

# 18-Month Progestogen - Only Contraception During Breast-feeding in Libyan Women

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This study was undertaken to evaluate the efficacy and the influence of progestogen-only contraceptives (POCs) in postpartum lactating mothers over a period of 18-months. 250 mothers were randomised to either the study groups or the control group. In the study groups, 100 mothers were given an oral progestogen pill; lynestrenol and another 100 mothers were assigned to injectable progestogens; depot medroxy-progesterone acetate (DMPA) and norethisterone oenanthate (NET EN), 50 each. The control group (n=50) was given nonhormonal methods. There was no contraceptive failure or negative influence on lactation among the medication groups. There were no significant differences between the groups with respect to the continuation rates and to the adverse effects that led to premature discontinuation. In conclusion, POCs can be used by lactating mothers effectively and safely for at least 18 months. Therefore, the wide use of these methods should be recommended if the international targets to protect, promote and support breast-feeding as well as family planning are to be achieved.

## Introduction

Breast-feeding has an important contraceptive role during the early postpartum months [1,2]. Nevertheless, the contraceptive protection it offers to the lactating mothers ends abruptly without giving any physical indication about the return of fertility [3,4]. Combined contraceptive pills are contraindicated during breast-feeding, since the oestrogen component has been shown to negatively influence lactation [5,6]. However, breast-feeding should not be discontinued to start the use of contraceptives. Nonhormonal methods are considered as the first choice for lactating mothers who need additional protection from pregnancy,

because there is no possibility that they will interfere with lactation [7,8]. When effective nonhormonal methods are contraindicated or not acceptable, progestogen-only contraceptives (POCs) are the primary alternatives during breast-feeding [8]. They are given either orally as pills (progestogen-only pills "POPs"), parentally as injections (POIs) or implants, or by means of impregnated intrauterine devices (IUDs). They were introduced to avoid the side effects of oestrogens and to reduce the total exposure to hormonal steroids. POCs have a lower dose of progestogen, resulting in the transfer of only minute amounts of the hormone to the infant's system with no significant effect [8,9].

The safety of long-term POCs use was questioned since previous studies on postpartum use of these contraceptives during lactation have not been designed to answer this question. Studies to determine the maximum period of use during lactation have been scarce, although breast-feeding is occasionally continued, in some cultures, for two to three years [10,11]. In Libya, the average duration for breast-feeding is 11 months, and some mothers continue for two years [12]. The present study was designed to determine the contraceptive efficacy when 18-month progestogen administration, in the form of pills or injectables, is combined with breast-feeding. It was also to investigate the influence of POC use on lactation for the above mentioned period, in order to determine any restrictions to prolonged use. Continuation rates and reasons for premature discontinuation were also aimed to be documented.

## Materials and methods

This study included postpartum healthy Libyan mothers aged between 18 and 45 years who had had normal pregnancies ending at 38 to 40 weeks of gestation by vaginal delivery of a single healthy baby with a normal body weight (2500-4000 grams). Their body mass index was between 20 and 29. Those mothers were breast-feeding and planning to breast-feed their infants for more than 12 months and asked for fertility control advice. They were willing to use either POPs, POIs or nonhormonal methods such as male condom, IUD or rely on breast-feeding only as a method of contraception for 18 months and commit to the study investigations. Mothers had no significant clinical problems. They were not pregnant and had no significant past or present medical illness, with the exception of mild controlled diabetes, stabilised hypothyroidism, mild controlled hypertension or mild stabilised obstructive pulmonary disease. They had no atrophic endometriosis or menses within the first six postpartum weeks.

Groups	n	Age (years)		Parity	
		Mean +SD	Range	Mean +SD	Range
Ctl group	50	28.9 +6.1	18-43	4.0 +2.6	1-10
POP group	100	28.2 +5.3	20-44	3.6 +2.8	1-15
POIs group	100	28.8 + 5.2	19-42	4.2 +2.7	1-14

Table 1 - Mean +SD and range of age and parity for the study participants.malignancies.

Groups	Months					
	0	3	6	9	12	18
<b>Continuation rate: No.(%)</b>						
Ctl group	50	46(92%)	45(90%)	41(82%)	40(80%)	26(52%)
POP group	100	95(95%)	95(95%)	95(95%)	60(60%)	40(40%)
POIs group	100	97(97%)	97(97%)	97(97%)	93(93%)	48(48%)
<b>No.(%) continued contraception &amp; discontinued breast-feeding</b>						
Ctl group	-	-	-	-	1(2%)	4(8%)
POP group	-	-	-	-	-	6(6%)
POIs group	-	-	-	-	4(8%)	49(98%)
<b>No.(%) continued breast-feeding &amp; discontinued contraception</b>						
Ctl group	-	2(4%)	3(6%)	3(6%)	3(6%)	3(6%)
POP group	-	-	-	-	-	12(12%)
POIs group	-	-	-	-	-	-
<b>No.(%) withdrew from the study</b>						
Ctl group	-	2(4%)	2(4%)	6(12%)	6(12%)	17(34%)
POP group	-	5(5%)	5(5%)	5(5%)	40(40%)	42(42%)
POIs group	-	3(6%)	3(6%)	3(6%)	3(6%)	3(6%)

Values are given as numbers and as percentages in parenthesis.

Table 2 - Study progress data amongst the three groups.

Reasons	Groups		
	Ctl	POP	POIs
<b>Mother's request to be withdrawn</b>			
Desired to be pregnant	1	35	-
Did not accept adverse effects			
-Intermenstrual spotting	2	5	-
Did not return to study site	11	2	-
<b>Staff withdrawn (adverse effect)</b>			
Intermenstrual heavy bleeding	-	-	3
<b>Pregnancy</b>	3	-	-

Table 3 - Reasons for total study termination.

Two-hundred and fifty Libyan mothers were recruited to the study. Local research hospital ethical approval was obtained from Misurata Teaching Hospital, Misurata, Libya, and all mothers gave their verbal informed consent. All mothers were assessed at study entry

about their satisfaction towards their infants' growth and whether they breast-feed successfully. Maternal assessment of the medications' negative effect on breast-feeding was based on the decreased nursing frequency, the reduced duration of suckling episodes

or the personal perception of infant's dissatisfaction, including that related to infant's growth. Fifty subjects were randomised to the control (Ctl) group and the other 200 subjects were randomised to the study groups.

## There was no breast-feeding failure reported by any of the study subjects during the first 12 months

Contraceptives' use commenced after the sixth postpartum week and before the twelfth postpartum week. The first study group was prescribed POPs as lynestrenol 0.5 mg to be administered orally once at the same time daily (POP group, n=100). The second study group was assigned to POIs (POIs group, n=100). Fifty subjects received depot

medroxy-progesterone acetate 'DMPA' 150 mg, one intramuscular injection every 11 weeks and another 50 subjects were allocated to norethisterone oenanthate 'NET EN' 200 mg, one intramuscular injection every seven weeks. The selection of the injectable preparation was also randomised.

The 50 Ctl group participants were free to choose between either a male condom, an IUD for extra contraception or just to rely on breast-feeding. Ten used a condom, 20 chose the IUD and the other 20 relied on breast-feeding alone. Those that relied on breast-feeding alone were willing to breast-feed their infants fully (exclusively) for the first six months, at which supplementary feeding can be introduced later. Mothers were informed about the expected reduction in nursing frequency and the decrease in the duration of suckling episodes after the introduction of supplementary foods to their infants at the age of six months. All subjects attended the clinic at months 3, 6, 9, 12 and 18. During those visits they were questioned about the pregnancy, the continuation of suc-

cessful breast-feeding, their satisfaction towards their infants' growth, their perception of the infant's dissatisfaction and the continuation of contraceptive use. Reasons for premature discontinuation of the contraceptive use or successful breast-feeding were documented. All mothers that continued both contraceptive use and successful breast-feeding, continued contraceptive use only, or continued successful breast-feeding only were followed-up for the total period of study and observations were recorded. Only mothers who terminated contraceptive use and successful breast-feeding together or did not return to the study site were considered as totally terminated from the study.

All data have been expressed as means +SD. These data were tested for normality. Statistical significant differences between the groups were tested using one-way unrelated analysis of variance (ANOVA) since all data were normally distributed. Further statistical analysis between the individual pairs of means was performed by using the Bonferroni test. All data were analysed using the 'StatView SE+Graphics' Macintosh program. A statistical significant difference was accepted throughout when \*p<0.05, \*\*p<0.01 and \*\*\*p<0.001.

## Results

Two-hundred and fifty mothers were admitted to the study. Table 1 describes the age and parity of the study participants. No statistically significant difference was found between the groups with respect to the age or the parity of the participants.

The study progress data for the three groups are given in Table 2. There was no statistical significant difference between the three groups with respect to the continuation rates. Progestogen contraceptive efficacy throughout the study period was 100%, since no pregnancy has occurred within the medications' groups. In the Ctl group, three cases of pregnancy (6%) occurred in the period of months 6-9. They were among those relied on breast-feeding alone as a

Reasons	Groups		
	Ctl	POP	POIs
<b>Breast-feeding failure</b>	2	3	4
Decreased duration of suckling episodes	1	2	1
Reduced nursing frequency	1	1	2
Mothers' perception of infant's dissatisfaction	-	-	1
<b>Personal reasons</b>	2	3	45
Infant sickness	1	1	2
Refusal of infant to suckle	1	-	4
Mother's employment	-	1	8
No given reason	-	1	31

Table 4 - Reasons for stopping successful breast-feeding.

Reasons	Groups		
	Ctl	POP	POIs
Menstrual disturbances	2	-	-
Intermenstrual spotting	1	-	-
Intermenstrual bleeding	1	-	-
Backache	1	-	-
Desire for pregnancy	-	12	-

Table 5 - Reasons for discontinuation of contraceptive use alone.

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method of contraception. Reasons for the withdrawals from the study are shown in Table 3. Reasons for stopping successful breast-feeding are shown in Table 4. At the end of month 12, all participating subjects were successfully lactating, unless they had decided the opposite for nonmedication reasons. There was no breast-feeding failure reported by any of the study subjects during the first 12 months. Infants' growth was satisfactory to all mothers whom continued breast-feeding throughout the first 12 months. Maternal assessment of breast-feeding failure leading to lactation discontinuation was reported after month 12. This was the case in 4% out of the Ctl group and in 3.5% out of the study groups; 3% in the POP group and 4% in the POIs group. Hence, statistical analysis revealed no significant differences between the three groups. Reasons for stopping contraceptive use alone are shown in Table 5.

### Discussion

The main finding of the present study is that the combination of ovulation inhibition from progestogen administration with that of breast-feeding was associated with total contraception for up to 18 months if required. Similar findings have been reported by others [13-15]. However, according to the literature, failure rates of POCs vary between studies with an overall range of 0-4/100 woman-years. On the other hand, the maximum protection against pregnancy that breast-feeding alone provides is

98% for the first six months postpartum, if the mother is fully (or nearly fully) breast-feeding and still amenorrhoeic [1,2].

In the present study, the administration of POCs, over a period of 18 months, appears to have no significant negative influence on continuing successful breast-feeding. None of the study participants reported breast-feeding failure at any time before the end of the twelfth month of the study period. Sometime between month 12 and month 18, 4% of the Ctl group and 3.5% of the study groups reported a reduced nursing frequency, a decreased duration of suckling episodes or a perception of infant no or low satisfaction. This appears to be largely related to the initiation of supplementary feeding. Food supplementation usually begins after the end of month 6, and the expected reduction in nursing frequency and decrease in duration of suckling episodes can be misperceived by some mothers, even though this was explained before and during the study. Nevertheless, this observation was only reported after month 12. Several studies have followed-up participants for up to 12 months and revealed that POCs have no adverse effect on lactation, regardless of how lactation was assessed [8,16-19].

In our study, only 4% of the study groups' participants had been withdrawn from the study because of menstrual irregularities. It has previously been demonstrated that menstruation disorders and amenorrhoea are the most frequently cited reasons for the discontinuation of POCs use [20-22]. Therefore, since breast-feeding is expected to reduce the incidence of menstrual disturbances, thus it may also improve continuation rates. The observed continuation rates in the present study were higher than those obtained when progestogen use is not combined with breast-feeding. This finding is in accord with the previous finding of Danli and others. [21]. In several studies involving nonlactating mothers, up to 25% of DMPA users and more than 10% of POP users have discontinued because of

abnormal bleeding [9,23]. Less than 5% do so in all of the studies involving breast-feeding mothers [9,13,24].

Despite the expected above mentioned bleeding disturbances, none of the study participants had any significant adverse effect that led to discontinuation. Adverse effects associated with the combined contraceptives' use and related to the oestrogen component do not apply to the POCs. Guillebaud [25] reported that after two years of lactation with regular 30 µg levonorgestrel pill taking, the infant receives at most the equivalent of one tablet. In spite of the minute amounts of steroids transferred to the infant, it must be recognised that all breast-fed infants are exposed to endogenous maternal steroids and that infants fed on cow's milk formula are also exposed to reproductive steroids [26].

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Neither the World Health Organisation [27] nor the International Planned Parenthood Federation [28] have recommended or even mentioned the UK restriction to the NET EN injection long-term use. Moreover, Family Planning Association in the UK (personal communication), indicated that physicians in the UK are able to prescribe outside

licensing indications where their clinical judgement believes such prescribing will be in the best interests of their clients. Although daily intake by a breast-fed infant from a mother on NET EN injections is relatively too low when compared to that of a mother receiving DMPA injections [15,29], the UK official restriction, probably contributes to the fact that NET EN is not extensively studied.

The advantage of the quick return to fertility for the pill users together with the advantage of self control over the oral pills were probably motivating factors for mothers to decide to try for another child whenever they wished. The long acting progestogens (POIs) were gener-

ally associated with higher acceptability and continuation rates. This could be due to two reasons; first - the relatively easy administration of the injections (once every two or three months, according to the type used) compared to the daily oral administration of the pills, and second - the long lactational amenorrhoea associated with the injections. Therefore, the present study suggests that POCs can be used safely and effectively throughout the period of lactation, without any need to restrict duration of use, to discontinue breast-feeding or to switch to another product or method.

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