Association of Caffeine Containing Beverages and Foods with Menstrual Irregularities and Psychological Symptoms in Women

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ABSTRACT

Keywords: Amenorrhea, Caffeinated beverages, Carbonated drinks, Dysmenorrhea, Menstrual irregularities, Oligomenorrhea, Pcos, Psychological symptoms.

INTRODUCTION

Caffeine is one of the most commonly found chemical substances in beverages, soft drinks, carbonated drinks, coffee, tea, chocolate and hot chocolate and many drugs[1]. Beverages are rapidly distributed throughout the tissues and absorbed from the digestive tract[2]. Inhibition of hydrolysis of cyclic 3', 5' adenosine monophosphate and 3', 5' guanosine monophosphate and antagonism of adenosine are included in beverages distribution mechanism[3,4]. It might affect menstrual functions and a disturbing and hormonal profile. Abnormalities in menstruation may contribute to other complications, like osteoporosis, breast cancer, and infertility. Female reproductive systems are disrupted as a result of both decreased and increased levels of estradiol, decreased levels of progesterone, reduced ovarian weight, amenorrhea and delayed time duration between menstruation[5,6,7,8,9]. Epidemiologic studies have shown that high intake of beverages can increase the risk of infertility in women and delay the time of pregnancy[10,11,12]. A study on intake of high levels of Caffeine by 917 American women establish the irregular or episodic periods (six or more drinks atleast 5 days a week). Normal duration of the menstrual cycle usually occurs every 28 days, varying from 4-10 days withanaverage of 6 days[13]. Many psychologicalchanges are seenduring menstruation, such as irritability, mood liabilities and anxiety. Common physical signs of menstrual cycle include breast tenderness, diarrhea, back pain, headache, dizziness, constipation, abdominal bloating and extreme fatigue. In adolescence, changes occur in females in the form of menstrual cycle and also known as sign of puberty. The changes that occurs in the uterus and ovaries are an essential part of sexual reproduction, accompanied by a change in the psychological, social and physical aspects. These are known as natural factors of the menstrual cycle. Studentscontainingcaffeine commonly complainabout menstrual cycle irregularities, amenorrhea, poly or oligomenorrehoa, dysmenorrhea, and polycystic ovarian disease [14].

OBJECTIVE

The main objective of this study was to determine whether there is an association between menstrual abnormalities and caffeine containing beverages or food among students and working staff of Hamdard university.

MATERIAL AND METHODS

The cross-sectional study was conducted by 3rd and 4th professional medical students during the academic year 2019 at Hamdard Al-Majeed College of Eastern Medicine of Hamdard University Karachi. Two hundred pre-

coded, well-constructed questionnaires were prepared and filled by females aged between 15-40 years and were working and studying at the Hamdard University. The questionnaires were collected and reviewed for data collection. The information in questionnaire was about age, age of menarche, marital status, menstrual cycle, regularity of cycle, and amount of bleeding (average, heavy or scanty).

Statistical Analysis

The all data were managed and analyzed with SPSS software version 22 for windows version 10. Prevalence was calculated as percentages (frequency) of their mean, median, mode, minimum and maximum variables.

RESULTS

Most women (52%) were age between 21-30 years, with Muslim religion (98%) the first menstruation begun (49.5%) at the age of 13-14 years and were unmarried (91.5%). **(**Table **1)**

Table 1. Demographic Data of Participants.

Characteristics	No. (%)
Age in years	
15-20	95(47.5%)
21-30	104(52%)
31-40	1(0.5)
Religion	
Muslim	196(98%)
Non-Muslim	4(2%)
Marital status	
Unmarried	183(91.5%)
Married	17(8.5%)

Table 2. Menstrual Cycle Characteristics.

Variables	No. (%)
Frequency	
Regular	147(73%)
Irregular	53(28.5%)
Duration (Days)	
3-5days	72(36%)
6-7days	107(53.5%)
8-9days	13(6.5%)
Above 9	8(4%)
Volume	
Heavy	37(18.5%)
Light	42(21%)
Normal	121(60.5%)
Symptoms	
Amenorrhea	29(14.5%)
PCOs	26(13%)
Oligomenorrhea	40(20%)

Regular menstruation was reported by 73.5%, average duration (3-7days) by 90% and average volume by 60.5%. The prevalence of menstrual disturbance with symptoms are Breast tenderness 20.5%, irritability 48%, abdominal bloating 52.5%, diarrhea 20%, constipation 21.5%, headache50%, mood swings 79%, back pain 77.5%, dizziness 56%, extreme fatigue 46%, acne 40.5%, food cravings 44% and decrease physical activity level 31%. Irregular periods were reported by 28.5%, with amenorrhea in 14.5%, oligomenorrhea in 20%, menorrhagia in 18.5% and polymenorrhea 6.5%. Few women reported a previous diagnosis of polycystic ovarian disease 13%. **(Table 2)**

Temperamental Assesment on The Basis of General, Physical, Physiological and Psychological Characteristics:

Phlegmatic: Soft and moist skin texture (62%), whitish complexion (21.5%), fatty body built (20%), thin and smooth hair texture (33%), slow and scanty hair growth (28.5%), brownish hair colour (47.5%), white color and more in quantity of urine (26%), less appetite (35%), por thirst (18%), slow digestion (19%), dull and laziness in physical activities (27.5%), excess sleep (30.5%), anger and joy comes on hardly (18.5%), weakly response in adverse condition (31.5%), and hesitate in taking decision (39%).

Bilious: Hard and hot skin texture (13.5%), pale complexion (68%), moderate body built (54%), curly hair texture (24.5%), moderate hair growth (48.5%), golden hair colour (8%), yellow colour and less in quantity of urine (28.5%), strong appetite (37.5%), increased thirst (36%), strong digestion (28.5%), hyperactive in physical activities (14%), sleep disturb (27.5%), anger and joy comes frequent, severe and persist for long time (23.5%), bravely response in adverse condition (41%) and take quickly decisions (29.5%).

Melancholic: Rough and cold skin texture (7%), blackish complexion (6.5%), lean and thin body built (20.5%), straight texture of hairs (31%), excessive hair growth (8%), black and White hair colour (6%), turbid and less in quantity of urine (2%), irregular appetite (26.5%), low thirst (10.5%), irregular digestion (12.5%), less in physical activities (12%), insomnia (9.5%), anger and joy infrequent but persist (11%), cowardly response in adverse condition (7.5%), afraid in taking decision (14%).

Sanguineous: Warm and smooth skin texture (17.5%), reddish complexion (4%), muscular body built (5.5%), thick and lusty texture of hair (11.5%), average hair growth (15%), blackish hair colour (38.5%), moderate in quantity of urine (43.5%), normal appetite (1%), average thirst (35.5%), average digestion (40%), average in physical activity (46.5%), average sleep (32.5%), anger and joy comes easily and easily lost (47%), aggressive response in adverse condition (20%) and boldly taking decision (17.5%).

CONCLUSION

Habitual use of carbonated drinks can be considered as a risk factor for most of menstrual cycle abnormalities.

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