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

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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. They contain progestin either alone or combined with estrogen. HC drugs are available in the form of oral contraceptive pills, injections, or implants. Oral forms are the first choice for American women aged 15 to 44 years. In the Kingdom of Saudi Arabia (KSA), HC is used by 62.9% to 78.7% of women seeking contraception. Unfortunately, HC agents are associated with some adverse effects. Among the most widely self-reported adverse effects are mood disturbances and depression, which are the most common causes for discontinuing the use of HC. Depression represents an immense problem that affects a vast number of women all over the world.

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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: Percentage of different degree of depression in both groups |
|---------------------------------------------------------------|
| Marital Status | Frequency | Percent |
| 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/meal | 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...
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 (25th-75th 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.[30] 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. 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%) and Australian women (30%). However, lower prevalence rates (10.3%‑16.5%) were reported by other studies of the general female population. Among HC users, even lower rates (4%‑10%) of depressive symptoms have been recorded.

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. Studies have attributed the negative mood changes in HC users to the progesterone content of HC and positive mood changes to estrogen. Increases in progesterone are thought to be one of the causes of low mood experienced after child birth. Hence, the risk of mood disorder is lower among combined contraceptive users. Also, the effect of HC agents on mood may occur through psychological rather than pharmacological influence.

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).

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. Contraceptive-induced mood changes were postulated to affect vulnerable women. Akin et al. stated that living in an extended family, increase labor force, 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% | Normal | Mild mood disturbance | Borderline clinical depression | Moderate depression | Severe depression | Extreme depression | Total | P       |
|-----------------------|----|--------|-----------------------|-------------------------------|---------------------|------------------|-------------------|-------|---------|
| Marital Status        |    |        |                       |                               |                     |                  |                   |       |         |
| married               | 488| 223    | 106                   | 39                            | 71                  | 35               | 14                | 468   | 0.005*  |
| separated             | 30 | 3      | 2                     | 2                             | 10                  | 9                | 4                 | 30    | 100.0%  |
| Smoking               |    |        |                       |                               |                     |                  |                   |       |         |
| smoking               | 468| 217    | 108                   | 38                            | 69                  | 24               | 12                | 12    | <0.001* |
| not smoking           | 30 | 9      | 3                     | 3                             | 12                  | 12               | 4                 | 12    | 100.0%  |
| Menstrual period      |    |        |                       |                               |                     |                  |                   |       |         |
| pre                   | 171| 68     | 47                    | 10                            | 33                  | 10               | 3                 | 171   | 0.036*  |
| post/Menstrual period | 30 | 155    | 58                    | 29                            | 47                  | 26               | 13                | 328   | 100.0%  |
| number of children    |    |        |                       |                               |                     |                  |                   |       |         |
| none                  | 43 | 17     | 5                     | 3                             | 4                   | 7                | 1                 | 37    | 0.260   |
| 1-2                   | 214| 96     | 51                    | 19                            | 28                  | 13               | 7                 | 214   | 100.0%  |
| more than 3           | 266| 114    | 56                    | 19                            | 50                  | 19               | 8                 | 266   | 100.0%  |
| family type           |    |        |                       |                               |                     |                  |                   |       |         |
| nuclear               | 392| 186    | 86                    | 33                            | 61                  | 22               | 4                 | 392   | <0.001* |
| extended              | 111| 36     | 23                    | 8                             | 20                  | 13               | 11                | 111   | 100.0%  |
| Education             |    |        |                       |                               |                     |                  |                   |       |         |
| none                  | 23 | 9      | 2                     | 1                             | 6                   | 4                | 1                 | 23    | 0.004*  |
| elementary            | 42 | 12     | 6                     | 4                             | 9                   | 9                | 2                 | 42    | 100.0%  |
| intermediate          | 106| 52     | 23                    | 2                             | 19                  | 7                | 3                 | 106   | 100.0%  |
| secondary or more     | 347| 155    | 81                    | 34                            | 48                  | 19               | 10                | 347   | 100.0%  |
| labor force participation | 250 | 131  | 49                    | 16                            | 30                  | 18               | 6                 | 250   | 0.013*  |
| in                    | 246| 89     | 60                    | 22                            | 46                  | 19               | 10                | 246   | 100.0%  |
| out                   | 41 | 36     | 24                    | 8                             | 18                  | 7                | 4                 | 41    | 100.0%  |
| household income      |    |        |                       |                               |                     |                  |                   |       |         |
| very low              | 100| 11     | 4                     | 3                             | 4                   | 2                | 1                 | 25    | 0.048*  |
| low                   | 47 | 17     | 12                    | 1                             | 12                  | 5                | 0                 | 47    | 100.0%  |
| medium                | 305| 151    | 78                    | 22                            | 32                  | 18               | 4                 | 305   | 100.0%  |
| high                  | 68 | 39     | 10                    | 9                             | 8                   | 1                | 1                 | 68    | 100.0%  |

Contd...
Table 2: Contd...

| Independent Variables | N% | Depressed | Normal | Mild mood disturbance | Borderline clinical depression | Moderate depression | Severe depression | Extreme depression | Total | P |
|------------------------|----|-----------|--------|-----------------------|-------------------------------|----------------------|------------------|-------------------|-------|---|
| depression therapy in the past |    |           |        |                       |                               |                      |                  |                   |       |   |
| yes                    |    |           |        |                       |                               |                      |                  |                   |       | <0.001* |
| no                     | 216 | 107       | 38     | 61                    | 25                            | 5                    |                   |                   | 452   |   |
| % within depression therapy in the past |    |           |        |                       |                               |                      |                  |                   |       |   |
| type of contraceptive |    |           |        |                       |                               |                      |                  |                   |       |   |
| tablet                 |    |           |        |                       |                               |                      |                  |                   |       | 0.011* |
| patch                  |    |           |        |                       |                               |                      |                  |                   |       |   |
| needle                 |    |           |        |                       |                               |                      |                  |                   |       |   |
| hormonal spiral        |    |           |        |                       |                               |                      |                  |                   |       |   |
| copper spiral          |    |           |        |                       |                               |                      |                  |                   |       |   |
| others                 |    |           |        |                       |                               |                      |                  |                   |       |   |
| how long               |    |           |        |                       |                               |                      |                  |                   |       |   |
| less than three months | 31  | 8         | 5      | 4                     | 4                            | 0                    |                   |                   | 52    | 0.001* |
| % of how long          |    |           |        |                       |                               |                      |                  |                   |       |   |
| more than three months | 39  | 21        | 4      | 17                    | 1                             | 1                    |                   |                   | 83    |   |
| more than six months   | 105 | 60        | 14     | 38                    | 28                            | 13                   |                   |                   | 258   |   |
| % of how long          |    |           |        |                       |                               |                      |                  |                   |       |   |
| 1 year                 | 43  | 19        | 18     | 21                    | 6                             | 2                    |                   |                   | 109   |   |
| % of how long          |    |           |        |                       |                               |                      |                  |                   |       |   |
| social support         |    |           |        |                       |                               |                      |                  |                   |       |   |
| more social support    | 158 | 67        | 22     | 32                    | 10                            | 3                    |                   |                   | 292   | <0.001* |
| % of social support    |    |           |        |                       |                               |                      |                  |                   |       |   |
| less social support    | 63  | 42        | 19     | 46                    | 26                            | 13                   |                   |                   | 209   |   |
| % of social support    |    |           |        |                       |                               |                      |                  |                   |       |   |
| living problems in the last two months |    |           |        |                       |                               |                      |                  |                   |       |   |
| yes                    | 42  | 45        | 17     | 42                    | 20                            | 12                   | 178               |                   | <0.001* |
| % of living problems in the last two months |    |           |        |                       |                               |                      |                  |                   |       |   |
| no                     | 180 | 62        | 24     | 39                    | 19                            | 4                    | 328               |                   |       |   |
| % of living problems in the last two months |    |           |        |                       |                               |                      |                  |                   |       |   |
| relationship with husband |    |           |        |                       |                               |                      |                  |                   |       |   |
| Not comfortable/ at all | 7   | 9         | 3      | 16                    | 15                            | 5                    | 55                |                   | <0.001* |
| % within a relationship with husband |    |           |        |                       |                               |                      |                  |                   |       |   |
| Somewhat comfortable   | 76  | 55        | 27     | 47                    | 11                            | 6                    | 222               |                   |       |   |
| % within a relationship with husband |    |           |        |                       |                               |                      |                  |                   |       |   |
| Comfortable/ very comfortable | 143 | 48        | 11     | 16                    | 10                            | 4                    | 232               |                   |       |   |
| % within the relationship with husband |    |           |        |                       |                               |                      |                  |                   |       |   |
| Independent Variables | N% | Depressed (%) | Total |
|-----------------------|----|---------------|-------|
| a health problem in the last two months yes | Count 96 | 64 | 34 | 69 | 36 | 15 | 314 <0.001* |
| no | Count 131 | 48 | 7 | 13 | 3 | 1 | 203 |
| Musculoskeletal pain yes | Count 40 | 33 | 8 | 28 | 11 | 3 | 123 0.027* |
| no | Count 187 | 79 | 33 | 54 | 28 | 13 | 394 |
| Limb pain yes | Count 9 | 12 | 2 | 5 | 5 | 3 | 38 0.001* |
| no | Count 219 | 100 | 39 | 77 | 34 | 11 | 480 |
| Back pain yes | Count 52 | 37 | 18 | 41 | 11 | 6 | 165 <0.001* |
| no | Count 176 | 75 | 23 | 41 | 28 | 10 | 353 |
| GI symptoms yes | Count 9 | 12 | 10 | 14 | 11 | 0 | 56 <0.001* |
| no | Count 219 | 100 | 31 | 68 | 28 | 16 | 462 |
| A headache yes | Count 32 | 29 | 16 | 28 | 16 | 6 | 127 <0.001* |
| no | Count 196 | 83 | 25 | 54 | 23 | 10 | 391 |
| chronic disease in the household none | Count 180 | 79 | 33 | 48 | 16 | 7 | 363 <0.001* |
| one | Count 31 | 23 | 5 | 20 | 7 | 5 | 91 |
| more than 2 | Count 6 | 7 | 3 | 7 | 12 | 4 | 39 |
| self-rated health very good/Good | Count 205 | 77 | 35 | 42 | 14 | 7 | 380 <0.001* |
| fair | Count 22 | 33 | 6 | 35 | 20 | 7 | 123 |
| poor/very poor | Count 0 | 0 | 0 | 0 | 5 | 2 | 10 |

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

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

| Group           | Using contraceptive | Count | Normal | Mild mood disturbance | Borderline clinical depression | Moderate depression | Severe depression | Extreme depression | Total | P  |
|-----------------|---------------------|-------|--------|-----------------------|-------------------------------|---------------------|------------------|-------------------|-------|----|
|                 | % within group      |       |        |                       |                               |                     |                  |                   |       |    |
| Using contraceptive | 44.0%               | 228   | 69.2%  | 112                   | 41                            | 82                  | 39               | 16                | 518   | <0.001* |
| Not using contraceptive | 62.0%               | 267   | 69.2%  | 67                    | 18                            | 22                  | 10               | 2                 | 386   |  |

### 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...

|                          | Frequency | Percent |
|--------------------------|-----------|---------|
| 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    |

Contd...
| Independent Variables | N% | \( N \) | \( \% \) within number of children | \( \% \) within family type | \( \% \) within labor force participation | \( \% \) within household income | \( \% \) within depression therapy in the past | \( \% \) within type of contraceptive | \( \% \) within how long | \( \% \) within living problems in the last 2 months | Total | \( P \) |
|-----------------------|----------------|---------|---------------------------------|----------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------|-----------------|--------------------------------|--------|-------|
| number of children    | none           | Count   | 3                               | 100.0%                     | 0.0%                          | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 3      | 0.74  |
|                       | 1-2            | Count   | 6                               | 100.0%                     | 0.0%                          | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 3      | 0.74  |
|                       | more than 3    | Count   | 6                               | 0.0%                       | 100.0%                        | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 3      | 0.74  |
| family type           | nuclear        | Count   | 4                               | 0.0%                       | 100.0%                        | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 4      | 0.67  |
|                       | extended       | Count   | 2                               | 0.0%                       | 100.0%                        | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 2      | 0.67  |
| Education             | elementary     | Count   | 2                               | 0.0%                       | 100.0%                        | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 2      | 0.67  |
|                       | intermediate   | Count   | 3                               | 100.0%                     | 0.0%                          | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 3      | 0.67  |
|                       | secondary or   | Count   | 24                              | 53.3%                      | 26.7%                         | 8.9%                          | 11.1%                         | 100.0%                   | 0.0%            | 0.0%                          | 45     | 0.50  |
|                       | more           | Count   | 13                              | 72.2%                      | 16.7%                         | 5.6%                          | 5.6%                          | 100.0%                   | 0.0%            | 0.0%                          | 18     | 0.50  |
| labor force           | in             | Count   | 13                              | 0.0%                       | 100.0%                        | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 1     | 0.00  |
|                       | out            | Count   | 16                              | 50.0%                      | 28.1%                         | 9.4%                          | 12.5%                         | 100.0%                   | 0.0%            | 0.0%                          | 4      | 0.00  |
| household income      | very low       | Count   | 1                               | 0.0%                       | 50.0%                         | 0.0%                          | 0.0%                          | 50.0%                     | 0.0%            | 0.0%                          | 1      | 0.00  |
|                       | low            | Count   | 2                               | 33.3%                      | 0.0%                          | 66.7%                         | 0.0%                          | 0.0%                      | 100.0%          | 0.0%                          | 6      | 0.00  |
|                       | medium         | Count   | 24                              | 70.6%                      | 20.6%                         | 5.9%                          | 2.9%                          | 100.0%                   | 0.0%            | 0.0%                          | 34     | 0.39  |
|                       | high           | Count   | 2                               | 50.0%                      | 0.0%                          | 0.0%                          | 50.0%                         | 0.0%                      | 100.0%          | 0.0%                          | 4      | 0.00  |
| depression therapy    | yes            | Count   | 0                               | 0.0%                       | 50.0%                         | 0.0%                          | 0.0%                          | 50.0%                     | 0.0%            | 0.0%                          | 2      | 0.15  |
|                       | no             | Count   | 29                              | 0.0%                       | 50.0%                         | 0.0%                          | 0.0%                          | 50.0%                     | 0.0%            | 0.0%                          | 48     | 0.00  |
| type of contraceptive | tablet         | Count   | 6                               | 27.3%                      | 36.4%                         | 18.2%                         | 18.2%                         | 100.0%                   | 0.0%            | 0.0%                          | 22     | 0.03  |
|                       | patch          | Count   | 1                               | 100.0%                     | 0.0%                          | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 2      | 0.00  |
|                       | hormonal       | Count   | 1                               | 50.0%                      | 50.0%                         | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 2      | 0.00  |
|                       | spiral         | Count   | 7                               | 50.0%                      | 50.0%                         | 0.0%                          | 0.0%                          | 100.0%                   | 0.0%            | 0.0%                          | 10     | 0.00  |
|                       | copper spiral  | Count   | 14                              | 70.0%                      | 20.0%                         | 0.0%                          | 10.0%                         | 100.0%                   | 0.0%            | 0.0%                          | 14     | 0.00  |
| Duration              | more than 3    | Count   | 6                               | 54.5%                      | 36.4%                         | 0.0%                          | 9.1%                          | 100.0%                   | 0.0%            | 0.0%                          | 11     | 0.39  |
|                       | more than 6    | Count   | 9                               | 54.5%                      | 36.4%                         | 0.0%                          | 9.1%                          | 100.0%                   | 0.0%            | 0.0%                          | 14     | 0.00  |
|                       | 1 year         | Count   | 12                              | 64.3%                      | 21.4%                         | 0.0%                          | 14.3%                         | 100.0%                   | 0.0%            | 0.0%                          | 22     | 0.00  |
| living problems       | yes            | Count   | 2                               | 54.5%                      | 22.7%                         | 18.2%                         | 4.5%                          | 100.0%                   | 0.0%            | 0.0%                          | 11     | 0.00  |
|                       | no             | Count   | 27                              | 18.2%                      | 36.4%                         | 9.1%                          | 36.4%                         | 100.0%                   | 0.0%            | 0.0%                          | 39     | 0.00  |

Contd...
| Independent Variables | N% | depression | Total | P |
|-----------------------|----|------------|-------|---|
| Healthy problem in the last 2 months | | | | |
| yes | Count 20 | 66.7% | 33.3% | 0.0% | 100.0% |
| no | Count 54 | 24.0% | 20.0% | 42.9% | 100.0% |
| Musculoskeletal pain | yes | Count 20 | 41.7% | 8.3% | 100.0% |
| no | Count 31 | 61.3% | 16.1% | 22.6% | 100.0% |
| Limb pain | yes | Count 20 | 66.7% | 0.0% | 100.0% |
| no | Count 31 | 38.7% | 5.1% | 56.2% | 100.0% |
| Back pain | yes | Count 20 | 66.7% | 16.7% | 100.0% |
| no | Count 31 | 61.3% | 44.4% | 34.4% | 100.0% |
| GI symptoms | yes | Count 20 | 33.3% | 33.3% | 33.3% | 100.0% |
| no | Count 31 | 61.3% | 16.1% | 22.6% | 100.0% |
| Headache | yes | Count 20 | 33.3% | 22.2% | 11.1% | 100.0% |
| no | Count 31 | 66.7% | 33.3% | 66.7% | 100.0% |
| Self rated health | very good/ | Count 20 | 66.7% | 16.7% | 100.0% |
| Good | Count 31 | 61.3% | 19.4% | 21.3% | 100.0% |
| fair | Count 20 | 66.7% | 16.7% | 100.0% |

Comparison of depression between group 1 and group 2

| Independent Variables | N% | depression | Total | P |
|-----------------------|----|------------|-------|---|
| Group using contraceptives | Count 29 | 58.0% | 24.0% | 10.0% | 100.0% |
| not using contraceptives | Count 47 | 94.0% | 6.0% | 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 Limp pain □ Back pain □ Gastro‑intestinal □ 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 I 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...
| Question | Description |
|----------|-------------|
| 25) Guilty feelings | 0 I don't feel particularly guilty. 1 I feel guilty a good part of the time. 2 I feel 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 myself as worthwhile 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):