimental group-I and their selected socio demographic variables like age at menarche and days of menstrual cycle are significant at the level of P<0.05 and the variables like age education, religion, family income, family history of dysmenorrhea, on an average interval between each menstrual cycle, pattern of menstruation, flow of menstruation and BMI are not significant at the level of P<0.05.

In associating the effectiveness of mint juice on dysmenorrhoea among adolescent girls based on Wong-Baker Faces Pain Rating Scale in control group-I and their selected socio demographic variables like age at menarche, on an average interval between each menstrual cycle, days of menstrual cycle and pattern of menstruation are significant at the level of P<0.05 and the variables like age education, religion, family income, family history of dysmenorrhea, type of diet, flow of menstruation and BMI are not significant at the level of P<0.05. Research hypotheses $(H_4)$ is accepted and null hypotheses $(H_{04})$ is rejected this indicates that the mint juice is effective in reducing the dysmenorrhoea among adolescent girls.

In associating the effectiveness of lemon juice on dysmenorrhoea among adolescent girls based on Wong-Baker Faces Pain Rating Scale in experimental group-II and their selected socio demographic variables like family history of dysmenorrhea and on an average interval between each menstrual cycle are significant at the level of P<0.05 and the variables like age, education, religion, family income, age at

menarche, type of diet, duration of menstrual cycle, flow of menstruation and BMI are not significant at the level of $P<0.05$.

In associating the effectiveness of lemon juice on dysmenorrhoea among adolescent girls based on Wong-Baker Faces Pain Rating Scale in control group-II and their selected socio demographic variables like age at menarche, on an average interval between each menstrual cycle and pattern of menstruation are not significant at the level of $P<0.05$ and the variables like age, education, religion, family income, family history of dysmenorrhea, type of diet, duration of menstrual cycle, flow of menstruation and BMI are not significant at the level of $P<0.05$. Research hypotheses ($H_5$) is accepted and null hypotheses ($H_{05}$) is rejected this indicates that the lemon juice is effective in reducing the dysmenorrhoea among adolescent girls.

## CONCLUSION

The study concludes that mint juice and lemon juice were effective on reducing dysmenorrhea. Comparing to lemon juice, mint juice is more effective on reducing dysmenorrhea.

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