Original Article

Prevalence of contraceptive use and its association with depression among women in the Jazan province of Saudi Arabia

Mashael Alfaifi[1], Ali H. Najmi[2], Khadija H. Swadi[3], Abdullah A. Almushtawi[4], Sattam A. Jaddoh[5]

[1]Department of Pharmaceutical Service, Clinical Pharmacy Section, King Saud Medical City, [2]Pharmaceutical Service Department, Clinical Pharmacy Section, King Fahad Medical City, [3]Collage of Pharmacy, Jazan University, Jazan, [4]Department of Pharmaceutical Service, Pharmacy Section, King Saud Medical City, [5]Alamal Mental Health Hospital, Ministry of Health, Jazan, Saudi Arabia

Abstract

Background: Hormonal contraceptives (HC) are used for birth control and the treatment of premenopausal syndrome. Mood changes represent the leading reported cause of discontinuation of HC. Changes in mood vary from mild disturbances to severe clinical depression. **Objectives:** This study aims to estimate the prevalence of depression among HC users who visit primary health care centers in the Jazan Province of Saudi Arabia and to identify psycho-social factors that may predispose HC users to depression. **Methods:** A self-administered questionnaire was distributed among women who visited five primary health care centers in the Jazan Province. The survey included questions about socio-demographic information and an Arabic adaptation of the Beck Depression Inventory. **Results:** Among the 904 women surveyed, the prevalence of HC use was 57.3%. Mood disturbances were observed in approximately one-third of these women. There is was a significant correlation between higher depression scores and a history of depression therapy (*P*-value < 0.001), as moderate, severe, and extreme depression was more common in those with a history of taking depression therapy. The type of contraception used was also found to be a significant factor (*P*-value = 0.01) in the degree of depression. **Conclusion:** Approximately one-third of women using HC were shown to exhibit symptoms of mood disturbance. Working, limited social support, asked whether or not they experienced living problems in the past 2 months, and having an uncomfortable or somewhat comfortable marital relationship increased the likelihood of mood disturbances. Primary health care physicians should be aware of the relatively high prevalence of mood disturbances in women using HC, to provide support and care to patients.

Keywords: Contraception, depression, estrogen, hormonal contraceptives, progesterone, survey

Introduction

Hormonal contraceptive (HC) agents are the most widely used methods to control birth and the menstrual cycle, owing to their effectiveness and practicability.[1] They contain progestin either alone or combined with estrogen. HC drugs are available in the form of oral contraceptive pills, injections, or implants.[2] Oral forms are the first choice for American women aged 15 to 44 years.[4] In the Kingdom of Saudi Arabia (KSA), HC is used by 62.9% to 78.7% of women seeking contraception.[5,6] Unfortunately, HC agents are associated with some adverse effects. Among the most widely self-reported adverse effects are mood disturbances and depression,[1,7,8] which are the most common causes for discontinuing the use of HC.[9-11] Depression represents an immense problem that affects a vast number of women all over the world.[12]

Address for correspondence: Dr. Mashael Alfaifi, Department of Pharmaceutical Service, Clinical Pharmacy Section, King Saud Medical City, Riyadh, Saudi Arabia.
E-mail: Mashael.e.alfaifi@gmail.com

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Although a considerable percentage of women report negative mood changes during the use of HC, studies of the prevalence of mood changes and/or depression among users of HC have yielded conflicting results: Some studies reported increased negative mood changes,[13-15] while others found positive effects[8,16-20] and other have failed to find any significant impact.[21-26] These inconsistencies between the different studies may be due to variations in the age of participants, lack of a valid method to detect mood changes, and non-evaluation of social circumstances. Therefore, this study aims to estimate the prevalence of depression among HC users who visited primary health care centers in the Jazan Province, KSA, and to identify psycho-social factors that may predispose HC users to depression.

Material and Methods

This is a cross-sectional study with the aim of estimating the prevalence of depression among users of hormonal contraceptives. It was conducted at five primary health care centers in Jazan Province, KSA, from August 20 to December 25, 2017. Subjects were included if they were Saudi women living in the city of Jazan, were aged 15 years or older, and had visited selected primary health care centers for routine checkups. Non-Saudi adults, children less than 15 years of age, and women who had used contraceptives for less than 3 months were excluded from the study. Written informed consent was obtained from each participant or their guardians. Maintaining confidentiality of the participants was ascertained by assigning code numbers (known to investigators only) to each participant. This study was approved by the research ethics committee of King Fahad Central Hospital in Jazan.

Settings

PHC centers were selected as the setting of the study because they are the main places where the study population would gather and they provide easy access for purposes of scientific research. Five PHC centers distributed throughout the city of Jazan were chosen, including Aldabyiah for the northern zone; North Abu-arish and Alaridah for the eastern zone; Samtha for the southern and western zones, and Mokhattat for the central zone.

Data Collection methods, instruments used, measurements

To test the validity of the questionnaire and evaluate response rate and the willingness to participate in the study, we conducted a pilot study on 100 patients, in which a structured questionnaire was used for a face-to-face interview (results summarized in Supplementary Table 1). The participants were reviewed by either a physician or a nurse. However, the response rate was very low and patients were not comfortable answering some of the questions in the presence of the health care provider. As a result, we made a change to the study design so student data collectors rather than health care providers would distribute the questionnaire to patients in the waiting area and the patient would complete the questionnaire. Data collectors were there only to answer questions the patients might have.

The questionnaire was built based partially on previous studies on the development of depression among women who use HC drugs. Some of the contents were also developed by the investigators in this study [Figure 1]. The investigators, for example, added the following questions to the questionnaire to

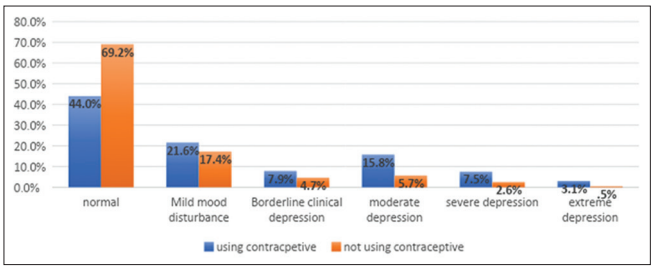

Figure 1: Percentage of different degree of depression in both groups

Table 1: Descriptive statistics of the socio-demographic variables and social factors of the questionnaire

	Frequency	Percent
Marital Status		
married	488	94.2%
separated	30	5.8%
Smoking		
smoking	43	8.4%
not smoking	468	91.6%
Menstrual period		
pre	171	34.3%
post/men	328	65.7%
Number of children		
none	37	7.2%
1 to 2	214	41.4%
more than 3	266	51.5%
Family type		
nuclear	392	77.9%
extended	111	22.1%
Education		
None	23	4.4%
elementary	42	8.1%
intermediate	106	20.5%
secondary or more	347	67.0%
Labor force participation		
In	250	50.4%
Out	246	49.6%
Household income		
very low	25	5.6%
Low	47	10.6%
medium	305	68.5%
High	68	15.3%
Type of contraceptive		
tablet	225	43.9%
patch	55	10.7%
needle	27	5.3%

Contd...

Table 1: Contd...

	Frequency	Percent
hormonal spiral	86	16.8%
copper spiral	82	16.0%
others	37	7.2%
Duration		
more than three months	52	10.4%
more than six months	83	16.5%
One year	258	51.4%
social support		
more social support	292	58.3%
less social support	209	41.7%
Living problems in the last 2 months		
Yes	178	35.2%
No	328	64.8%
relationship with husband		
Not comfortable/at all	55	10.8%
Somewhat comfortable	222	43.6%
Comfortable/very comfortable	232	45.6%
Depression therapy in the past		
Yes	63	12.2%
No	452	87.3%
Health problem in the last 2 months		
Yes	314	60.7%
No	203	39.3%
Musculoskeletal pain	123	23.8%
Limb pain	38	7.3%
Back pain	165	31.9%
GI symptoms	56	10.8%
Headache	127	24.5%
Chronic disease in the household		
None	363	73.6%
One	91	18.5%
more than 2	39	7.9%
Self-rated health		
very good/Good	380	74.1%
Fair	123	24.0%
poor/very poor	10	1.9%
Depression		
Normal	228	44.0%
Mild mood disturbance	112	21.6%
Borderline clinical depression	41	7.9%
moderate depression	82	15.8%
severe depression	39	7.5%
extreme depression	16	3.1%

evaluate whether the duration or type of HC has any effect on depression score: 1 - How long you have been using a hormonal contraceptive? and 2 - What type of contraceptive do you use?

The questionnaire included 36 items covering the following topics: Socio-demographic variables (age, education level, and household income), social factors (smoking, depression in the past, and social support level) and an Arabic adaptation of the Beck Depression Inventory (BDI).[27] The original questionnaire was in English; however, it was translated into Arabic and then translated back to English. Coding of the answers was conducted by the investigators [Figure 1].

The BDI is one of the most widely used self-reporting scales for depressive symptoms, and it has frequently been used to evaluate the severity of depression. The scale's format is clear, simple to administer, and easily understood by the population.[28] The consistency and validity of the BDI scale in the Arabic context has been elicited,[29] as it has been employed in various studies on the Saudi population.[29-31] Each item on the scale has a score of between 0 and 3, with a maximum score on the survey of 63. Higher scores indicate more depressive symptoms. A BDI score of 17 or more means that symptoms may warrant a depression diagnosis.

Statistical analysis

Normally distributed variables were expressed as means ± standard deviation, and differences between groups were tested by a Student's unpaired *T*-test. Abnormally distributed variables were summarized using the median and interquartile range (25^{th}-75^{th} percentile), and differences were tested using the Mann-Whitney test. All numerical variables were checked for normality by the Shapiro Wilk test.

Categorical variables were summarized as frequencies and percentages, and association between variables was tested using Pearson's Chi-square or Fisher-Freeman-Halton Exact tests as appropriate. A P value of < 0.05 was considered statistically significant.[32] Data analysis was carried out using SPSS version 22 and all data were analyzed anonymously.

Results

A sample of 904 women was surveyed about their use of contraception and presence of depression symptoms [Table 1]. The prevalence of contraception use was 57.3%, with 518 women using HC and 386 not using HC.

The mean age of the participants was 31.6 (SD ± 6.7). 94.2% of participants were married and only 5.8% were separated. Only 30 participants (5.8%) indicated that they were smokers. In terms of the menstrual cycle, 34.3% of participants were premenstrual while 65.7% were menstrual or postmenstrual at the time of the survey. Only 7.2% of participants had no children, while 41.4% had one or two children, and 51.5% had three or more children.

The participant's family type was nuclear in 77.9% of cases and extended in 22.1%. In terms of educational history, 4.4% of participants had received no education; 8.1% had received elementary education; 20.5% had received intermediate education; and 67% had received secondary education or above. Almost half of the participants were in the labor force. Regarding income, 68.5% of family participants earned a mild-range income, 5.6% earned a very low income, 10.6% earned a low income, and 15.3% earned a high income.

For the type of contraception used, 44% of participants were using tablets, 10.7% were using patches, 5.3% were using needles (injections), 16.8% were using hormonal spirals, 16%

were using copper spirals, and 7.2% were using other types. The duration of contraception varied among participants, with 51.4% having used contraception for more than one year, 16.5% having used it for between 6 months and one year, and 10.4% having used it for less than three months Table 3.

Regarding social support, can be formal or informal. The former represents government help; the latter is offered by family members, friends or neighbors. Formal support was weak or nonexistent for most subjects we surveyed; for example, casual laborers have no unemployment or retirement benefits. We find that 58.3% of participants had more social support, and 41.7% had less social support. Only 35.2% mentioned that they asked whether or not they experienced living problems in the past 2 months. The participant's marital relationship was not comfortable at all in 10.8% of patients, somewhat comfortable in 43.6% of patients, and comfortable to very comfortable in 45.6% of patients. 12.2% of participants answered that they had received depression therapy in the past.

More than half of the participants (60.7%) said that they had had health problems in the past two months. The most common complaint was back pain, which was found in 32% of participants, followed by headache (24.5%), muscle pain (23.8%), and gastrointestinal tract symptoms (10.8%), and limb pain (7.3%). 18.5% of participants had one chronic disease in the household, while 7.9% said that they had more than two chronic diseases in the household. 1.9% of the participants self-rated their health as poor or very poor, 24% self-rated their health as fair, and 74.1% self-rated their health as good, and 21.6% self-rated their health as very good.

Of the participants who had mild mood disturbance, 7.9% had borderline clinical depression, 15.8% had moderate depression, 7.5% had severe depression, 3.1% had extreme depression, and 44% were regular. The degree of depression was compared across various factors using a Chi-square test [Table 2]. There was a significant difference in the degree of depression based on marital status (p-value = 0.005). Cases of moderate, severe, and extreme depression were more common in participants who were separated than in those who were married. Similarly, more cases of moderate, severe, and extreme depression were observed in subjects with the following characteristics: Smokers, limited educational level, extended family type, very low or low-income, history of receiving depression therapy, and out of the labor force. Moreover, there was a statistically significant difference in the degree of depression based on the type of contraception used, contraception duration, difference in the social support received, and the presence of health problems in the last two months.

We have also studied the prevalence of various degrees of depression in those who are not using hormonal contraception. When comparing the two groups, there was a statistically significant difference, with a *P* value <0.001, indicating more cases of depression in HC users. The degree of depression is compared across various factors using a Chi-square test Table 3.

Discussion

This study was conducted to estimate the prevalence of contraceptive use and its association with depression among women in the city of Jazan, KSA, and to identify psycho-social factors that may predispose HC users to depression. Many studies have described the prevalence of contraceptive use in KSA.[5,6] However, to the best of the authors' knowledge, this is the first study to assess HC-associated mood changes in KSA.

We found the prevalence of use of contraception was 57.3% and more than half of the HC user suffered from mood disturbances. The highest prevalent was mild mood change (21.6%), while the least prevalent was severe or extreme mood disturbance (7.5% and 3.1%, respectively). The overall prevalence of clinical depression in our study was 43.3% of the respondents. This prevalence is similar to those reported in Norwegian (24%)[33] and Australian women (30%).[34] However, lower prevalence rates (10.3%-16.5%) were reported by other studies of the general female population.[12] Among HC users, even lower rates (4–10%) of depressive symptoms have been recorded.[9,16]

Major depressive disorder is the second leading cause of health-related disability in women. Women usually present a higher prevalence of depression compared to men.[12,34] Studies have attributed the negative mood changes in HC users to the progesterone content of HC and positive mood changes to estrogen.[19] Increases in progesterone are thought to be one of the causes of low mood experienced after child birth.[33] Hence, the risk of mood disorder is lower among combined contraceptive users.[29] Also, the effect of HC agents on mood may occur through psychological rather than pharmacological influence.[27]

In the present study, mood disturbances were significantly associated with less social support, existence of a living problem in the last 2 months, an uncomfortable marital relationship, and type of contraceptive. About 65% of tablet users had a mood disturbance, while 55% of hormonal spiral users had a mood disturbance. Another study showed only a minimal association between mood and current use of the LNG-IUS (Levonorgestrel Intrauterine System).[1]

History of depression was associated with mood changes in respondents. On the other hand, HC was reported to produce mood changes only in women with a history of depression.[26] Contraceptive-induced mood changes were postulated to affect vulnerable women,[24] Akın *et al.*[21] stated that living in an extended family, increase labor force , history of depression, and smoking were risk factors for depression. Analogous risk factors for depression were also reported by studies conducted on the general female population, not considering their use of HC. Saab *et al.*

Table 2: Degree of depression is compared across various factors

Independent	Variables	N%	Depression						Total	*P*
			Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression		
Marital Status	married	Count	223	106	39	71	35	14	488	0.005*
		% of Marital Status	45.7%	21.7%	8.0%	14.5%	7.2%	2.9%	100.0%	
	separated	Count	5	6	2	11	4	2	30	
		% of Marital Status	16.7%	20.0%	6.7%	36.7%	13.3%	6.7%	100.0%	
Smoking	smoking	Count	9	3	3	12	12	4	43	<0.001*
		% of Smoking	20.9%	7.0%	7.0%	27.9%	27.9%	9.3%	100.0%	
	not smoking	Count	217	108	38	69	24	12	468	
		% of Smoking	46.4%	23.1%	8.1%	14.7%	5.1%	2.6%	100.0%	
Menstrual period	pre	Count	68	47	10	33	10	3	171	0.036*
		% within a Menstrual period	39.8%	27.5%	5.8%	19.3%	5.8%	1.8%	100.0%	
	post/ Menstrual	Count	155	58	29	47	26	13	328	
		% within a Menstrual period	47.3%	17.7%	8.8%	14.3%	7.9%	4.0%	100.0%	
number of children	none	Count	17	5	3	4	7	1	37	0.260
		% within a number of children	45.9%	13.5%	8.1%	10.8%	18.9%	2.7%	100.0%	
	1-2	Count	96	51	19	28	13	7	214	
		% within number of children	44.9%	23.8%	8.9%	13.1%	6.1%	3.3%	100.0%	
	more than 3	Count	114	56	19	50	19	8	266	
		% within number of children	42.9%	21.1%	7.1%	18.8%	7.1%	3.0%	100.0%	
family type	nuclear	Count	186	86	33	61	22	4	392	<0.001*
		% within family type	47.4%	21.9%	8.4%	15.6%	5.6%	1.0%	100.0%	
	extended	Count	36	23	8	20	13	11	111	
		% within the family type	32.4%	20.7%	7.2%	18.0%	11.7%	9.9%	100.0%	
Education	none	Count	9	2	1	6	4	1	23	0.004*
		% within Education	39.1%	8.7%	4.3%	26.1%	17.4%	4.3%	100.0%	
	elementary	Count	12	6	4	9	9	2	42	
		% within Education	28.6%	14.3%	9.5%	21.4%	21.4%	4.8%	100.0%	
	intermediate	Count	52	23	2	19	7	3	106	
		% within Education	49.1%	21.7%	1.9%	17.9%	6.6%	2.8%	100.0%	
	secondary or more	Count	155	81	34	48	19	10	347	
		% within Education	44.7%	23.3%	9.8%	13.8%	5.5%	2.9%	100.0%	
labor force participation	in	Count	131	49	16	30	18	6	250	0.013*
		% of labor force participation	52.4%	19.6%	6.4%	12.0%	7.2%	2.4%	100.0%	
	out	Count	89	60	22	46	19	10	246	
		% of labor force participation	36.2%	24.4%	8.9%	18.7%	7.7%	4.1%	100.0%	
household income	very low	Count	11	4	3	4	2	1	25	0.048*
		% within household income	44.0%	16.0%	12.0%	16.0%	8.0%	4.0%	100.0%	
	low	Count	17	12	1	12	5	0	47	
		% of household income	36.2%	25.5%	2.1%	25.5%	10.6%	0.0%	100.0%	
	medium	Count	151	78	22	32	18	4	305	
		% of household income	49.5%	25.6%	7.2%	10.5%	5.9%	1.3%	100.0%	
	high	Count	39	10	9	8	1	1	68	
		% of household income	57.4%	14.7%	13.2%	11.8%	1.5%	1.5%	100.0%	

Contd...

Table 2: Contd...

Independent	Variables	N%	Depression						Total	*P*
			Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression		
depression therapy in the past	yes	Count	11	5	3	19	14	11	63	<0.001*
		% within depression therapy in the past	17.5%	7.9%	4.8%	30.2%	22.2%	17.5%	100.0%	
	no	Count	216	107	38	61	25	5	452	
		% within depression therapy in the past	47.8%	23.7%	8.4%	13.5%	5.5%	1.1%	100.0%	
type of contraceptive	tablet	Count	79	51	26	41	17	11	225	0.011*
		% within the type of contraceptive	35.1%	22.7%	11.6%	18.2%	7.6%	4.9%	100.0%	
	patch	Count	25	17	3	8	2	0	55	
		% within type of contraceptive	45.5%	30.9%	5.5%	14.5%	3.6%	0.0%	100.0%	
	needle	Count	12	3	1	5	4	2	27	
		% within the type of contraceptive	44.4%	11.1%	3.7%	18.5%	14.8%	7.4%	100.0%	
	hormonal spiral	Count	38	20	5	14	6	3	86	
		% of the type of contraceptive	44.2%	23.3%	5.8%	16.3%	7.0%	3.5%	100.0%	
	copper spiral	Count	47	18	4	7	6	0	82	
		% within type of contraceptive	57.3%	22.0%	4.9%	8.5%	7.3%	0.0%	100.0%	
	others	Count	25	2	2	4	4	0	37	
		% within type of contraceptive	67.6%	5.4%	5.4%	10.8%	10.8%	0.0%	100.0%	
how long	less than three months	Count	31	8	5	4	4	0	52	0.001*
		% of how long	59.6%	15.4%	9.6%	7.7%	7.7%	0.0%	100.0%	
	more than three months	Count	39	21	4	17	1	1	83	
		% of how long	47.0%	25.3%	4.8%	20.5%	1.2%	1.2%	100.0%	
	more than six months	Count	105	60	14	38	28	13	258	
		% of how long	40.7%	23.3%	5.4%	14.7%	10.9%	5.0%	100.0%	
	1 year	Count	43	19	18	21	6	2	109	
		% of how long	39.4%	17.4%	16.5%	19.3%	5.5%	1.8%	100.0%	
social support	more social support	Count	158	67	22	32	10	3	292	<0.001*
		% of social support	54.1%	22.9%	7.5%	11.0%	3.4%	1.0%	100.0%	
	less social support	Count	63	42	19	46	26	13	209	
		% of social support	30.1%	20.1%	9.1%	22.0%	12.4%	6.2%	100.0%	
living problems in the last two months	yes	Count	42	45	17	42	20	12	178	<0.001*
		% of living problems in the last two months	23.6%	25.3%	9.6%	23.6%	11.2%	6.7%	100.0%	
	no	Count	180	62	24	39	19	4	328	
		% of living problems in the last two months	54.9%	18.9%	7.3%	11.9%	5.8%	1.2%	100.0%	
relationship with husband	Not comfortable/ at all	Count	7	9	3	16	15	5	55	<0.001*
		% within a relationship with husband	12.7%	16.4%	5.5%	29.1%	27.3%	9.1%	100.0%	
	Somewhat comfortable	Count	76	55	27	47	11	6	222	
		% within a relationship with husband	34.2%	24.8%	12.2%	21.2%	5.0%	2.7%	100.0%	
	Comfortable/ very comfortable	Count	143	48	11	16	10	4	232	
		% within the relationship with husband	61.6%	20.7%	4.7%	6.9%	4.3%	1.7%	100.0%	

Contd...

Table 2: Contd...

Independent	Variables	N%	Depression						Total	*P*
			Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression		
a health problem in the last two months	yes	Count	96	64	34	69	36	15	314	<0.001*
		% of the health problem in the last two months	30.6%	20.4%	10.8%	22.0%	11.5%	4.8%	100.0%	
	no	Count	131	48	7	13	3	1	203	
		% of a health problem in the last two months	64.5%	23.6%	3.4%	6.4%	1.5%	0.5%	100.0%	
Musculoskeletal pain	yes	Count	40	33	8	28	11	3	123	0.027*
		% of Musculoskeletal pain	32.5%	26.8%	6.5%	22.8%	8.9%	2.4%	100.0%	
	no	Count	187	79	33	54	28	13	394	
		% of Musculoskeletal pain	47.5%	20.1%	8.4%	13.7%	7.1%	3.3%	100.0%	
Limb pain	yes	Count	9	12	2	5	5	5	38	0.001*
		% of Limb pain	23.7%	31.6%	5.3%	13.2%	13.2%	13.2%	100.0%	
	no	Count	219	100	39	77	34	11	480	
		% of Limb pain	45.6%	20.8%	8.1%	16.0%	7.1%	2.3%	100.0%	
Back pain	yes	Count	52	37	18	41	11	6	165	<0.001*
		% of Back pain	31.5%	22.4%	10.9%	24.8%	6.7%	3.6%	100.0%	
	no	Count	176	75	23	41	28	10	353	
		% of Back pain	49.9%	21.2%	6.5%	11.6%	7.9%	2.8%	100.0%	
GI symptoms	yes	Count	9	12	10	14	11	0	56	<0.001*
		% of GI symptoms	16.1%	21.4%	17.9%	25.0%	19.6%	0.0%	100.0%	
	no	Count	219	100	31	68	28	16	462	
		% of GI symptoms	47.4%	21.6%	6.7%	14.7%	6.1%	3.5%	100.0%	
A headache	yes	Count	32	29	16	28	16	6	127	<0.001*
		% of Headache	25.2%	22.8%	12.6%	22.0%	12.6%	4.7%	100.0%	
	no	Count	196	83	25	54	23	10	391	
		% of Headache	50.1%	21.2%	6.4%	13.8%	5.9%	2.6%	100.0%	
chronic disease in the house hold	none	Count	180	79	33	48	16	7	363	<0.001*
		% of chronic disease in the house hold	49.6%	21.8%	9.1%	13.2%	4.4%	1.9%	100.0%	
	one	Count	31	23	5	20	7	5	91	
		% of chronic disease in the household	34.1%	25.3%	5.5%	22.0%	7.7%	5.5%	100.0%	
	more than 2	Count	6	7	3	7	12	4	39	
		% of chronic disease in the household	15.4%	17.9%	7.7%	17.9%	30.8%	10.3%	100.0%	
self-rated health	very good/ Good	Count	205	77	35	42	14	7	380	<0.001*
		% within the self-rated health	53.9%	20.3%	9.2%	11.1%	3.7%	1.8%	100.0%	
	fair	Count	22	33	6	35	20	7	123	
		% within the self-rated health	17.9%	26.8%	4.9%	28.5%	16.3%	5.7%	100.0%	
	poor/very poor	Count	0	0	0	3	5	2	10	
		% within self rated health	0.0%	0.0%	0.0%	30.0%	50.0%	20.0%	100.0%	

Comments/abbreviations: GI=Gastrointestinal. *indicates statistically significant results with a *P*<0.05

found that psychologically distressed women had more children, less education, lower income, less social support, an uncomfortable marital relationship, and participated in the labor force.

Our study was subject to several limitations. This is a cross-sectional study which does not allow for determining causation. The data collected from the questionnaire was self-reported and we cannot rule out recall bias, inaccuracy, lack of patient understanding of some questions, or limited patient knowledge. This study was conducted in one region and mainly at large outpatient clinics. We cannot determine from this study whether the addition of rural areas or smaller clinics would have affected the results.

Table 3: Comparison between women using contraceptive therapy versus non users and prevalence of depression

			Depression						Total	*P*
			Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression		
Group	Using contraceptive	Count	228	112	41	82	39	16	518	<0.001*
		% within group	44.0%	21.6%	7.9%	15.8%	7.5%	3.1%	100.0%	
	Not using contraceptive	Count	267	67	18	22	10	2	386	
		% within group	69.2%	17.4%	4.7%	5.7%	2.6%	0.5%	100.0%	

- This study had some points of strength including the use of a valid and reliable scale (namely the BDI scale) to assess mood changes and their severity in respondents.
- The study was conducted in 5 main primary care centers with a reasonable sample size. History of depression was evaluated, and women of different age groups were included to fill the gap in knowledge in previous studies on the same subject.

Conclusion

Mood disturbances affected more than half of women using different types of contraceptives included HC type which accounted for thirty-eight percent. The factors that significantly increased the likelihood of having mood disturbances included working, having less social support, having had a living problem in the last 2 months, and having an uncomfortable or somewhat comfortable marital relationship. Contraceptive tablets was associated with a significant increased in mood disturbance compared to other types of HC forms, such as needles, hormonal spirals, and cooper spirals. Health education should be delivered to women at risk. Primary health care physicians and family medicine physicians should be aware of the relatively high prevalence of mood disturbances, and pharmacist counseling regarding contraceptive drugs should be incorporated to provide support and care to patients in need.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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Supplementary Table

Descriptive statistics:

	n	Minimum	Maximum	Mean	Std. deviation
Age	50	20	46	30.92	5.645

	Frequency	Percent
Marital Status		
married	49	98.0
separated	1	2.0
Smoking		
smoking	1	2.0
not smoking	49	98.0
Menstrual period		
pre	14	28.0
post/men	36	72.0
number of children		
none	3	6.0
1-2	23	46.0
more than 3	24	48.0
family type		
nuclear	44	88.0
extended	6	12.0
Education		
elementary	2	4.0
intermediate	3	6.0
secondary or more	45	90.0
labor force participation		
in	18	36.0
out	32	64.0
household income		
very low	2	4.0
low	6	12.0
medium	34	68.0
high	4	8.0
missing	4	8.0
type of contraceptive		
tablet	22	44.0
patch	2	4.0
hormonal spiral	2	4.0
copper spiral	10	20.0
others	14	28.0
Duration		
more than 3 months	11	22.0
more than 6 months	14	28.0
1 year	22	44.0
missing	3	6.0
social support		
more social support	38	76.0
less social support	12	24.0
living problems in the last 2 months		
yes	11	22.0
no	39	78.0
relationship with husband		
Not comfortable/at all	3	6.0
Somewhat comfortable	14	28.0
Comfortable/very comfortable	32	64.0

Contd...

Contd...

	Frequency	Percent
missing	1	2.0
health problem in the last 2 months		
yes	28	56.0
no	22	44.0
Musculoskeletal pain	12	24.0
Limb pain	3	6.0
Back pain	20	40.0
GI symptoms	3	6.0
Headache	9	18.0
chronic disease in the household		
none	41	82.0
1	7	14.0
more than 2	2	4.0
self rated health		
very good/Good	42	84.0
fair	8	16.0
Depression		
normal	29	58.0
Mild mood disturbance	12	24.0
Borderline clinical depression	4	8.0
moderate depression	5	10.0

Independent	Variables	N%	depression				Total	P
			normal	Mild mood disturbance	Borderline clinical depression	moderate depression		
number of children	none	Count	3	0	0	0	3	0.74
		% within number of children	100.0%	0.0%	0.0%	0.0%	100.0%	
	1-2	Count	13	6	1	3	23	
		% within number of children	56.5%	26.1%	4.3%	13.0%	100.0%	
	more than 3	Count	13	6	3	2	24	
		% within number of children	54.2%	25.0%	12.5%	8.3%	100.0%	
family type	nuclear	Count	25	10	4	5	44	0.67
		% within family type	56.8%	22.7%	9.1%	11.4%	100.0%	
	extended	Count	4	2	0	0	6	
		% within family type	66.7%	33.3%	0.0%	0.0%	100.0%	
Education	elementary	Count	2	0	0	0	2	0.67
		% within Education	100.0%	0.0%	0.0%	0.0%	100.0%	
	intermediate	Count	3	0	0	0	3	
		% within Education	100.0%	0.0%	0.0%	0.0%	100.0%	
	secondary or more	Count	24	12	4	5	45	
		% within Education	53.3%	26.7%	8.9%	11.1%	100.0%	
labor force participation	in	Count	13	3	1	1	18	0.50
		% within labor force participation	72.2%	16.7%	5.6%	5.6%	100.0%	
	out	Count	16	9	3	4	32	
		% within labor force participation	50.0%	28.1%	9.4%	12.5%	100.0%	
household income	very low	Count	1	0	0	1	2	0.00
		% within household income	50.0%	0.0%	0.0%	50.0%	100.0%	
	low	Count	2	4	0	0	6	
		% within household income	33.3%	66.7%	0.0%	0.0%	100.0%	
	medium	Count	24	7	2	1	34	
		% within household income	70.6%	20.6%	5.9%	2.9%	100.0%	
	high	Count	2	0	2	0	4	
		% within household income	50.0%	0.0%	50.0%	0.0%	100.0%	
depression therapy in the past	yes	Count	0	1	0	1	2	0.15
		% within depression therapy in the past	0.0%	50.0%	0.0%	50.0%	100.0%	
	no	Count	29	11	4	4	48	
		% within depression therapy in the past	60.4%	22.9%	8.3%	8.3%	100.0%	
type of contraceptive	tablet	Count	6	8	4	4	22	0.03
		% within type of contraceptive	27.3%	36.4%	18.2%	18.2%	100.0%	
	patch	Count	1	1	0	0	2	
		% within type of contraceptive	50.0%	50.0%	0.0%	0.0%	100.0%	
	hormonal spiral	Count	1	1	0	0	2	
		% within type of contraceptive	50.0%	50.0%	0.0%	0.0%	100.0%	
	copper spiral	Count	7	2	0	1	10	
		% within type of contraceptive	70.0%	20.0%	0.0%	10.0%	100.0%	
		Count	14	0	0	0	14	
		% within type of contraceptive	100.0%	0.0%	0.0%	0.0%	100.0%	
Duration	more than 3 months	Count	6	4	0	1	11	0.39
		% within how long	54.5%	36.4%	0.0%	9.1%	100.0%	
	more than 6 months	Count	9	3	0	2	14	
		% within how long	64.3%	21.4%	0.0%	14.3%	100.0%	
	1 year	Count	12	5	4	1	22	
		% within how long	54.5%	22.7%	18.2%	4.5%	100.0%	
living problems in the last 2 months	yes	Count	2	4	1	4	11	0.00
		% within living problems in the last 2 months	18.2%	36.4%	9.1%	36.4%	100.0%	
	no	Count	27	8	3	1	39	
		% within living problems in the last 2 months	69.2%	20.5%	7.7%	2.6%	100.0%	

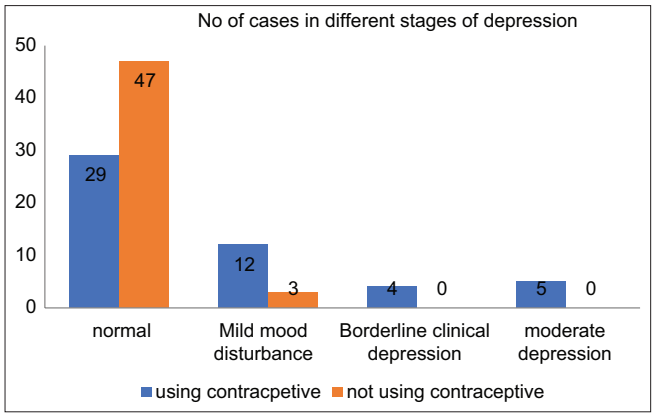
Contd...

Contd...

Independent	Variables	N%	depression				Total	P
			normal	Mild mood disturbance	Borderline clinical depression	moderate depression		
relationship with husband	Not comfortable/ at all	Count	2	0	1	0	3	0.03
		% within relationship with husband	66.7%	0.0%	33.3%	0.0%	100.0%	
	Somewhat comfortable	Count	4	5	3	2	14	
		% within relationship with husband	28.6%	35.7%	21.4%	14.3%	100.0%	
	Comfortable/ very comfortable	Count	23	7	0	2	32	
		% within relationship with husband	71.9%	21.9%	0.0%	6.3%	100.0%	
health problem in the last 2 months	yes	Count	11	9	4	4	28	0.02
		% within health problem in the last 2 months	39.3%	32.1%	14.3%	14.3%	100.0%	
	no	Count	18	3	0	1	22	
		% within health problem in the last 2 months	81.8%	13.6%	0.0%	4.5%	100.0%	
Musculoskeletal pain	yes	Count	5	5	1	1	12	0.42
		% within Musculoskeletal pain	41.7%	41.7%	8.3%	8.3%	100.0%	
	no	Count	24	7	3	4	38	
		% within Musculoskeletal pain	63.2%	18.4%	7.9%	10.5%	100.0%	
Limb pain	yes	Count	1	2	0	0	3	0.34
		% within Limb pain	33.3%	66.7%	0.0%	0.0%	100.0%	
	no	Count	28	10	4	5	47	
		% within Limb pain	59.6%	21.3%	8.5%	10.6%	100.0%	
Back pain	yes	Count	9	4	3	4	20	0.09
		% within Back pain	45.0%	20.0%	15.0%	20.0%	100.0%	
	no	Count	20	8	1	1	30	
		% within Back pain	66.7%	26.7%	3.3%	3.3%	100.0%	
GI symptoms	yes	Count	0	1	1	1	3	0.10
		% within GI symptoms	0.0%	33.3%	33.3%	33.3%	100.0%	
	no	Count	29	11	3	4	47	
		% within GI symptoms	61.7%	23.4%	6.4%	8.5%	100.0%	
Headache	yes	Count	3	3	2	1	9	0.23
		% within Headache	33.3%	33.3%	22.2%	11.1%	100.0%	
	no	Count	26	9	2	4	41	
		% within Headache	63.4%	22.0%	4.9%	9.8%	100.0%	
self rated health	very good/ Good	Count	28	7	3	4	42	0.02
		% within self rated health	66.7%	16.7%	7.1%	9.5%	100.0%	
	fair	Count	1	5	1	1	8	
		% within self rated health	12.5%	62.5%	12.5%	12.5%	100.0%	

Comparison of depression between group 1 and group 2

Independent	Variables		depression				Total	P
			normal	Mild mood disturbance	Borderline clinical depression	moderate depression		
Group	using contraceptive	Count	29	12	4	5	50	0.00
		% within Group	58.0%	24.0%	8.0%	10.0%	100.0%	
	not using contraceptive	Count	47	3	0	0	50	
		% within Group	94.0%	6.0%	0.0%	0.0%	100.0%	



This questionnaire is a tool to study the relationship of depression with drugs contraception, Just fill in this questionnaire you agree voluntary consent to participate in this study and have the right to withdraw at any time without giving any reasons .

1. Age: 15-29 ☐ 30-39 ☐ 40-49 ☐ more than 50 ☐
2. Marital status: Married ☐ Widowed/divorced/separated☐
3. Smoking: Yes ☐ No ☐
4. Menstrual period: Premenstrual ☐ Menstrual/Postmenstrual ☐
5. Number of children: None ☐ 1-2 ☐ more than 3 ☐
6. Family type: Nuclear ☐ Extended ☐
7. Education level: None ☐ Elementary ☐ Intermediate ☐ Secondary or more ☐
8. Labor force participation: In labor force ☐ Out of labor force ☐
9. Household income: low ☐ Medium ☐ High ☐
10. Have you ever received any depression therapy in the past? Yes ☐ No ☐
11. Have you use contraceptive? Yes ☐ No ☐
12. What type of contraceptive do you use? Tablet ☐ patches ☐ Needle ☐ Hormonal spiral ☐ copper spiral ☐ other:… ☐
13. How long you have been using Hormonal contraceptive?

more than 3months ☐ more than 6months ☐ 1 years ☐

14. Social Support: more social support ☐ less social support ☐
15. Reporting a living problem in the past 2 months: Yes ☐ No ☐
16. Relationship with husband:

Not comfortable/at all ☐
Somewhat comfortable ☐
Comfortable/very comfortable ☐

17. Reporting a health problem before using oral contraceptive : Yes ☐ No ☐

18. (If yes choice at least one)

Musculoskeletal pain Limp pain Back pain Gastro-intestinal symptoms Headache

19. Presence of chronic disease in the household : None ☐ 1 ☐ more than 2 ☐
20. Self-rated Health: very good/good ☐ Fair ☐ poor/very poor ☐

21) Sedness
0 I do not feel sad
1 I feel sad much of the time
2 I am sad all the time
3 I am so sad unhappy that I can't stand it.

22) Pessimism
0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel the future is hopeless and that things cannot improve.

23) Past failure
0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

24) Loss of pleasure
0 I get as much pleasure as I ever did form the things I enjoy.
1 I don't enjoy things much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 can't get any pleasure from the things I used to enjoy

26) self-criticalness
0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

27) suicidal thoughts or wishes
0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

28) crying
0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

29) Agitation
0 I am no more irritated by things than I ever was.
1 I am slightly more irritated now than usual.
2 I am quite annoyed or irritated a good deal of the time.
3 I feel irritated all the time.

Contd...

25) Guilty fallings
0 I don't feel particularly guilty
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

26) Punishment feelings
0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

27) Self-dislike
0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

30) Loss of interest
0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

31) Indecisiveness
0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions more than I used to.
3 I can't make decisions at all anymore.

32) worthlessness
0 I do not feel I am worthless
1 I don't consider my self as worth while and useful as I used to
2 I feel more worthless as compared to other people
3 I feel utterly worthless

Please select the appropriate answer in the table below (one answer for each question)

33) Loss of Energy
0. I have as much energy as ever.
1. I have less energy than I used to have.
2. I don't have enough energy to do very much.
3. I don't have enough energy to do anything.

34) Changes in Sleeping Pattern
0. I have not experienced any change in my sleeping pattern. 1. I sleep somewhat less than usual. -or-
I sleep somewhat more than usual. 2. I sleep a lot less than usual. -or-
I sleep a lot more than usual. 3. I sleep most of the day. -or-
I wake up 1-2 hours early and can't get back to sleep.

35) Irritability
0. I am no more irritable than usual.
1. I am more irritable than usual.
2. I am much more irritable than usual. 3. I am irritable all the time.

36) Changes in Appetite
0. I have not experienced any change in my appetite.
1. My appetite is somewhat less than usual. -or- My appetite is somewhat greater than usual.
2. My appetite is much less than usual. -or- My appetite is much greater than usual.
3. I have no appetite at all. -or- I crave food all the time.

37) Concentration Difficulty
0. I can concentrate as well as ever.
1. I can't concentrate as well as usual.
2. It's hard to keep my mind on anything for very long. 3.
I find I can't concentrate on anything.

38) Tiredness or Fatigue
0. I am no more tired or fatigued than usual.
1. I get more tired or fatigued more easily than usual.
2. I am too tired or fatigued to do a lot of the things I used to do. 3. I am too tired or fatigued to do most of the things I used to do.

39) Loss of Interest in Sex
0. I have not noticed any recent change in my interest in sex.
1. I am less interested in sex than I used to be.
2. I am much less interested in sex now.
3. I have lost interest in sex completely.