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## Effect of Ginger tea on Dysmenorrhea among nursing students in Indore, Madhya Pradesh, India

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### ABSTRACT

**Background:** Adolescence is a time of moving from childhood to adulthood maturity. These transitions involve a lot of changes as biological, cognitive, and emotional. However, menstruation is a normal physiological phenomenon indicating woman capability for procreation. It is often associated with some degree of suffering and embarrassment. As usual every woman may experiences one or more types of menstrual problems during her lifetime as dysmenorrhoea. It is a medical term of menstrual cramps, caused by uterine contractions. However, primary one refers to common menstrual cramps, while secondary results from reproductive organs disorder. Thus, the current study aimed to assess the effect of ginger tea on dysmenorrhoea level; among nursing students. **Materials and Methods:** Study objectives included compare dysmenorrhoea level among nursing students in experimental and control group after posttest and find out the association between pre-test dysmenorrhoea levels with selected demographic variables as age, education, family history of dysmenorrhea. A quasi experimental approach was utilized. Study conducted in Index Nursing College, MP, and India. Sample included 60 nursing students with dysmenorrhea. They selected by purposive sampling method, GNM students with dysmenorrhea were considered as control group and BSc Nursing students with dysmenorrhea as experimental. Data collection tool was consisted of demographic variables, and McCaffery numerical pain intensity scale to assess dysmenorrhoea level. **Results:** Independent “*t*” test was used for testing the significance of difference between experimental and control group. Computed *t* value ( $t = 5.987, P < 0.05$ ) was greater than table value, “*t*” = 2.00, concluded that, post test dysmenorrhea scale of experimental group students was significantly lower than control group. Chi-square showed no significant association between selected demographic variables as age, course of study/education and dysmenorrhoea family history for pre-test level. **Conclusion:** It can concluded that, 3 times ginger tea consumption per day was effective in reducing dysmenorrhea

**Key words:** Dysmenorrhea; Ginger tea; Nursing students, Quality of Life (QOL).

## **INTRODUCTION**

Menarche is an amazing moment of females' life and crowns stages of female gender. However, transition from girlhood to womanhood is marked with menarche onset, as important milestone. It is the first menstrual cycle, or first menstrual bleeding among the female, and often considered as central event of female puberty. It usually occurs at age between 12-13 years old. As well as it may occur early at age of 10 years and late at 16 years old. As evidenced menarche timing varies widely and usually influenced by genetic and environmental factors, as well as nutritional status (D.C Dutta, 2005). However, during menstruation the body releases a hormone called prostaglandins, which responsible about the uterine contraction for helping the uterus lining processes. ( Dhanya S,2012) Dysmenorrhoea is a Greek term meaning "painful menstruation". Menstrual problems are common in adolescents and among them dysmenorrhea is the leading problem reported in half of the women of child bearing age and 10% of them are experienced incapacitating pain for 1-3 days, every month (Jameison.D.J,1996). Dysmenorrhoea is characterized by cramping lower abdominal pain that may radiate to the lower back and upper thighs, commonly associated with nausea, headache, fatigue and diarrhoea. It can be classified into two subtypes. Primary dysmenorrhea usually occurs when there is absence of anatomic abnormalities or pelvic pathologic disorders identifiable pelvic disease and it occur with every ovulatory cycle. Secondary dysmenorrhoea can occur many years after menarche and usually associated with identifiable pelvic pathological conditions (D.C Dutta, 2005). However, most adolescent's female was suffering from dysmenorrhoea during the 1st three years after menarche. As documented young adult women with ages between 17- 24 years are most likely to report dysmenorrhea. It has been estimated that 10% of them with dysmenorrhea usually suffering from severe pain. This is reflected negatively on their Quality of Life QOL

and interferes with their functioning form 1-3 days every month.<sup>(</sup> However, these symptoms usually begin with menstruation although some women have discomfort several hours prior to the menstruation onset. On the other hand, the pain begins with the menstrual flow onset and lasts for 8-48 hours (Wong Hockenberry Wilson, 2004).

### **Aim of the study to:-**

- 1- Assess the effect of ginger tea on dysmenorrhoea level; among nursing students.
- 2- compare the dysmenorrhoea level among experimental and control group students nursing after post-test and find out the association between protest of dysmenorrhoea levels with selected demographic variables as age, education; dysmenorrhoea family history.

### **MATERIALS AND METHODS**

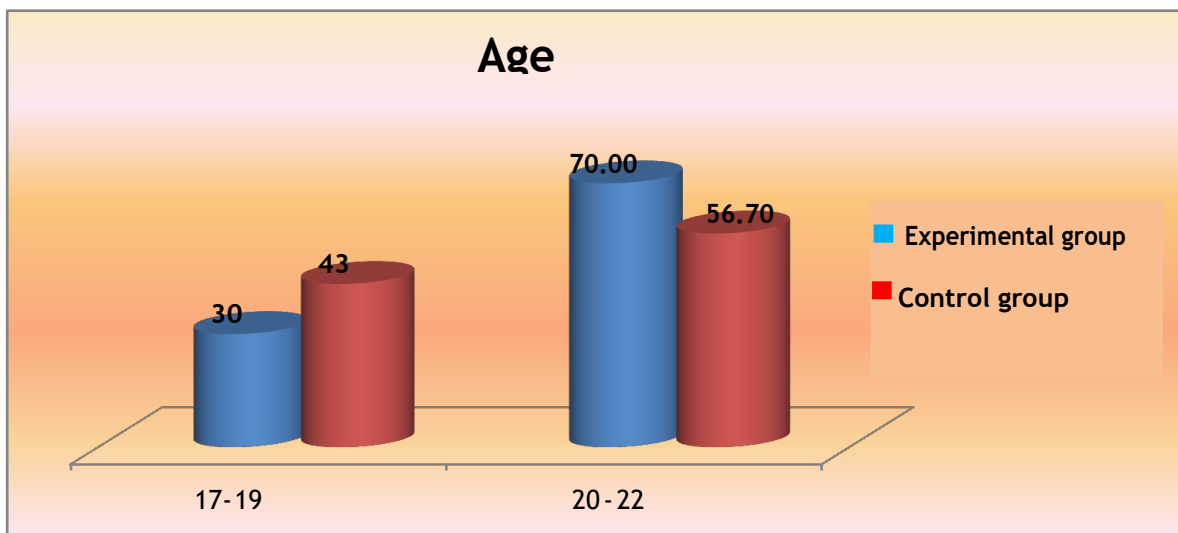
The current study research approach was quantitative evaluative. The research design was quasi-experimental non randomized control group design. In this method there were two groups, experimental and control. The intervention effects were judged by the differences between the pre-test and post-test scores pain scales. The non randomized control group design involved an experimental treatment and two groups of subjects who were observed before and after the implementation. In this study there is one experimental and control group. The ginger tea was taken 3 times a day after pretest assessment of dysmenorrhea. Similarly for the control group placebos is given after pre test and then post test was applied one after the intervention both among groups. The independent variable in the current study was ginger tea, given to the participant students, the dependent variable was dysmenorrhea, and the extraneous variables included age, menarche's age, length of menstrual cycle, and dysmenorrhoea family history. The current study was conducting in Index Nursing College which is located at Indore, in Madhya Pradesh district, India. Setting selection was done based on feasibility of the study conduction and subject's availability. The target population of the present study comprised of nursing students who

were suffering from dysmenorrhea. The samples for the present study consisted of 60 students with dysmenorrhea from mentioned setting, and residing in the hostel. Sampling technique utilized was purposive sampling. The researcher had taken the list of students with dysmenorrhea and their last menstrual period dates from each batch of GNM and BSc Nursing. The students were asked to report the researcher immediately at onset of

menstruation without adopting any remedial measures for dysmenorrhoea. GNM students were assigned as control group and BSc Nursing students as experimental group. The investigator used structured questionnaire to collect the baseline data and McCaffery numerical pain intensity scale for assessing the pain severity. Data were later analyzed by using descriptive and inferential statistics

### 3. RESULTS

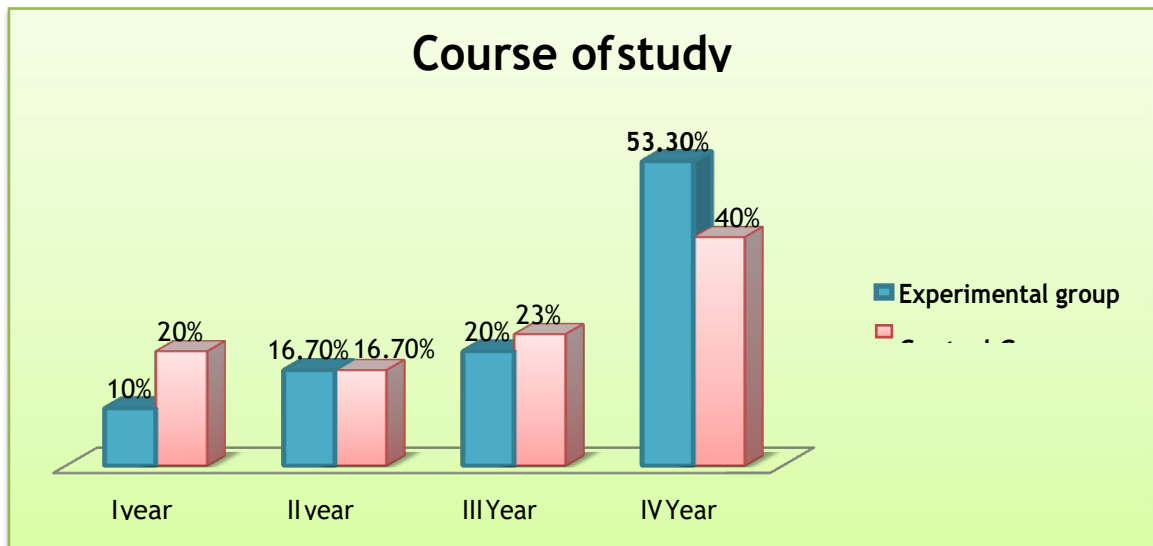
#### Section-I: - Description of nursing students based on the demographic variables among experimental and control group. (n=60)



**Figure 3.1:**

#### **Distribution of nursing students with dysmenorrhea based on age (Percentage).**

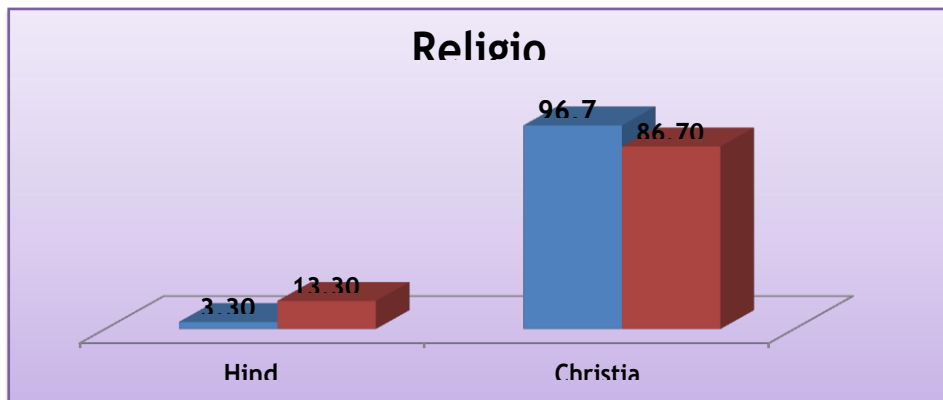
The above figure shows that, high percentage of students, (70%) among experimental group belongs to the age group of 20-22 years old, and (30%) their age was ranged between 17-19 years old. While, it was noticed that, more than half of them (56.7%) among the control group belongs to age group between 20-22 years old and only (43.3%) of them from age group of 17-19 years old .



**Figure 3.2: (n=60)**

**This figure representing the nursing student’s distribution with dysmenorrhoea based on their study placement.**

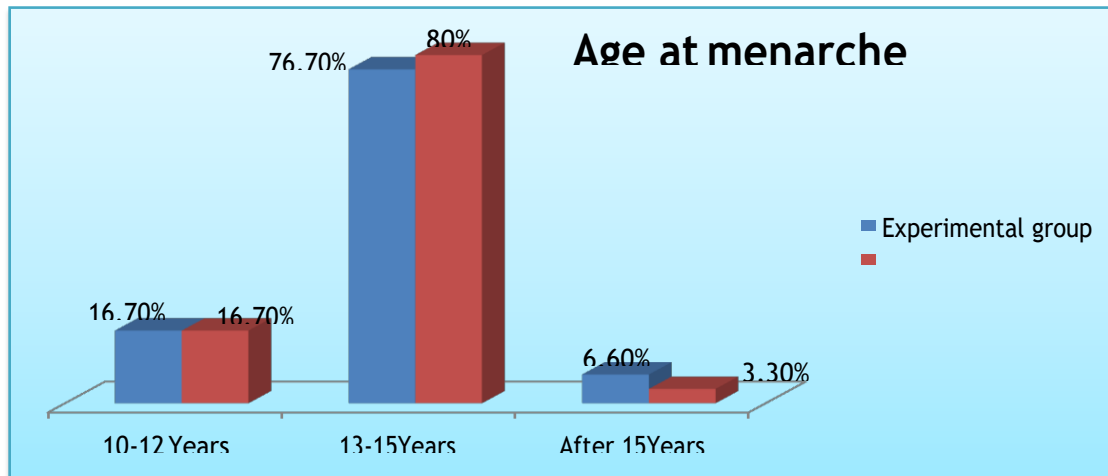
This figure reveals that, more than half of experimental group, (53.3%) belongs to fourth year and only 3(10%) at first year. Otherwise, control group nursing students were detected as (40%) belongs to fourth year and (16.7%) at second year.



**Figure-3.3: (n=60)**

**Distribution of nursing students with dysmenorrhoea based on religion.**

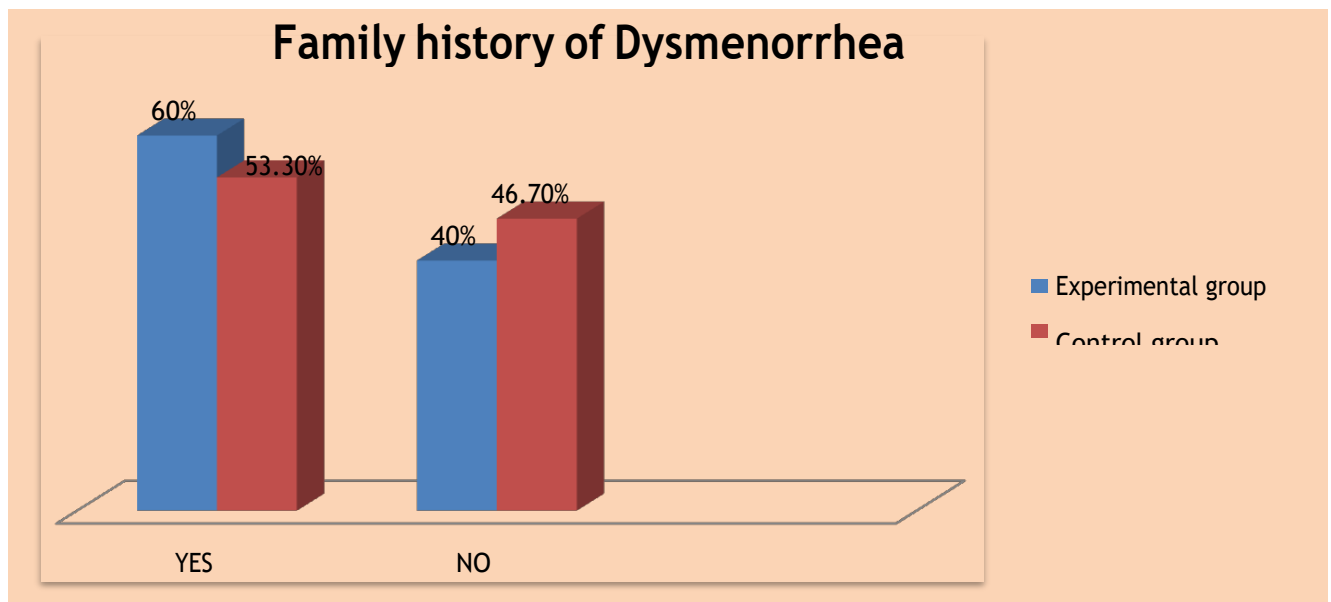
This graph depicts that, the vast majority of experimental group, (96.7%) belongs to Christian religion and only 1(3.3%) to Hindu religion. While, it was observed that (86.5%) & (13.3%) belongs to Christian and Hindu religion among control group respectively.



**Figure 3.4: (n=60)**

**Distribution of dysmenorrhoea nursing students based on their menarche age.**

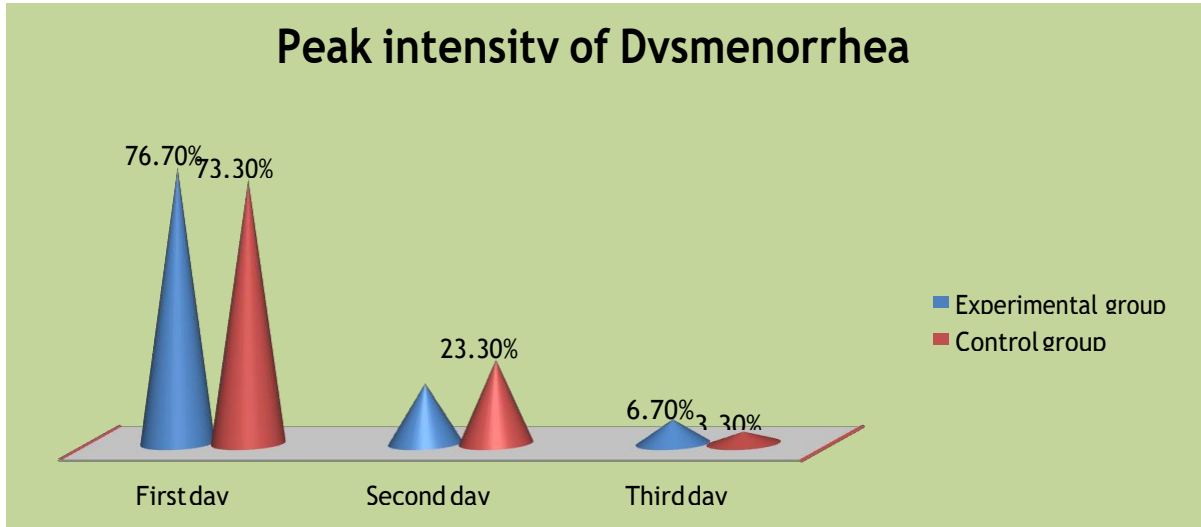
This figure reflected that, high percentage 23 (76.7%) among experimental group attained menarche between age of 13-15 years old and only 2(6.7%) were attained the menarche after age of 15 years old. On the opposite majority of students (80%) were attained the menarche between 13-15 years old and only 1(3.3%) after age of 15 years old among control group.



**Figure 3.5: (n=60)**

**Distribution of dysmenorrhoea nursing students based on dysmenorrhoea family history.**

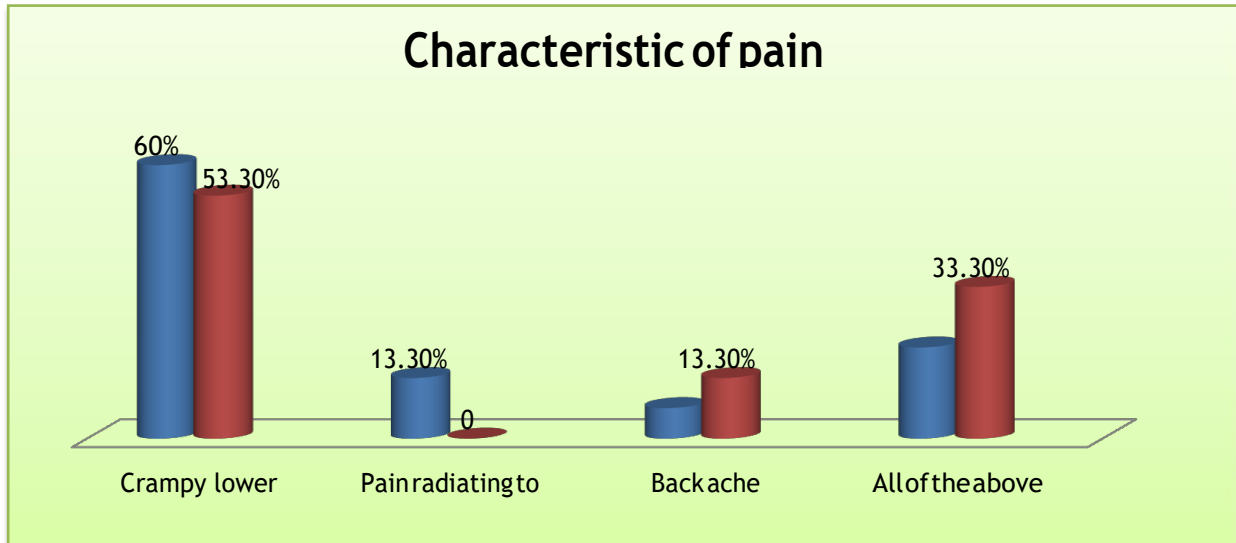
This figure shows that, 18 (60%) from the experimental group has the family history of dysmenorrhoea and 12(40%) with negative history. On the other hand more than half of control group, 16 (53.3%) were mentioned that, there is a family history of dysmenorrhoea and (46.7%) said no.



**Figure 3.6: (n=60)**

**Distribution of dysmenorrhoea nursing students based on dysmenorrhoea peak of intensity.**

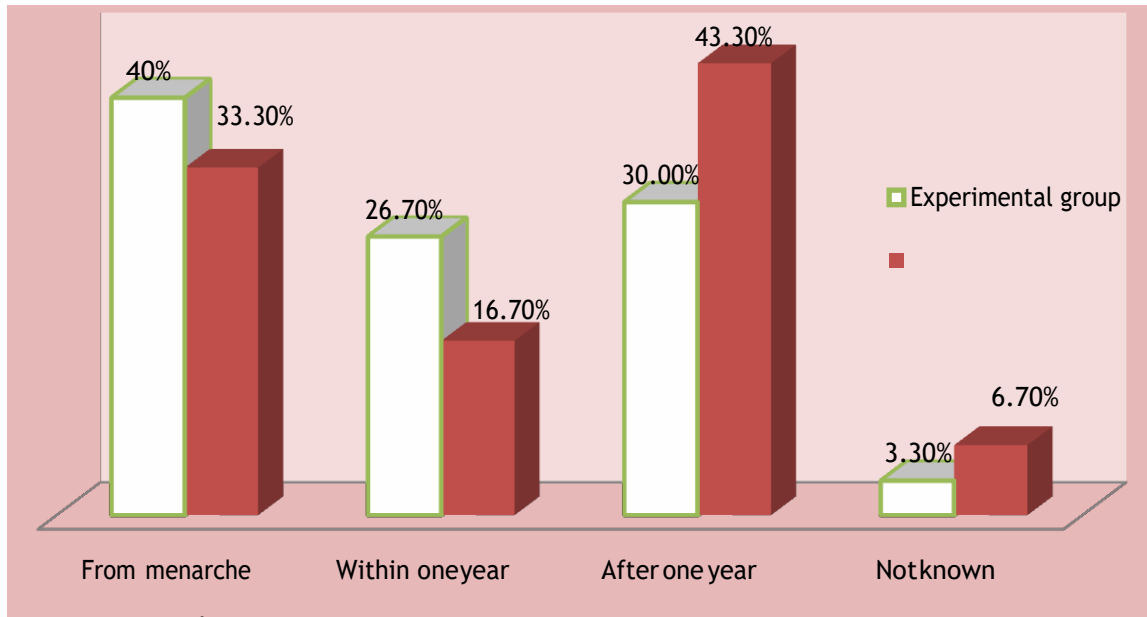
The above figure depicts that high percentage among the experimental group, 23(76.6%) had a peak intensity of dysmenorrhoea on the first menstrual day, and only 1(3.3%) had dysmenorrhoea during all three menstrual days. Otherwise, it was detected that 22(73.3%) from control group was experienced peak intensity of dysmenorrhoea on the first menstrual day. while only 2(6.7%) was suffering from dysmenorrhoea during all three menstrual days.



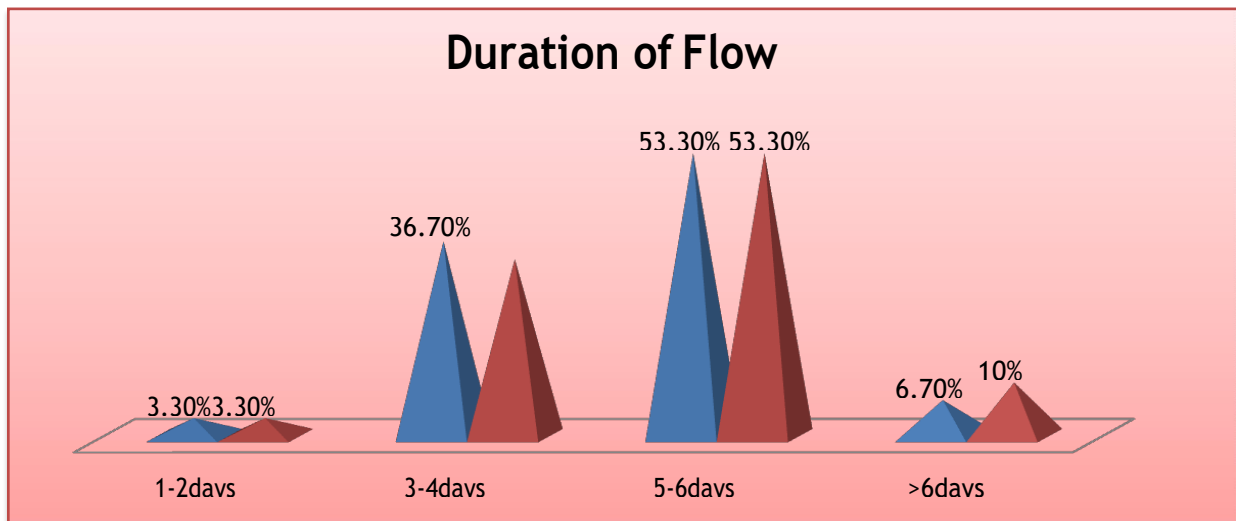
**Figure 3.7: (n=60)**

**Distribution of dysmenorrhoea nursing students based on type of pain.**

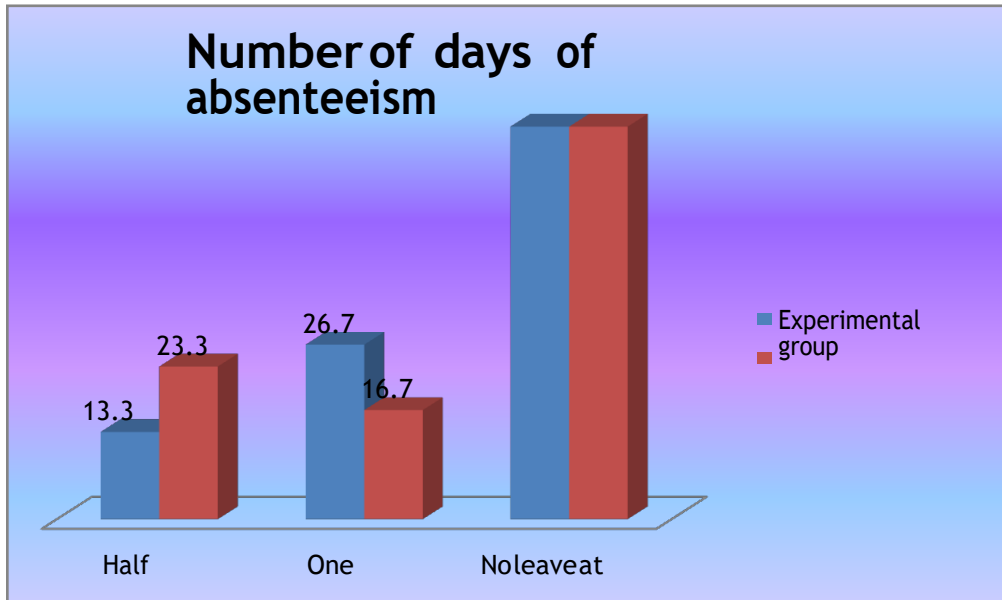
The above graph depicts that, 18(60%) have crampy lower abdominal pain and only 2(6.7%) have pain radiating to the lower limbs on first menstrual day among experimental group. As well as more than half of group 16(53.3%), have crampy lower abdominal pain and 4(13.3%) only have back ache on the first menstrual day.



**Figure 3.8: Distribution of dysmenorrhoea nursing students based on the first onset of dysmenorrhoea.** This picture shows that less than half 12(40%) of experimental group had dysmenorrhoea from menarche onwards, and 1(3.3%) only didn't know about the dysmenorrhoea onset. While, 13 (43.3%) among control group, were developed the dysmenorrhoea one year after menarche, and 2(6.7%) didn't know the dysmenorrhoea onset .



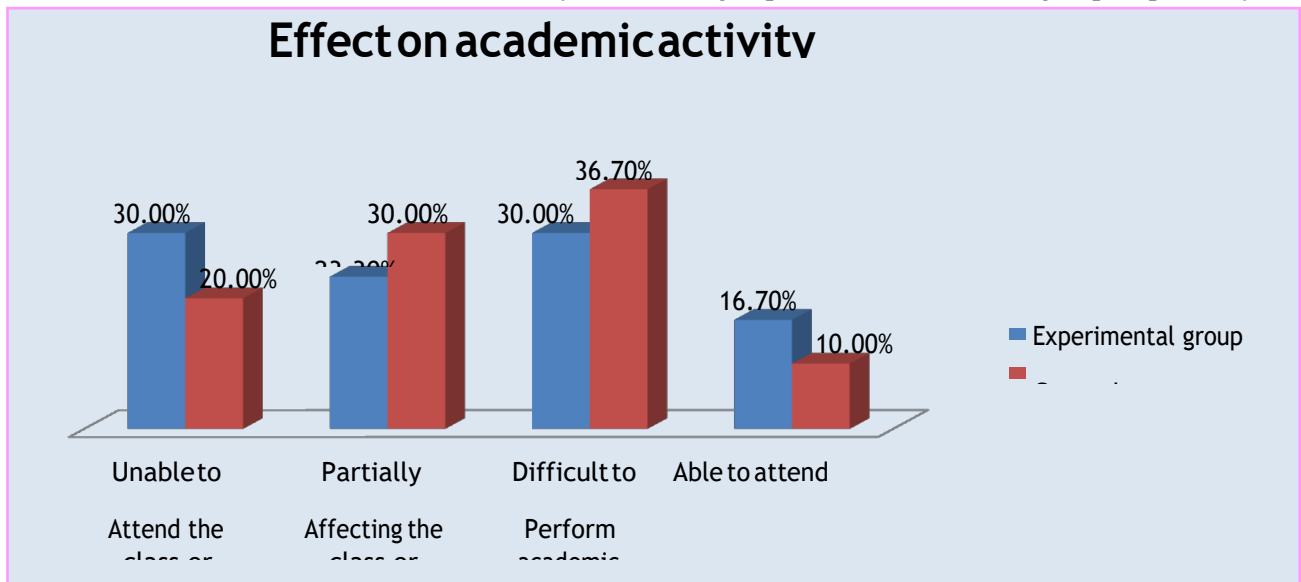
**Figure 3.9: (n=60)**  
**Distribution of dysmenorrhoea nursing students based on duration of menstrual flow.**  
 Figure 3.9 reveals that, more than half of experimental group 16(53.3%) have 5-6 days of menstrual flow, and only 1(3.3%) mentioned that their menstrual flow 1-2 days and As regards the control group,16(53.3%) of students mentioned that, their menstrual flow from 5-6 days and only 1(3.3%) their menstrual flow from 1-2 days usually.



**Figure 3.10:** (n=60)

**Distribution of dysmenorrhoea nursing students based on absenteeism number of days.**

Figure 3.10: shows that 18 (60%) among experimental and control group, have not taken leave at all. As well as 4(13.3%)& 5(16.7%)have taken half day leave among experimental and control group respectively .

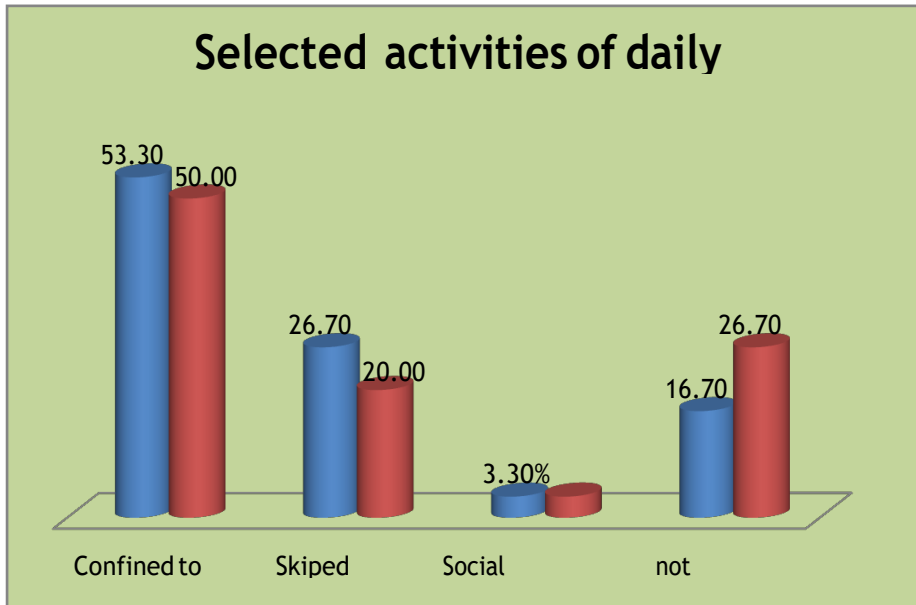


**Figure 3.11:** (n=60)

**Distribution of nursing students based on dysmenorrhoea effect on their academic activity**

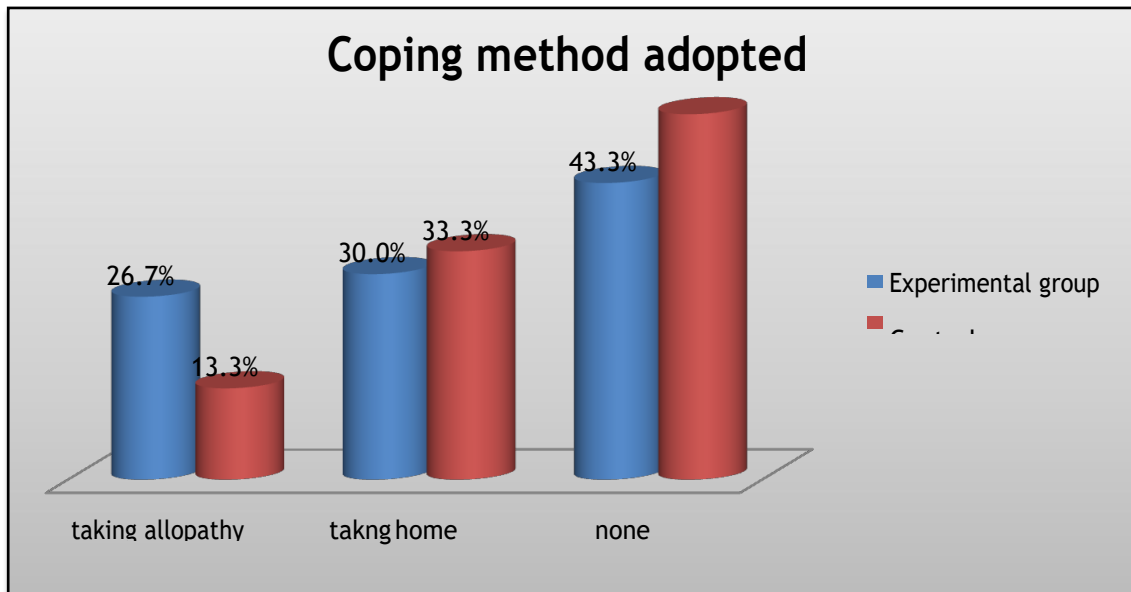
figure depicts that around 1/3 from experimental group, 9(30%) were unable to attend the class or clinical and the same ratio had difficulty to perform the ward/class activities, as well as only 5(16.7%) were able to attend the class or clinical during menstruation. As regards the control group, it was detected that more than 1/3 11(36.7%) had difficulty in performing their activities and only 3(10%) were able to attend the class or clinical.





**Distributions of nursing students according to dysmenorrhoea effect on selected activities of daily living.**

The above figure shows, that more than half of experimental group, 16(53.3%) were confined to bed, and only 1(3.3%) had shown, usually social withdrawal during the first menstrual day. As well as 15(50%) among control group, were confined to bed and while,1(3.3%) had shown social withdrawal.



**Figure 3.13: (n=60) distribution of nursing students with dysmenorrhoea based on the coping method.**

It was noticed that in experimental group, 13(43.3%) does not take any treatment and 8(26.7%) only was follow the pharmacological management with or without prescription for dysmenorrhoea. While, 16(53.3%) among control group does not take any treatment and 4(13.3%) only followed the pharmacological management with or without prescription.

**SECTION-II**

**Comparison, level dysmenorrhoea among nursing students of experimental and control group after the ginger tea administration.**

**Table. 3.1: Summary of „t“ test on pain score of dysmenorrhea among experimental and control group. (n=60)**

<b>Group</b>	<b>Frequency</b>	<b>Mean post-test</b>	<b>SD</b>	<b>df</b>	<b>t</b>	<b>P value</b>
<b>Experimental</b>	<b>30</b>	<b>1.30</b>	<b>0.7117</b>	<b>58</b>	<b>5.987*</b>	<b>0.00*</b>
<b>Control</b>	<b>30</b>	<b>2.29</b>	<b>0.5668</b>			

**\*Significant at 0.05 level  $t_{58}=2.00$**

The trial for detection of effectiveness of ginger tea in reducing the dysmenorrhea among experimental group independent „t“ test was utilized .The current data in table I revealed that computed t value (t=5.987, p<0.05) were greater than the table value (t=2.00) .Thus the research hypothesis H1 was accepted. Hence it can be concluded that providing 2gm of ginger tea 3 times a day (6gm/day) was effective in dysmenorrhoea reduction.

**SECTION-III**

**Association between pre-test dysmenorrhoea levels with selected demographic variables**

**Table 3.2:**

Association between pre-test dysmenorrhoea level with selected demographic variables as age, education, and family history

Demographic Variable	Posttest Dysmenorrhea Score			$\chi^2$	P value
	Mild	Moderate	Severe		
<b>1-Age group</b>					
• 17-19yrs	2	20	0	2.569	p>0.05
• 20-22yrs	6	29	3		
• 23-25	0	0	0		
<b>2-Course of study</b>					
• First year	0	9	0	6.042	p>0.05
• Second year	2	9	0		
• Third year	2	12	0		
• Fourth year	4	19	3		
<b>3-Family history of dysmenorrhea</b>					
Yes	5	27	2	0.282	p>0.05
• No	3	22	1		
<b>Age at menarche</b>					
• 10- 12 yrs	0	9	2	9.162	P<0.05
• 13-15 yrs	3	39	4		
• >15 yrs	0	1	2		
<b>How many days you tend to take leave during Dysmenorrhea?</b>					
• Half day	0	10	2	4.676	p>0.05
• One day	0	8	3		
• Two days	0	1	0		
• No leave at all	3	30	3		

**Table 3.2:** Revealed that near by half of students 29(48%) were experienced moderate pain, while only 3(10%) were experienced severe dysmenorrhoea belongs to age group of 20-22 years old .The computed  $\chi^2$  value 2.569 was less than the table value of 5.99 at 0.05 level. So there is no statistical significant difference was noticed between age and pre test dysmenorrhoea level.

**4. DISCUSSION**

The first objective of the current study was to compare the dysmenorrhoea level among

nursing students in experimental and control group after the ginger tea consumption. In the present study independent “t” test was utilized to test the significant difference between experimental and control group .As represented in table 3.1 it was noticed that, the computed t value (t = 5.987, P<0.05) are more than the table value t=2.00. On the basis of this, research hypothesis (H<sub>1</sub>) was accepted that, in post test dysmenorrhoea score among the experimental group will be significantly lower than the control group. So it can be concluded that 2gm of ginger tea three times per day was effective in

dysmenorrhoea reduction. These findings are supported by the study conducted at Cherran's College of Nursing, Coimbatore in 2010 that, assessing the effectiveness of ginger tea on dysmenorrhoea among the adolescent girls with dysmenorrhoea. As well as it concluded that ginger tea was effective for reducing the pain and discomfort during menstruation. (Anil K Agarwal, 2010) Furthermore the current study results was agreed with the comparative study results conducted in Iran regarding the effect of ginger, ibuprofen and mefenamic acid on dysmenorrhoea as reported that, ginger was effective like Ibuprofen and mefenamic acid. This can be attributed to the gingerol action. It is the principle ingredient in ginger has anti prostaglandin effect that great effect on reducing pain associated with dysmenorrhea. (Rahnama P, 2012)

**Another objective for the study was to find out the association between pretest levels of dysmenorrhea with selected demographic variables such as age, education, family history.**

Assuming that baseline variables could probably influence the dysmenorrhea, attempts were made to find the association of baseline variables with dysmenorrhea. Association was computed between pre -test score of dysmenorrhea with selected baseline variables like age, course of study and dysmenorrhoea family history.

It was observed that nearly half of samples 29(48%) were experienced moderate pain, while, only 3(10%) experienced severe dysmenorrhoea among group of age between 20-22 years old. The computed  $\chi^2$  value **2.569** was less than the table value **5.99** at **0.05** levels. So there is no significant association was noticed between age and pre test level of dysmenorrhea .Regarding course of study, moderate dysmenorrhoea was reported among fourth year students, around  $\frac{1}{3}$  (31.6%) and mild dysmenorrhoea 2(3.3%) only among second and third year nursing students. However, the present study results was consistent with a study conducted in Apollo college of nursing Chennai in 2011 with 40 BSc Nursing students with dysmenorrhea who resided in hostel. Two consecutive menstrual cycles

were assessed with data collection tools. First menstrual cycle was taken as pre-test in which level of dysmenorrhea was assessed without administration of ginger tea. Consecutive cycle as post test in which ginger tea 100ml /day for five days was given as 50ml in morning and 50ml in night, after food, starting from 2 days before the onset of menstruation to the third day of menstrual cycle. Association between the selected demographic variables upon the level of pain and dysmenorrhea symptoms among students before and after intake of ginger tea was assessed. It reveals that, there was no significant association between the selected demographic variables and level of pain among students before and after administration of ginger tea (Dhanya, 2011)

**Conclusion:** Menstrual disorders are a common presentation in the late adolescence, 75% of girls experience discomforts associated with menstruation. Dysmenorrhea is a common problem in women of reproductive age. In day to day nursing practice the nurses identify women with dysmenorrhea both in clinical as well as community setting which can be handled well so as to cope with menstrual pain. Most of them are left untreated. Many studies conducted in India and in abroad shows that ginger as an effective complementary therapy to reduce dysmenorrhea and to improve the quality of life during menstruation. The result of the present study showed that there was a great need for the health personnel to implement this method to educate the people in the community as well as in the hospitals. Therefore this home remedy (Ginger tea) will help to improve the productivity and quality of life in adolescents and women of reproductive age to cope with discomforts dysmenorrhoea.

#### **Recommendations:**

Based on the current study findings it is recommended that:

1. This study can be done on a large sample for more valid generalization.

2. There is urgency for other studies conducting regarding effectiveness of ginger preparation v/s other methods as pelvic exercise on dysmenorrhoea.

4. Other studies must be conducted to assess the nurses' knowledge regarding complementary and alternative therapies on dysmenorrhoea or pain reduction.

## 5. REFERENCES

1. **Abd El-Hameed et al.** Assessment of dysmenorrhea & menstrual hygiene practices among adolescent girls in some Nursing schools at El-Mina Governorate, Egypt. *Journal of American Science*, 2011; 7(9), <http://www.americascience.org>. Accessed on 2nd September, 2011.
2. Anamika S, Devender K T, Pragya S, Renuka S. Problems related to menstruation and their effect on daily routine of students of a medical college in Delhi, India. *Asia-Pacific Journal of Public Health* 2008 February 20(3):234-41. PMID:19124317
3. Anil K A, Anju A. A study of dysmenorrhea during menstruation in adolescent girls. *Indian J Community Med.* 2010 January; 35(1): 159–164. Cited in Pubmed PMID:28886348
4. Anil K Agarwal and Anju Agarwal, A Study of Dysmenorrhea During Menstruation in Adolescent Girls. *Indian J Community Med.* 2010 January; 35(1): 159–164.
5. AP Dempsey, P A Dempsey. *Using Nursing Research process :Clinical evaluation and utilization.* Philadelphia: Mosby; 2003
6. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. 2000.
7. Banikarim.C, Mariam.R, Kelder.H.S. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. *Archives Pediatrics adolescent medicine* Dec2000; 154(6):1226-1229
8. Bibi Augustian. A comparative study to assess the effectiveness of pelvic rocking exercise and ginger on dysmenorrhea among nursing students in a selected Nursing college, Bangalore. 2012
9. Chauhan.M, Kala.J Relation Between Dysmenorrhea and Body Mass Index in Adolescents with Rural Versus Urban Variation *The Journal of Obstetrics and Gynecology of India* 2012; 234-239
10. Cohen R. J, Ek K, Pan C. X. Complementary and alternative medicine (CAM) use by older adults: A comparison of self-report and physician chart documentation. *J Gerontol A Biol Sci Med Sci.* 2002; 57(4):M223–7. [PubMed: 11909887]
11. D.C Dutta DC. *Text book of gynaecology*, 5th edition. Calcutta: New central Book Agency; 2005 .p 174-180.
12. Dhanya S. Effectiveness of ginger tea upon dysmenorrhea .*Kerala nurses forum* 2012 april-june; 7(2):23-29.
13. Dr Tori Hudson, N.D *Menstrual Cramps- Still a Contender* .December 27th, available site is <http://drtorihudson.com>
14. Dr. P. Banerji of India. *Ginger for cramps.* Dr Banerji's World's Largest Homeopathic Centre. Jun 21, 2011. [www.DrPBanerji.com](http://www.DrPBanerji.com)
15. Dr. P.B. Verma et al. *Menstrual Pattern of Adolescent School Girls of Bhavnagar (Gujarat).* *NJIRM* 2011; Vol. 2(1). Jan-March .2011
16. Dr. Heather Johnson DOM. *Dr Heathers Herb's for life.* March 20.2012.
17. E W. Trece, B W Trece. *Elements of Research in Nursing.* St.Louis :CV Mosby company; 2002
18. E W. Trece, B W Trece. *Elements of Research in Nursing.* St.Louis :CV Mosby company; 1986
19. Ensiyeh J. The effect of ginger for relieving of primary dysmenorrhoea *journal of Pakisthan medical association* 2013 January.

20. Giti Ozgoli, Marjan G, Fariborz Comparison of Effects of Ginger, Mefenamic Acid, and Ibuprofen on Pain in Women with Primary Dysmenorrhea *the journal of alternative and complementary medicine* 15, (2) 2009: 129–132
21. Grzanna R, Lindmark L, Frondoza CG. Ginger--an herbal medicinal product with broad anti-inflammatory actions. *J Med Food*. 2005 Summer;8(2):125-32.
22. Gumanga S K , Kwame-A R. Prevalence and severity of dysmenorrhea among some adolescent girls in a secondary school in Accra, Ghana. *Postgraduate Medical Journal of Ghana* 2012 September; 1(1)
23. Halder A. Effects of progressive muscle relaxation versus intake of ginger powder on dysmenorrhea amongst the nursing students in Pune .*The nursing journal of India*. 2012 august; CIII (4):152-156
24. Ingela Henoch .The symptom management model, Västra Frolunda ; 2007
25. Jameison.D.J, Steege.J.F. The prevalence of dysmenorrhea, dyspareunia, pelvic pain, and irritable bowel syndrome in primary care practices. *Obstetrics & Gynaecology*. May 1996; 87: 55-58.
26. Karim A C, Dawood MY. Dysmenorrhea. *Clin Obstet Gynaecol*. 1990 Mar;33(1) : 168-78.
27. Khodakrami N. The Effect of an Iranian Herbal Drug on Primary Dysmenorrhea: A Clinical Controlled Trial. *Journal of Midwifery & Women's Health* 2009 september 54(5);401-404
28. Klein JR, Lin IF. Epidemiology of adolescent dysmenorrhea. *Pediatrics*. 1981.
29. Kothari C R. *Research Methodology, Methods and Techniques*. New Delhi; 2004
30. Masoud H, et al. Comparing the effects of ginger (*Zingiber Officinale*) extract and ibuprofen on patients with osteoarthritis *Archives of Iranian Medicine*, October 8 (4) 2005: 267 – 271.
31. Neamat A. Abd E,-H1, Maher S. M,d, Nadia H., Eman R. Ahmed Assessment of Dysmenorrhea and Menstrual Hygiene Practices among Adolescent Girls in Some Nursing Schools at EL-Minia Governorate, Egypt *Journal of American Science*, 2011;7(9)
32. Neamat A. Abd E,-H1, Maher S. M,d, Nadia H., Eman R. Ahmed Assessment of Dysmenorrhea and Menstrual Hygiene Practices among Adolescent Girls in Some Nursing Schools at EL-Minia Governorate, Egypt *Journal of American Science*, 2011;7(9)
33. Nwankwo TO, Aniebue UU, Aniebue PN. Menstrual disorders in adolescent school girls. *J Pediatr Adolesc Gynecol*. 2010 Dec;23(6):358-63 Cited in Pubmed PMID- 21056354
34. Ortiz M I. Eur J Obstet Gynecol Reprod Biol. Primary dysmenorrhea among Mexican university students: prevalence, impact and treatment. 2010 Sep;152 (1):73-7. Cited in Pubmed PMID- 20478651
35. Ozgoli.G, Goli.M, Moattar.F, Comparison of effects of ginger, Mefenamic acid and ibuprofen on pain in women with primary dysmenorrhea. *Journal of alternate and complementary Medicine*. Volume 15, Number 2, 2009, pp. 129–132
36. Parvin.R. The effects of *Zingiber Officinale* R. on Primary dysmenorrhea. *Journal of medicinal plants*. Dec 2010; 9(36): 81-86.
37. Patel V, Tanksale V, Sahasrabhojane M, Gupte S, Nevrekar P. The burden and determinants of dysmenorrhoea: a population-based survey of 2262 women

- in Goa, India. BJOG. 2006 Apr; 113(4):453-63.
38. Pedrón-Nuevo N, et al. Incidence of dysmenorrhea and associated symptoms in women aged 12-24 years. 1998 Dec; 66:492-496.  
<http://www.ncbi.nlm.nih.gov/pubmed/9951177>,
39. Peter Filinovich. Home Remedies for Painful Menstrual Periods or Dysmenorrhoea. Enzine article, women's issue.
40. Polit F D, Beck T C, Nursing Research, Principles and Methods. 7TH edition. Philadelphia: Lippincott William and Wilkins; 2004
41. Polit F D, Beck T C, Nursing Research, Principles and Methods. 7TH ed. Philadelphia: Lippincott William and Wilkins; 2004.
42. Polit FD, Beck CT. Essentials of Nursing Research – Appraising evidence for Nursing Practice. 7th edition. New Delhi: Wolter Kluwers Pvt Ltd: 2009
43. Polit FD, Beck CT. Nursing Research – Generating and assessing Evidence for nursing practice. 9th ed. New Delhi: Wolter Kluwer; 2011
44. Proctor M, Farquhar C; Diagnosis and management of dysmenorrhoea. BMJ. 2006 May 13; 332(7550):1134-8.
45. R Myers .Research Methodology. 2nd edition. Philadelphia. WB Saunders ;1998
46. Rahnema P, Montazeri A, Huseini HF, Kianbakht S, Naseri M. Effect of Zingiber officinale R. rhizomes (ginger) on pain relief in primary dysmenorrhea: a placebo randomized trial. BMC Complement Altern Med. 2012 Jul 10(12):PMID: 22781186
47. Rahnman Parvin et al The effect of zingiber officinal r. on primary dysmenorrhea Scientific information database
48. Roger K. Cady, MD, Jerome Goldstein, MD, Robert Nett, MD, Russell Mitchell, M.E. Beach, BS, LPN, CCRP, Rebecca Browning. . 2011; 51(7):1078–1086
49. Shanthi . A study to assess the effectiveness of ginger tea on pain and discomfort of dysmenorrhea among adolescent girls in selected schools at Dindigul District. 2010
50. Sharma SK. Nursing research and statistics. Elsevier: Haryana; 2011
51. Shrotriya C, Ray A, Ray S, George A T Menstrual characteristics and prevalence and effects of dysmenorrhea on quality of life of medical students. International Journal of Collaborative Research on Internal Medicine & Public Health. 2011 April; 4(4): 276-294,
52. Singh. A. et al. prevalence and dysmenorrhea among female medical students. Indian Journal of Physiology Pharmacology 2008; 52 (4): 389–397
53. Sripramote M, Lekhyananda N. A randomized comparison of ginger and vitamin B6 in the treatment of nausea and vomiting of pregnancy. J Med Assoc Thai. 2003 Sep; 86(9):846-53.
54. Sun LH, Ge JJ, Yang JJ, She YF, Li WL, Li XH et al. Randomized controlled clinical study on ginger-partitioned moxibustion for patients with cold-damp stagnation type primary dysmenorrhea. Zhen Ci Yan Jiu 2009 Dec; 34(6): 398-402.
55. Supreetha. S. , Sharadadevi M, Sequeira PS , Jithesh J , Shreyas T, Amit M. Antifungal Activity of Ginger Extract on Candida Albicans: J Dental Sci Research 2011 sep; 2(2); 1-5
56. Suresh K. K1, Mrudula R, Sujana B., Roja R K, Divya i K., C. Balkrishna. Prevalence of dysmenorrhea among Adolescent girls (14-19 yrs) of Kadapa district And its impact on quality of life: a cross Sectional study. National Journal of Community Medicine. 2011 July-Sept; 2 ( 2) :265

57. Suzanna M.Z, Kim TD, Shaiju K, Mack T. R, Amie JL, Benjamin DW, Sara A, Daniel PN Phase II Study of the Effects of Ginger Root Extract on Eicosanoids in Colon Mucosa in People at Normal Risk for Colorectal Cancer. *Cancer Prev Res.* October 11, 2011.
58. Titilayo A, Agunbiade OM, Banjo O, Lawani A. Menstrual discomfort and its influence on daily academic activities and psychosocial relationship among undergraduate female students in Nigeria. *Tanzan J Health Res.* 2009 Oct; 11(4):181-8. Cited in Pubmed PMID: 20734697
59. Tori Hudson, ND. Ginger and menstrual cramps. Integrative practioner. www.Natura Health Product.com. Available from : [http://www.herbs2000.com/herbs/herbs\\_ginger\\_part2.htm](http://www.herbs2000.com/herbs/herbs_ginger_part2.htm)
60. Unsal A, Ayranci U, Tozun M, Arslan G, Calik E. Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students. *Ups J Med Sci.* 2010 May; 115(2):138-45. Cited in Pubmed PMID: 20074018
61. Verma.P.B, Pandya.M.C, Singh.M.P. Menstrual pattern of adolescent school girls of Bhavnagar (Gujarat). *NJRM* 2011; Vol 2(1) Jan-March: 389-391
62. What is dysmenorrhea National Women's Health Resource Center, 2425 L Street NW, Washington, DC 20037. Call (202-293-6045) or on the Internet
63. women's Health stats and facts. www.ACOG.ORG.
64. Wong Hockenberry Wilson. Perry lowdermilk. Maternal child nursing care, 3rd edition. Missouri: Mosby publishers; 2004. p 108-112
65. Wood GB, Haber J. Nursing Research. Missouri Mosby Publication: 1994.
66. Yang JJ, Sun LH, She YF, Ge JJ, Li XH, Zhang RJ. Influence of ginger-partitioned moxibustion on serum NO and plasma endothelin-1 contents in patients with primary dysmenorrhea of cold-damp stagnation type. *Zhen Ci Yan Jiu* 2008 Dec; 33(6): 409-12.