WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 07, 79-92. Research Article ISSN 2277–7105

ASSESSMENT OF CINNAMON EFFECT TO REDUCE PRIMARY DYSMENORRHEA AND IMPROVE QUALITY OF LIFE AMONG FEMALES IN EASTERN REGION OF SAUDI ARABIA: A CROSS SECTIONAL SURVEY

Dr. Amal Khaleel Abu Alhommos[1*] and Muneerah Al-Hadi[1]

Pharmacy Practice Department, Clinical Pharmacy College, King Faisal University, 31982-Alhasa, Saudi Arabia.

Article Received on
06 Feb. 2018,
Revised on 27 Feb. 2018,
Accepted on 20 March 2018
DOI: 10.20959/wjpr20187-11682

***Corresponding Author**
Dr. Amal Khaleel Abu Alhommos
Pharmacy Practice Department, Clinical Pharmacy College, King Faisal University, 31982-Alhasa, Saudi Arabia.

ABSTRACT

Dysmenorrhea is a painful contraction in the uterus region happening before and/or during menstrual cycle menstrual cycle. It is a typical issue among adults females influencing around 40-80% of them begin a couple days before menstruation and goes on for a couple of hours to a few days after start of monthly cycle. The study objective is to evaluate the cinnamon effects on primary dysmenorrhea in a sample of adult females in eastern region of Saudi Arabia. An online survey was distributed in the eastern region of Saudi Arabia. The study was conducted in Saudi Arabia between January to March 2017. The questionnaire included four sections: demographics section, concern symptoms, practice and knowledge. The total numbers of females participated in this study was 232. Regarding to females attitude to minimize the pain of dysmenorrhea, most of them used paracetamol or ibuprofen tablets 109 (47%) and 74 (31.9%) used cinnamon. Only 50 (31.25%) of them had complete pain relieving all using cinnamon, but 96 (59.66%) had partial pain while using cinnamon. Regarding the possible side effects induced by cinnamon using, the most of participants 207(89.26%) did not suffer from any side effects. Based on this study results, the effect of cinnamon on dysmenorrhea appeared to be inferior to analgesics and had moderate effect on dysmenorrhea. Further study with randomized double-blinded control design and appropriate sample size in different regions of Saudi Arabia is needed to study its real efficacy.

KEYWORDS: Dysmenorrhea, females, cinnamon and effect.

1. INTRODUCTION

Dysmenorrhea is a painful contraction in the uterus region occurring before or during the menstrual cycle.[1,2] It is a common problem among adolescent females affecting about half of them that begins a couple days before menstruation and goes on for a couple of hours to a few days after the start of the monthly cycle.[1,3]

The main cause of dysmenorrhea is not clearly understood, but it related to uterine prostaglandin levels, especially PGF2 which is noticeable in women who have severe dysmenorrhea, this process occurs when the uterine wall expulsion leading to release of prostaglandin from endometrial cells in the time of starting of menstruation.[4,5] Prostaglandin is responsible of contractions of the smooth muscle of the uterus, that is why it related to pain.[4,5] The highest level of prostaglandin usually occurs in the first two days of menstruation.[4,5]

Dysmenorrhea is divided into two types, primary and secondary dysmenorrhea.[6,7] primary dysmenorrhea refers to painful contractions without any reasons inverse to secondary type which referring to the presence of problems in the uterus or pelvis, which is resolved when the cause have been treated.[6,7] It is characterized by physical and psychological symptoms such as pain in the suprapubic region radiate to the lower back or back of the legs, lightheadedness, headache, mood disturbances and depression, other rarely symptoms which are related to intestinal cramps during menstruation, such as, nausea, vomiting and diarrhea also may occur.[8,9]

Many studies showed the prevalence of dysmenorrhea among female with average about 40-80% in different countries.[1] It is a popular cause of absence from work among females, reduce the ability to learn, interfering with their daily activity, negatively affect occupancy and educational levels and the annual economic loss in the USA due to dysmenorrhea is two billion dollars and 600 million working hours.[8,9]

There were two cross-sectional studies in Saudi Arabia about the prevalence of dysmenorrhea among university students one of them in King Abdul-Aziz university and another in Majmaa university.[8,10]

The prevalence of severe dysmenorrhea in King Abdul-Aziz University in Jeddah was 38.6% and 28.3% of those sufferers skipping their classes due to the pain of menstruation.[10] The

prevalence of severe dysmenorrhea in the Majmaa in Riyadh University among students was 5 – 10% and the ratio of absenteeism among them was 71% whom skipping their classes 1 to 3 days every month.[10]

Several studies found that there is positive effects of non–steroidal anti-inflammatory drugs (NSAID) to reduce the pain of dysmenorrhea, which act by reduce prostaglandin production.[4,5] The main problem of long-term use of synthetic drugs is side effects, the most common side effect of NSAID is GIT upset including ulcers and irritation and kidney problems such as diminished renal blood flow and renal papillary necrosis.[4, 5]

Herbal medicine has a role in different types of diseases and it is interesting, although present of newly synthetic medicine is lacking of side effects and more than 80% of people in developing countries tend to use herbal and complementary medicine. Cinnamon is one of the effective herb in treating of dysmenorrhea but has not been sufficiently documented.[4, 5]

No previous studies performed in Saudi Arabia to assess the efficacy of cinnamon among females with dysmenorrhea. The main objective of our study is to assess the cinnamon effect to reduce dysmenorrhea and improve quality of life among females in the eastern region of Saudi Arabia.

2. METHOD

2.1 Research Design

A descriptive cross-sectional study design used to conduct the study during January to march 2017 among 232 post menstruation adolescent females aged 18-45 years. The online questionnaire was distributed in eastern region of KSA. The online questionnaire designed as multiple choices questions. The questionnaire included four sections, which are the demographics section, concern symptoms, practice and knowledge.

2.2 Data Analysis

The collected data, which collected by online questionnaire, was analyzed by using Excel MS program 2013 to interpret the data as the percentage.

3. RESULTS

The total numbers of the female participants conducted during this study were 232. The most age of participants was between 18-25y about 109(47%). Most of females who participate in this study 206 (88.8%) had dysmenorrhea during their menstruation cycle. Dysmenorrheal

pain among our participants began within the first three years of first menstruation 201 (86.6%) and only 31(13.4%) began after age 25 years which is usually related to the abnormality in the uterine. Therefore, only 163 (70.3%) of females had a regular menstrual cycle. The duration of menstrual cycle for most of our participants was 3-7 days 210 (90.5%).

The most of the females 201 (86.6%) had a primary dysmenorrhea cause of their dysmenorrhea which is related to natural physiology of uterus contraction due to the high level of prostaglandin secretion but only 31 (13.4%) of them could have another secondary causes for dysmenorrhea. However, only 28 (12.1%) of the females had the uterus disorders that cause them dysmenorrhea as shown in (**Table1**).

Table (1): Demographic Data.

Characteristics	Categories	N (%)
1.Age (in years) **Most frequent age group:** 18-25 years	12-18 years 18-25 years 25-35 years 35-45 years	20 (8.6%) 109(47%) 43(18.5%) 60(25.9%)
2. Do you suffer from menstrual pain?	yes No	206(88.8%) 26(11.2%)
3. The pain of the menstrual cycle began :	-within 3 years of the start of the menstrual cycle - after age 25 years	201(86.6%) 31(13.4%)
4. Do you have any previous diagnosis of uterine problems?	Yes No	28(12.1%) 204(87.9%)
5. Is your menstruation regular?	Yes No	163(70.3%) 69(29.7%)
6. How many days your menstruation?	3-7 8-15 more	210(90.5%) 21(9.1%) 1(0.4%)

3.1 Concern symptoms

Regarding to the symptoms associated with dysmenorrhea, the most common symptoms were continuous pain in the upper suprapubic region and severe lower back pain 223 (96.1%), 143 (61.6%) respectively.

The common onset of upper suprapubic region pain started before several hours of menstruation until first two days of menstruation192 (82.8%). About the effect of menstrual cycle pain on the females quality of life, the almost half of them 117 (50.4%) absence from their jobs and affect their regular daily activity as shown in (Table 2).

Table (2): Concern symptoms.

7. during menstruation the symptoms usually you suffered of : (more than one answer)	**N (%)**
- Discomfort or pain in the lower abdomen area	223(96.1%)
- Pain in the hip area	34 (14.7%)
- Lower back and thighs	143(61.6%)
- Nausea, vomiting and loose stool	41(17.7%)
- Headache, lethargy, mild dizziness	67(28.9%)
- Fever	19(8.2%)
8. Lower abdominal pain usually occur (more than one answer)	**N (%)**
- Before the descent to the first two days of menstruation	192(82.8%)
- All days of the cycle	14(6%)
- Ovulation days (14-15) starting from the first day of the monthly menstrual cycle.	42(18.1%)
9. Does the pain of the menstrual cycle affect the performance of your daily work or lead to the absence from your work	**N (%)**
Yes	117(50.4%)
-No	58(25%)
-Sometimes	57(24.6%)

3.2 Practice

Regarding to females attitude to minimize the dysmenorrhea, they used paracetamol or ibuprofen tablets 109 **(**47%), cinnamon 74 **(**31**.**9%), diclofenac Sodium injection 6 **(**2.6%) and only43 (18.5%) used non-pharmacological approaches such as the warm pads as shown in (**Figure1**).

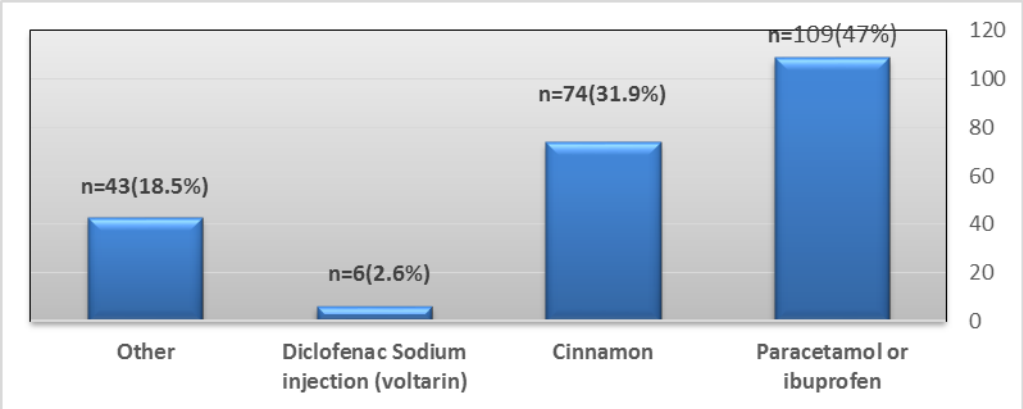

Figure (1): Females behavior to relieve menstrual pain.

Only 71 (30.6%) of females had effect after using cinnamon but, the 150 (64.7%) of them had insufficient pain management as shown in **(Figure2)**.

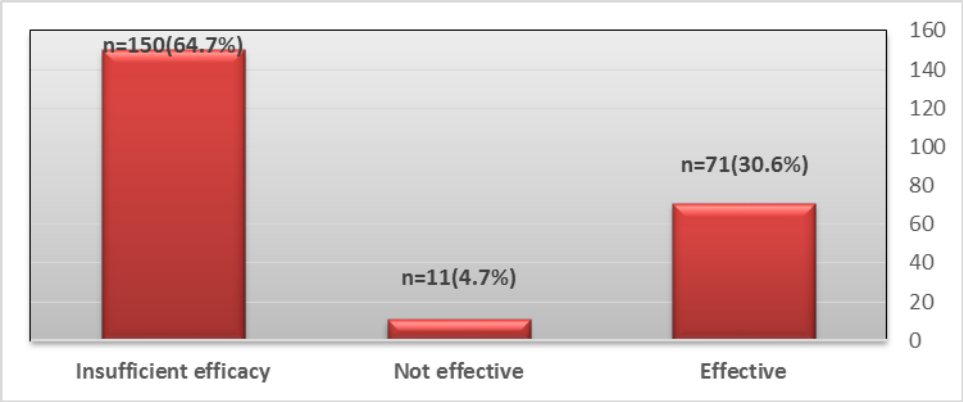

Figure (2): The efficacy of method used to relieve menstrual pain.

About the previously cinnamon use and its effectiveness for dysmenorrhea, 160 (69%) of participants used cinnamon as pain relievers for dysmenorrhea as shown in (**Figure3)**.

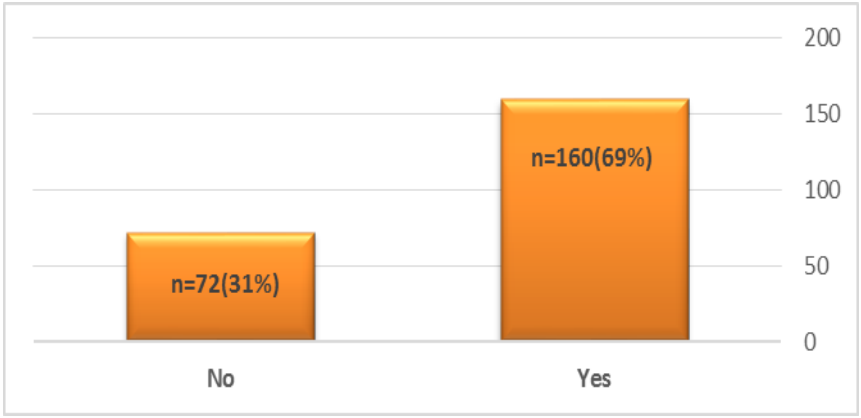

Figure (3): The cinnamon using to relieve menstrual pain.

Only. 50 **(**31.25%) of them had a complete pain relieving by using cinnamon alone, but only 96 (59.66%) had a partial pain reliving by using cinnamon alone as shown in (**Figure4**).

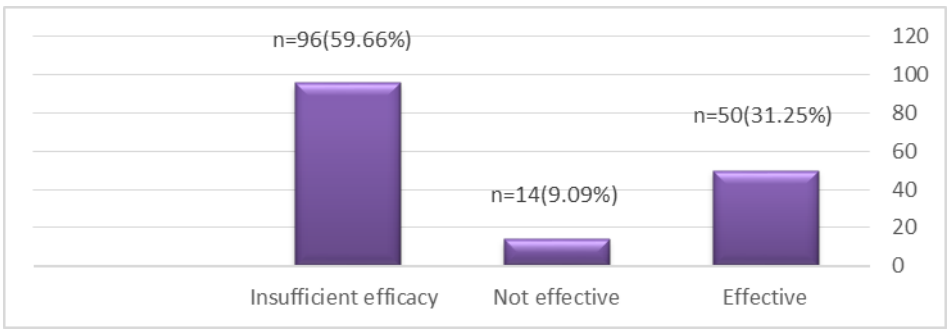

Figure (4): The efficacy of cinnamon on dysmenorrhea.

Approximately third of participants 49 (29.3%) used analgesic concurrent with cinnamon as pain relievers for dysmenorrhea as shown in (**Figure 5**).

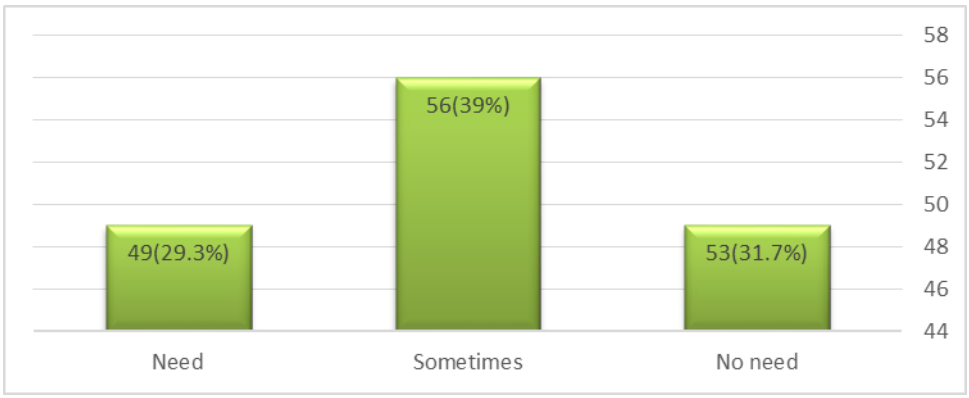

Figure (5): The need of using of cinnamon syrup with other painkillers.

The most of our participants 207 (89.26%) did not suffering from any side effect often using cinnamon as shown in (**Figure 6**).

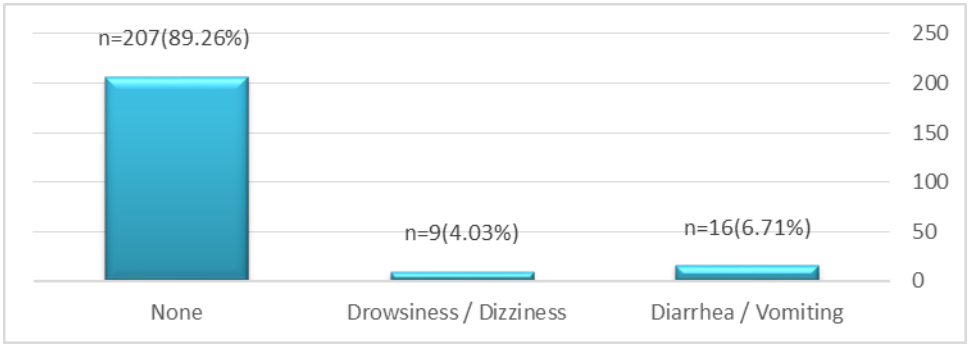

Figure (6): The side effects of cinnamon.

More than half of females used different types of herbs rather than cinnamon for dysmenorrhea with good effects 142(61.2%). The most common herbs used by females are mint, anise, ginger, chamomile respectively as shown in (**Figure7**).

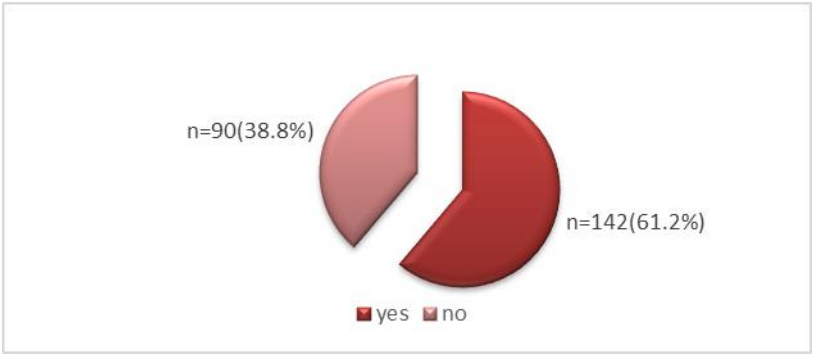

Figure (7): The using of effective herbs to relieve menstrual pain.

3.3 Knowledge of females about cinnamon

About the allowed dose of cinnamon used per day, the 67(28.9%) of females thought one and half to two table spoon full, and others 161(69.4%) didn't know the allowed amount of cinnamon per day as shown in (**Figure 8**).

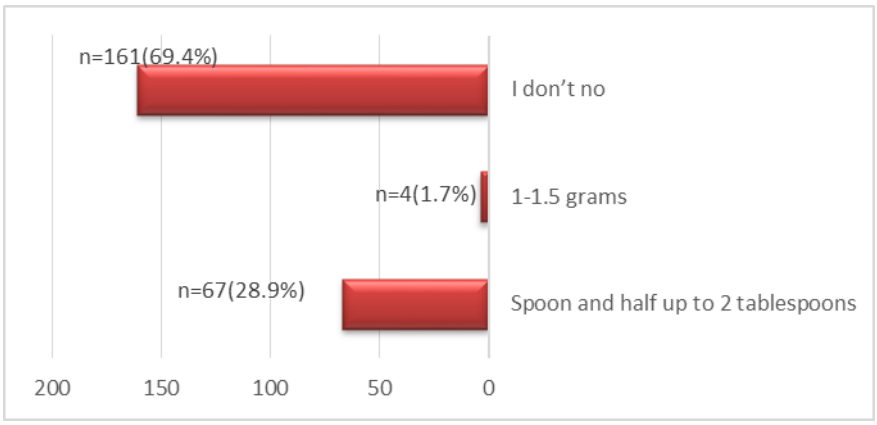

Figure (8): The amount of cinnamon allowed per day.

According to the female knowledge about cinnamon contraindications of use, 32(13.8%) of them thought the major contraindications are hypersensitivity, lactating and pregnant women70 (30.2%) but the most of them 141(60.8%) they had not any information about cinnamon contraindications as shown in (**Figure9**). (This question to select more than one answer).

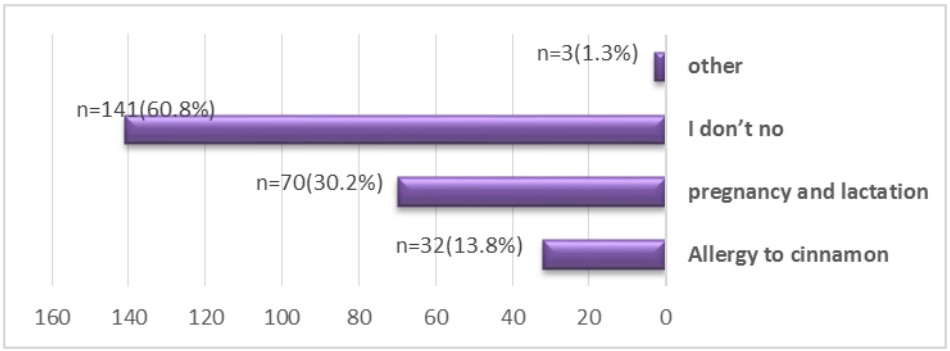

Figure (9): The contraindications of cinnamon use.

About the time of administration of cinnamon to reduce dysmenorrheal pain, almost of participants used it during the menstrual cycle days 119 (51.3%) but 43 (18.5%) of them used it before the menstrual cycle as shown in (Figure 10).

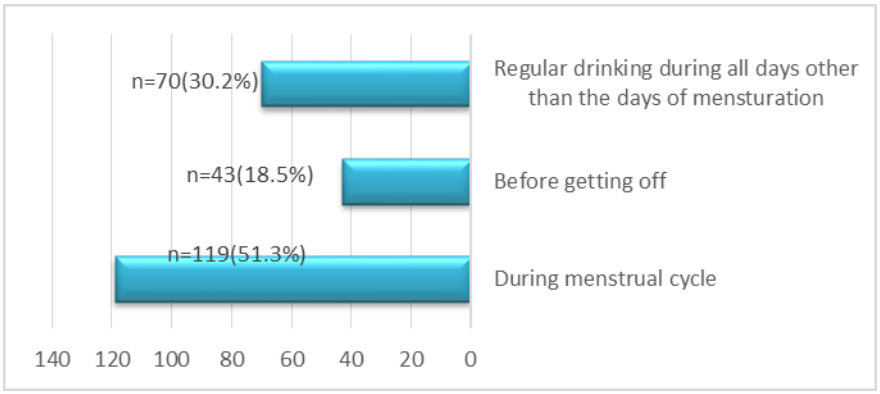

Figure (10): Time of administration to drink boiled cinnamon to reduce menstrual pain.

About the preparation method of cinnamon to reduce dysmenorrhea most of the participants used the hot drink of cinnamon by boiling the cinnamon parks in water 131(56.5%) and only six (2.6%) of them they soaked the cinnamon parks in boiled water as shown in (**Figure11**).

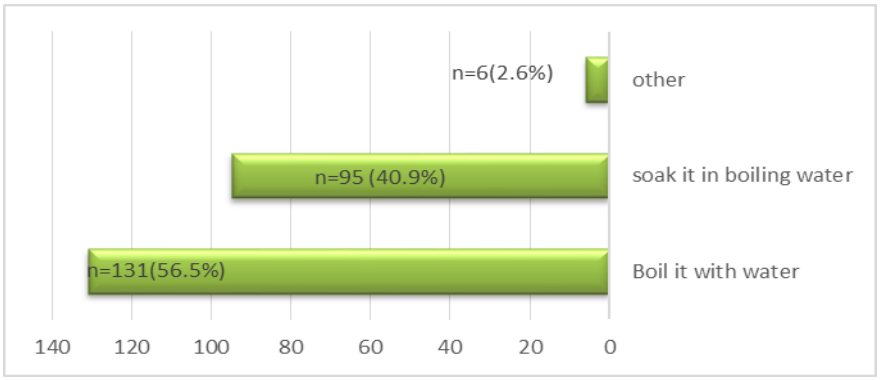

Figure (11): Preparing the cinnamon syrup.

The female knowledge about the drug-cinnamon interactions or food-cinnamon interactions, the most of the participants 177(76.3%,) thought there are many interactions with cinnamon. In addition, they thought that the cinnamon interact with anticoagulants, antidiabetic drugs and ginger as shown in (**Figure12**).

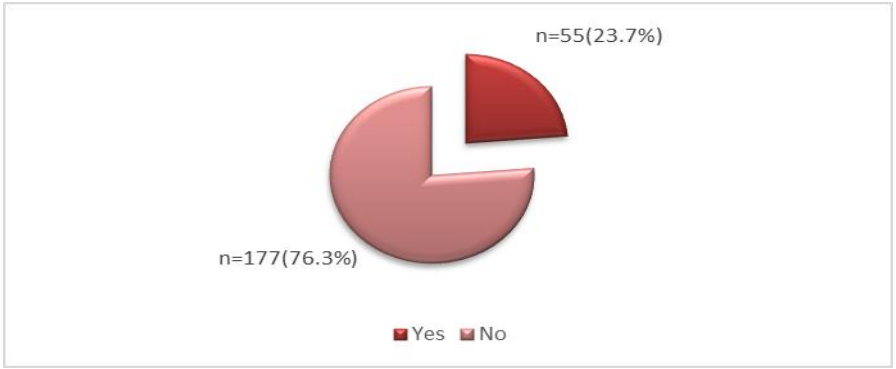

Figure (12): Cinnamon interactions with some medications or foods.

The main sources of information for the participant's knowledge about cinnamon use is the family members and their relatives 197 (84.9%), then from different websites 30 (12.9%), then from the specialized physicians 5 (2.2%) as shown in (**Figure13**).

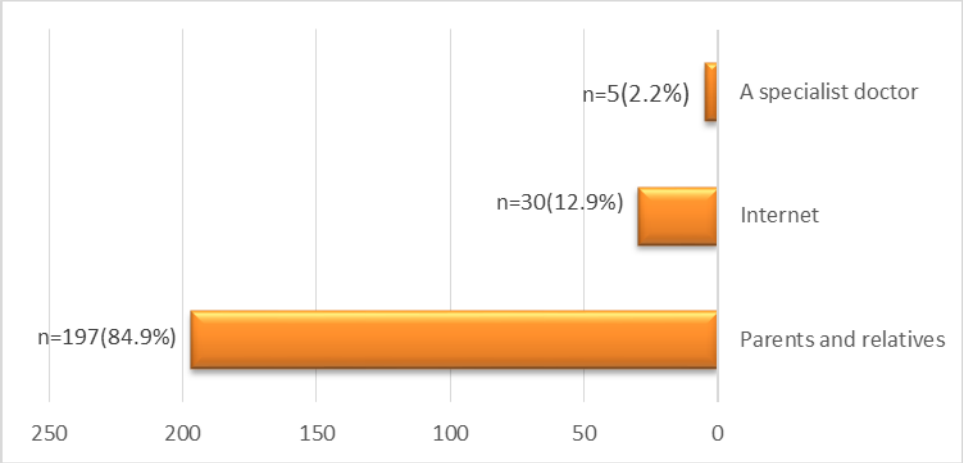

Figure (13): The information resources about the benefits of cinnamon use in relieving menstrual pain.

4. DISCUSSION

No other studies were found in Saudi Arabia that assess the effect of cinnamon to reduce pain of dysmenorrhea. Dysmenorrhea is a critical issue, which affect more than half of females and interfere with their daily activity and quality of life, which lead adolescent females to consume analgesic, which is having negative side effects. The cinnamon is one of the herb, which had a good effect to reduce the pain of dysmenorrhea.

Depending on the demographic data, the most age of participants in our study were between 18-2 years. Almost females more than half had dysmenorrhea during their menstruation cycle. Most of their dysmenorrheal pain began among first three years of first menstruation while others after age 25y which is usually related to the uterine disorders. Most of the females had a regular menstrual cycle. The duration of menstrual cycle for most of our participants was 3-7 days. The most of the females had a primary dysmenorrhea cause of their dysmenorrhea, which is related to natural physiology of uterus contraction due to the high level of prostaglandin secretion. However, few of the females had the uterus diseases that cause their dysmenorrhea.

According the concern symptoms associated with dysmenorrhea, the most common symptoms continued pain in the upper suprapubic region and severe lower back pain. The

common onset of upper suprapubic region pain started before several hours of menstruation until, the first two days of menstruation. About the effect of menstrual cycle pain on the female's quality of life, almost half of them, they absent from their jobs and affect their regular daily activity.

Regarding to females attitude to minimize the dysmenorrhea, approximately half of females used paracetamol or ibuprofen tablets, third of participants used cinnamon, other used non-pharmacologic methods such as warm pads and other herbs rather than cinnamon and very few numbers of participants used diclofenac sodium injections which referred to high consumption rate of painkillers that is weak points and also, the third of participants used cinnamon as painkillers of dysmenorrhea which means the cinnamon is popular among Saudi females and traditional way of using herbs remain common.

More than half of females had insufficient pain management by using all of the previously mentioned methods that means the efficacy of cinnamon and other painkillers is similar.

About the previously cinnamon use and its effectiveness for dysmenorrhea, most of the participants used cinnamon as pain relievers for dysmenorrhea, which means the cinnamon is popular herb used as painkillers for dysmenorrhea in Saudi Arabia. About the third, had a complete pain relieving upon using cinnamon which means the efficacy of cinnamon on dysmenorrhea is good as shown in (**Figure4**).

An approximately third of participants used analgesic concurrently with cinnamon as pain relievers for dysmenorrhea, which means the efficacy of cinnamon on dysmenorrhea is moderate as shown in (**Figure 5**).

Regarding to the possible side effects induced by cinnamon use, most of the participants did not suffer any side effects and very few number of participants suffered some side effects such as diarrhea, vomiting and drowsiness, which means the cinnamon is safe as shown in (**Figure 6**).

More than half of the females used different types of herbs rather than cinnamon for dysmenorrhea with good effects, which means the use of herbs among Saudi females, is common. Female's use the most common herbs for dysmenorrhea other than cinnamon are mint, anise, ginger, chamomile respectively.

Regarding to the knowledge of females about allowing a dose of cinnamon per day, the most of females did not know and some thought one and a half to two tablespoons. According to female knowledge about cinnamon contraindications of use, most of them, they had not any information about that, only third thought that the major contraindication is lactating and pregnant women hypersensitivity respectively, which means the knowledge about herbs, is poor as shown in (**Figure 8**).

About the time of administration of cinnamon, approximately half of the participants used it during the menstrual cycle's days, the third of participants used it regularly rather than the days of the menstruation and others used it before getting off menstruation which means the highest efficacy of cinnamon on dysmenorrhea appear among the days of dysmenorrhea which also refer to the fast onset of action. Most of participants prepared the hot drink of cinnamon by boiling the cinnamon parks in water or soaked the cinnamon parks in boiling water and a few used it by using a different preparation method other than these two methods, as shown in (**Figure 10**).

The female knowledge about the drug-cinnamon interactions or food-cinnamon interactions, most thought there are not any interactions, which referred to poor knowledge about herbs among participants. Some of participants thought that the cinnamon interact with anticoagulant, antidiabetic and ginger which is good point to be known among patients as shown in (**Figure12**).

The main sources of information used by our participants for their knowledge about cinnamon use is family members and their relatives, different websites, and the specialized physicians, respectively which means that the traditional way and alternative therapy often overcome the medical knowledge among Saudi females.

Limitations

The main limitations of this study were the low sample size and the most suitable design to achieve the objective of this trial was the double blind randomized control. In addition, most of questions were close ended, and there were no similar observational study to compare our study result with it. The questionnaire did not contain the nationality and the living region of the participants; however, it was distributed to the relatives and some female students that were known to be Saudis from the eastern region.

5. CONCLUSION

Based on this study results, the effect of cinnamon on dysmenorrhea appeared to be inferior to analgesics and had a moderate effect on dysmenorrhea. Further study with randomized double-blinded control design and appropriate sample size is needed to study cinnamon efficacy in different regions of Saudi Arabia.

6. ACKNOWLEDGMENTS

I would express my special thanks Dr. Bandar Aldhbaib, Dean of Clinical Pharmacy College and Dr. Yasir Ibrahim, Head of pharmacy practice department for providing us with all the necessary facilities for the research and for their guidance and advice throughout this study.

7. REFERENCES

1. Lydia Aziato1, Florence Dedey, Joe Nat A Clegg-Lamptey, The experience of dysmenorrhoea among Ghanaian senior high and university students: pain characteristics and effects, 2014.
2. Proctor ML, Murphy PA, Herbal and dietary therapies for primary and secondary dysmenorrhea, 2001.
3. MANAR F. HEEBA, D.N.Sc.; EL-SAYDA H. NASR, D.N.Sc. and HADAYAT A. AMASHA, D.N.Sc., Menstrual Cycle Pattern among Nursing Students Adolescent Girls, Menstrual Cycle Pattern among Nursing Students Adolescent Girls, 2016.
4. Molouk Jaafarpour, Masoud Hatefi, Fatemeh Najafi, et al, The Effect of Cinnamon on Menstrual Bleeding and Systemic Symptoms With Primary Dysmenorrhea, 2015.
5. Molouk Jaafarpour, Masoud Hatefi, Ali Khani, Javaher Khajavikhan, Comparative Effect of Cinnamon and Ibuprofen for Treatment of Primary Dysmenorrhea: A Randomized Double-Blind Clinical Trial, 2015.
6. Komal Atta, Shireen Jawed, Sadaf Zia, and Correlating Primary Dysmenorrhea with Its Stressors: A cross Sectional Study Investigating The Most Likely Factors of Primary Dysmenorrhea and Its Effects on Quality Of Life and General Well Being, JUMDC, 2016.
7. MoolRaj Kural, Naziya Nagori Noor, Deepa Pandit, et al, Menstrual characteristics and prevalence of dysmenorrhea in college going girls, pubmed, 2015.
8. Nahla Khamis Ibrahim, Manar Saleh AlGhamdi, Alanoud Nawaf Al-Shaibani, Dysmenorrhea among female medical students in King Abdulaziz University: Prevalence, Predictors and outcome, 2015.

9. Parvaneh Mirabi2/ Seideh Hanieh Alamolhoda, Seddigheh Esmaeilzadeh, et al, Effect of Medicinal Herbs on Primary Dysmenorrhoea- a Systematic Review, 2014.
10. J.C. Helen Shaji, Severity of Primary Dysmenorrhea and Menstrual Distress among University Students in Kingdom of Saudi Arabia, International Journal of Health Sciences & Research, 2014.