Original Research Article

Awareness about the Effect of Contraceptive Drugs in the Oral and Periodontal Health among Women in Reproductive Age in Military Hospital at Omdurman (Sudan) in 2018_2019.

Abstract

Background: oral contraceptives OCs drugs considered as a risk factor for the initiation and progression of periodontal diseases. They affect the oral health by causing gingival redness, bleeding, enlargement, tooth mobility and reduce the quality of female's life. **The aim**s of this study was to assess the awareness of women at reproductive age about the effect of oral contraceptive drugs on their periodontal and oral health, assess knowledge about the effect of contraceptive pills on the periodontal health and assess oral hygiene habits among women using contraceptive pills.

Methodology: We conducted a descriptive cross-sectional study in Military hospital in Omdurman, Sudan, from December 2018 to March 2019. A designed questionnaire was to collect data. We collected data on demographic such as age and educational level, awareness about OCs drugs and their effect on oral and periodontal tissue and the oral hygiene practice of women at reproductive age. We followed convenience method to select study participants. Data were analyzed by SPSS version 23 and in frequencies and proportions were calculated. Results presented in tables and graphs.

Results: A total number of 205 women, with mean age 31 were selected to participate in this study. 85% of investigated women used OCs drugs for more than one year. Most of study participants (54%), their educational level was university. Almost,91% of women did not aware that OCs drugs affect the periodontal and oral health and 77% of them didn't get scaling after they begin using OCs drugs . Regarding oral hygiene habits, 53.2 % of women brushed their teeth twice per day and 92% used

floriated tooth paste. **Conclusion:** This study demonstrates that high percentage of women at reproductive age who used OCs drugs didn't aware about the effects of these drugs on their oral and periodontal health

Key Words: Awareness, Contraceptive Drugs, Oral and periodontal health.

Abbreviations:

OCs**:** oral contraceptives

OCPs: Oral contraceptive pills

GCF: Gingival crevicular fluid

PMNL**:** Poly Morpho Nuclear Leukocyte

1. Introduction:

Oral health has strong biological, psychological and social consequences because it affects aesthetics, communication, and quality of life. Good oral health is important for proper mastication, digestion, appearance, speech and all body health (1). Oral cavity is more susceptible for harmful bacteria than other parts of the body. The body natural defenses and good oral health care such as daily brushing and flossing are important because they can help in removal of bacteria and reduce the severity of chronic inflammatory periodontal diseases, which are seen to progress faster interdentally, so plaque control in these areas is of great benefit (2).

Gingival disease is one of the most common human diseases. The signs of gingival disease like chronic gingivitis may include redness , bleeding and swollen of the gingiva, this condition can affected by change in hormones, the oral contraceptive pills (OCPs) are one of the systemic risk that can change hormonal condition and exaggerates or modified the body response to dental plaque and cause chronic gingivitis (3).Oral contraceptive pills (OCPs) are one of the of most commonly used

methods of birth control by women worldwide to prevent pregnancy, available as two types one with only progesterone other with a combination of estrogen and progesterone called combined oral contraceptive pills ,the effect of these hormone in periodontal tissue include: about estrogen: stimulates the proliferation of gingival fibroblast, synthesis and maturation of gingival connective tissue and increase in the quantity of gingival inflammation with no increased in plaque accumulation, decrease keratinization , reduce the inflammation mediated by T cell , decrease the leukocyte production from the bone marrow and inhibits the PMNL chemotaxsis. About the progesterone: increase vascular dilation, thus increase permeability and increase in GCF (Gingival Crevicular Fluid), also increase producing of prostaglandin E2, inhabits proliferation of gingival fibroblast and collagen and non collagen fibers synthesis in periodontal fibroblast (3). Emergency contraceptive pills are as well available .They are recently fourth generation OCPs, they are also market as mono-phasic or multi -phasic depending on frequency and dosage of hormone given over cycle of therapy. Currently available OCPs have low doses of estrogen (0.05mg/day) and progestin (1.5mg/day) (3).

Oral contraceptive (OCs) drugs may enhance periodontal breakdown by reducing the resistance to dental plaque and may induce gingival inflammation and enlargement in otherwise healthy females .OCs drugs accentuate the gingival response to local irritants similar to that seen in pregnancy. The incidence and severity of gingival disease are positively correlated with plasma sex hormone concentration and duration of use. The long term use of OCs increased gingival inflammation, gingival enlargement and clinical attachment loss .In contrast; a clinical study was unable to demonstrate any effect of low dose OCs on gingival tissue (4). Human gingiva contains estrogen and progesterone receptor that influence the periodontal tissue to act

as target organ for sex hormone. In most cases gingival enlargement was reversed when OCs was discontinued or dosage reduced (4). Dry socket and dry mouth are also most common oral side effect of oral contraceptive .Dry socket is a very painful condition in which the socket left behind after the extraction does not heal. Women on oral contraceptive should inform the dentist about this before the treatment. Hence, women should be aware of these side effects (5). Women oral health is important to enhance the quality of their life and the use of oral contraceptive pills can lead to oral and periodontal diseases, so to ensure better oral health women should have good knowledge and awareness about the effect of these drugs in the oral cavity .This study was conducted to assess women awareness about the side effects of using oral contraceptive, assess knowledge about the effect of contraceptive pills on the periodontal health and assess oral hygiene habits among women using contraceptive pills. This study will improve the knowledge of women at reproductive age about the oral and periodontal effect of OCs drugs and to enhance their dental care.

2. Materials and Methods: We conducted a descriptive cross sectional study hospital base among women in reproductive age (18-50 years old) at the Military Hospital at Omdurman (Sudan) since December 2018 to march 2019. Women who used oral contraceptive drugs for more than six months were represented as study participants. We excluded the women who didn't have regular followed up with the hospital; women had systemic diseases and those who used other drugs that may affect the oral and periodontal tissue. A convenience sampling method was used to selected study participants who met the inclusion criteria during the study period. A designed pre testing and revised self administrative questionnaire was used to collect data from study participants. We collected demographic variable such as age, educational level. Awareness about contraceptive drugs, data included the effect of

this drug on oral and periodontal tissue and the oral hygiene practice .Collected data was entered into the SPSS software (version 23). Data was analyzed with same software and results presented as frequencies and proportions in table and figures.

3. Results:

A total of number of 205 women at reproductive age was included in this study with mean of age 31± 7.42years old as shown in table 1. Out of the total, 174 (85%) women used OC for more than one year as found in figure 1. A number of 111 (54%) of study participants had university educational level as seen in figure 2. Of the total, 143(69.7%) of women at reproductive age complained of gingival and oral ulcer, 25 (12%) complained from gingival bleeding, 23 (11 %) gingival redness, enlargement and only 6 (3%) complained of tooth mobility during the use of oral contraceptive drugs as seen in table 2. Regarding oral hygiene habits, 109 (53.2 %) of women at reproductive age brushed their teeth twice per day, and 189 (92%) of them used floriated tooth paste as demonstrated in Table3. Most of participants, 166 (81%) changed their tooth brushes every 3 months as seen in table 3.The results of this study showed that158 (77%) of the women did not get scaling after start using OC drugs as mentioned in table 3. Almost 91% of the women were not aware about the effect of OC drugs on oral and periodontal health as seen in figure3.

Table 1: The age of the women who used oral CO drugs:

Age	**Means** ± (SD)
(18-45)	31.2 ± 7.42

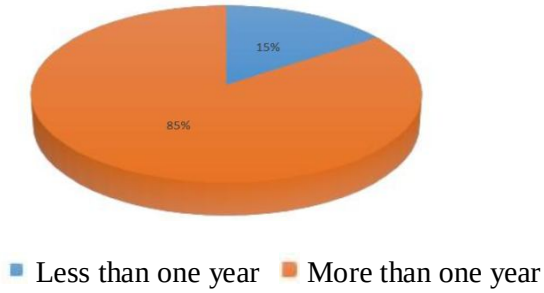


Figure 1: The duration of using OC drugs

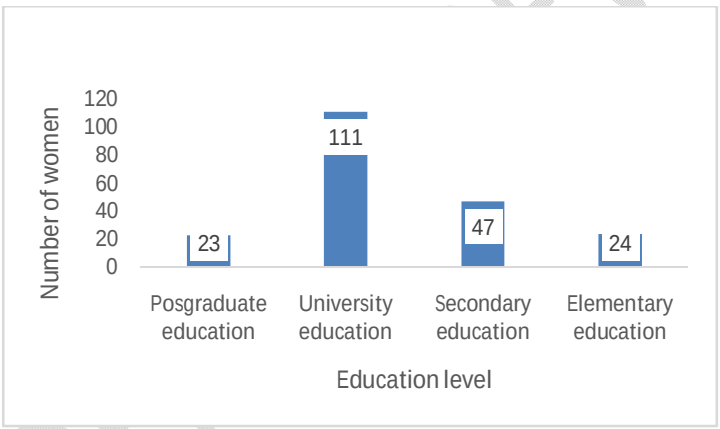


Figure 2: The education level of the participant's women

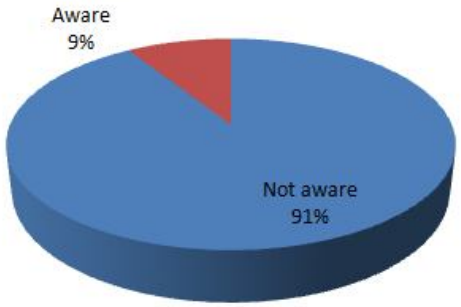
Table 2: The oral and periodontal symptoms that women had with OC drugs

Oral and periodontal symptoms	**Yes** Frequency(205) 100%	**No** Frequency(205) 100%
Gingival bleeding	25(12%)	180 (88%)
Gingival redness	23(11%)	182(89%)
Gingival and oral ulcer	143 (69.7%)	62 (30.3%)
Gingival Enlargement	23 (11%)	182 (89%)
Tooth mobility	6 (%3)	199 (97%)

Table 3: Oral hygiene practice and professional scaling visits during the period Of OCs drugs used:

Oral hygiene practice Variables	**Frequency (N=205) percent (100%)**
Frequency of teeth brushing per day	**(Frequency) %**
Once	74 (36.1%)
Twice	109 (53.2%)
Triple	22 (10.7%)
Type of tooth paste	**Frequency %**
Fluoridated tooth paste	189 (92%)
Non Fluoridated tooth paste	16 (8%)
The time for changing tooth brush	**Frequency %**
Three month	166 (81%)
More than three month	39 (19%)
Professional scaling visits	**Frequency %**

Yes	47 (23%)
No	158 (77%)



Figures 3: Awareness about the relation between OCs drugs and oral health.

4. Discussion:

Oral contraceptive drugs are one of the most common used class of drugs by women's for birth control and as results of their wide distribution, many systemic and oral side effects have been identified according to the dose and duration of the drugs (4).The oral and periodontal adverse effects of the elevation ovarian hormones include the aggravated of the gingival response to local factors like plaque and increase gingival inflammation and enlargement , periodontal destruction and oral disease progression(4)(6).

Oral contraceptive drugs have effect on gingival microvasculature by induce vascular permeability and it has been shown that the gingival tissue contain receptors for estrogen and progesterone hormone which may assisted in the progress of the inflammation and the continuous exposure of OC pills increase the production of pro inflammatory cytokines and prostaglandin, that increase the risk of periodontal tissue destruction and loss of it attachment (4, 7, 1).

The results showed that the 31 years old was the mean age of the women who majority of them were had the university education and 85% started using OC pills for more than 1 year. Although most of women have high level of education, (91%) of them were not aware about the effect of OC drugs in oral and periodontal health.

Most women in this study (88%) didn't have gingival bleeding, this may be due to the women good oral hygiene. Our finding was agreed with Study conducted by

Taichamn et al showed that OC user had mild gingivitis (8). On the other hand , there were studies demonstrated an increased risk of gingival diseases in OC user which reflected by increased in the gingival index score and gingival bleeding because estrogen increase the quantity of inflammation in gingival tissue and progesterone increase vascular dilation, blood flow to the gingival tissue and vascular permeability (9,10 ,11). Mullallay et all showed that women taking contraceptive pills have more sever gingival bleeding and periodontal attachment loss (12).

In our study majority of women brushed their teeth twice times /day and used fluoridated tooth paste which suggest an acceptable oral hygiene habits.

We found that 77% of women didn't get scaling after start using OC drugs, this maybe result from that the effect of the OC drugs were not noticeable due to their oral hygiene habits and the low awareness regarding the relation between the OC drugs and periodontal diseases. in our study most of the participants used contraceptives pills for more than one year .The increase in gingival inflammation is usually related to the duration of use, and results of studies suggest that prolonged use of oral contraceptives may detrimentally affect the periodontium and women who receiving OC drugs for more than one and half year to two year may exhibited grater periodontal destruction due to alter host resistance after long term hormone in take (3).

In the present study most of the women didn't have gingival enlargement which may be related to their oral hygiene habits ,this result was agreed with Mullally et al in who reported that the negative influence of the changes in estrogen and progesterone levels can be controlled by additional plaque control (12).Our result regarding the gingival enlargement was not in agreement with the study conducted by Mahajan and sood who documented the gingival enlargement and bleeding in 32 years old female used contraceptive drugs for more than two years and had poor oral hygiene(13). The gingivitis and gingival enlargement in oral contraceptive users can be minimized by establishing low plaque levels by good control during or at the beginning of the therapy (13).

The majority of women in our study complained of Gingival and oral ulcer, and this result was in agreement with French study done by bursztien et al who conducted that

apthosis (oral apthus ulcer)was one of oral lesions that associated with oral contra captive pills and regress rapidly in (1-5 weeks) a after stopping the pills (14).

5. Conclusion:

Most of females who use the OC drugs were not aware about its effect in the oral and periodontal health .Most of users focus on brushing and its tools, way and frequency more than periodic inspection in dental clinic and majority of them complained from oral ulceration.

Consent:

Verbal consent

Writing consent is not applicable

Ethical Approval:

I t is not applicable

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