

Investigation and Comparative Study Among Various Methods of Contraception Used in Erbil City

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Abstract

The objective of this study was to investigate and compare among five different methods of contraception including combined oral contraceptive pills (COC), Depot medroxyprogesterone acetate (DMPA), copper Intrauterine contraceptive device (IUCD), vaginal spermicides and male condom used in Hawler City through estimate of their effect, relative failure rate, percentage of use, adherence and compliance and adverse effects of each contraceptive method. In order to reach to these aims, a retrospective study was conducted in Hawler City in Azadi Health Care Center over a period of 6 months from 22th November, 2010 to 15th May, 2011 during which data collection and subjects follow up for 3 months had been achieved. A convenient sampling method was used to collect 373 married women in their reproductive age group (16-39) years old and 56 husbands. The studied population was allocated into five groups according to contraceptive method used: group (I) included (113) subjects using combined oral contraceptive pills, group (II) included (38) subjects using depot medroxyprogesterone acetate injection, group (III) included (211) subjects using copper intrauterine contraceptive device, group (IV) included (11) subjects using vaginal spermicides and group (V) included (56) subjects using male condom as a contraceptive method. The data necessary for this study had been collected by a direct interview with the subjects and the informations had been recorded on a questionnaire. The study revealed that IUCD had a higher percentage of use among studied sample (49%), regarding the effect DMPA was the most efficient contraceptive method (97.3%) with a lowest failure rate (2.6%), vaginal spermicide and the male condom showed the highest degree of adherence and compliance (100%). The male condom showed highest degree of subject's acceptability (69.9%), whereas DMPA showed lowest acceptability (21%). Regarding gynecological side effects, DMPA showed the highest degree of menstrual irregularity (81.5%) and amenorrhea (65.7%). Breakthrough bleeding, spotting and vaginal infection occurred in the highest percentage among IUCD users (43.1%), (11.8%), (59.2%), respectively. Central nervous system, gastrointestinal and dermatological adverse effects was higher in COC than DMPA users. The extent of weight gain was similar among DMPA and COC users (39.4%) and (39.8%), respectively. While hypertension was less among DMPA users in comparison with COC users. In conclusion, the most popular contraceptive methods used in Hawler City was IUCD, while DMPA was the most efficient contraceptive method in comparing with other methods. Male condom and vaginal spermicidal had been shown the higher rate of adherence and compliance and DMPA showed the lowest failure rate in compare with other methods. Male condom was the most acceptable method for contraception, followed by IUCD, vaginal spermicides, COCs and DMPA respectively. The percentage of menstrual irregularity was highest among DMPA users followed by IUCD users then COCs users, while IUCD showed the highest percentage of vaginal infection followed by DMPA users and then COCs users, and finally in comparison of CNS and GI and dermatological adverse effects of hormonal methods of contraception, COCs showed a higher percentage of occurrences of these adverse effects than DMPA.

Key words: contraception, COC, IUCD.

دراسة مقارنة بين الطرق المختلفة لموانع الحمل المستعملة في مدينة اربيل

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الخلاصة

الهدف من هذه الدراسة هو البحث والمقارنة بين خمسة طرق مختلفة لمنع الحمل المستخدمة في مدينة اربيل والتي تتضمن (حبوب الحمل ، والحقن ديبومدروكسي بروجسترون اسيتيت ، اللولب ، مبيد النطاف المهلي والواقي الذكري) . وقد تم التحقق من الفعالية والكفاءة ، معدل نسبة الفشل ، نسبة الاستخدام ، الامتثال والالتزام ، والآثار الجانبية الناجمة عن كل وسائل منع الحمل المستخدمة . من اجل الوصول إلى هذه الاهداف ، اجريت دراسة رجعية لمقارنة هذه الطرق الخمسة في مدينة اربيل في خلال فترة ستة اشهر من تاريخ ٢٢ تشرين الثاني / ٢٠١٠ إلى ١٥ ايار / ٢٠١١ تم خلالها جمع البيانات ومتابعة النساء اللواتي تم اختيارهن للمشاركة في هذا البحث لمدة ثلاثة اشهر . وقد استخدمت طريقة اخذ العينات المناسبة لجمع ٤٢٩ نساء متزوجات في سن الانجاب تتراوح

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اعمارهن من (١٦ - ٣٩) سنة . واخذت العينات من وحدة تنظيم الاسرة في مركز صحي نازادي في اربيل . وتم تقسيم العينة المدروسة الى خمسة مجموعات وفقا لطريقة منع الحمل المستخدمة : المجموعة (I) تضم (١١٣) امرأة تستخدم حبوب منع الحمل ، المجموعة (II) تتضمن (٣٨) امرأة تستعملن الحقن ديبو ميدروكسيبروجيستيرون ، المجموعة (III) تتكون من (٢١١) امرأة تستعملن اللولب كوسيلة لمنع الحمل ، المجموعة (IV) تضم (١١) امرأة تستخدم مبيد النطاف المهبلية ، والمجموعة (V) تتضمن (٥٦) امرأة يستخدمن اذواجن الواقي الذكري كوسيلة لمنع الحمل . وقد تم جمع البيانات اللازمة لهذه الدراسة من خلال المقابلات المباشرة مع النساء مع تدوين المعلومات على استبيان . اظهرت النتائج الدراسة ان اللولب هو الاكثر استخداما بين عينة الدراسة (٤٩ %) . اما بخصوص الفعالية فقد اظهرت النتائج ان الحقن ديبو ميدروكسيبروجيستيرون هي الطريقة اكثر فعالية (٩٧.٣ %) مع اقل نسبة الفشل (٢.٦) . وظهرت ان مبيد النطاف المهبلية والواقي الذكري كانا لهما اعلى نسبة من الالتزام والامتثال (١٠٠ %) . وبينت الدراسة ان الواقي الذكري هي الطريقة الاكثر قبولا (٦٩.٩ %) ، اما الطريقة الاقل قبولا فقد كانت الحقن ديبو ميدروكسيبروجيستيرون (٢١ %) .

اما بالنسبة للاثار الجانبية النسائية ، فقد اظهرت النتائج ان عدم انتظام الطمث وانقطاعها هما اكثر شيوعا بين مستخدمي الحقن ديبو ميدروكسيبروجيستيرون (٨١.٥ %) و (٦٥.٧ %) بالتوالي . اما بالنسبة للنزف الشديد والنزف المتقطع والعدوى المهبلية فقد وجدت بنسب اعلى بين مستخدمات اللولب (٤٣.١ %) ، (١١.٨ %) و (٥٩.٢ %) على التوالي . اما بالنسبة للاثار الجانبية المتعلقة بالجهاز العصبي والجهاز الهضمي والتأثيرات الجلدية ، فقد ظهرت بنسبة اعلى بين مستخدمات حبوب منع الحمل بالمقارنة مع حقن ديبو ميدروكسيبروجيستيرون .

في الختام ، فقد كانت نتائج هذا البحث بشأن طرق منع الحمل الخمسة المستخدمة في مدينة اربيل مماثلة لتلك التي ذكرت في جميع انحاء العالم وان كان هناك فرق واضح في نسب النتائج . يتضح من النتائج ان نسب استخدام طرق منع الحمل تختلف اختلافا كبيرا من بلد لآخر ، كذلك نسب الفشل والكفاءة والاثار الضارة الناجمة عنها . لذا نستنتج من هذا ان كل مجتمع يستخدم الطريقة الأنسب له ، تتشارك المرأة مع الطبيبة النسائية للاختيار الطريقة المناسبة لاحتياجاتها ، وينبغي ان تكون آمنة ، مع اقل آثار جانبية متاحة ، سهلة الاستخدام مع اقل تكلفة .

الكلمات المفتاحية : منع الحمل ، حبوب منع الحمل ، اللولب لمنع الحمل .

Introduction

Family planning saves lives of women and children and improves the quality of life for all. It is one of the best investments that can be made to help ensure the health and wellbeing of women, children and communities⁽¹⁾. It is defined as the voluntary use of methods and procedures intended to affect the number and timing of pregnancies, this include all the proximate determinants of fertility, including age of person at first sexual intercourse or marriage, post-partum lactation for spacing purposes and sterilization, which is widely used to influence the timing and number of births⁽²⁾. The world population is about 6.9 billion. At the predicted rate of growth, the population is projected to reach 7.5 billion by 2020 and more than 9 billion by 2050⁽³⁾. Various methods of contraception are used by both females and males. These include the following: Periodic abstinence which includes (coitus interruptus, lactational amenorrhea and natural family planning)⁽⁴⁾ . Mechanical barriers include: male condom, female condom, diaphragm, cervical cap and spermicidal agents⁽⁵⁾. Hormonal contraceptives is the most effective method of fertility control, but has major and minor side effects, especially for certain groups of women. Major side effects including venous thromboembolic depression and neoplasms. Minor side effects facial hyperpigmentation, acne and headache⁽⁶⁾. including nausea and vomiting, breakthrough bleeding, amenorrhea, weight gain, edema, disease and vascular disorders (cerebrovascular disease and myocardial infarction), cholestasis, Hormonal

contraceptives include: implants, injectable depomedroxyprogesterone acetate, progestin-only oral contraceptives, combination oral contraceptives, combination patch contraceptive and contraceptive vaginal ring⁽⁷⁾. Another method is through inserting intrauterine devices⁽⁸⁾. Sterilization either female sterilization by tubal ligation or male sterilization via vasectomy⁽⁹⁾. Emergency postcoital contraception achieved by emergency contraceptive pills, the minipill emergency contraception method or Copper T380 intrauterine device⁽¹⁰⁾. The effectiveness of any contraceptive method depend on its mechanism of action, availability (e.g., if a prescription required, cost), and acceptability (e.g. side effects, ease of use, religious and social beliefs). Any or all of these reasons can account for the discrepancy between the lowest observed failure rate and the actual failure rate in typical users⁽¹¹⁾.

Aims of the study

1. Investigate and compare among five methods of contraception including (combined oral contraceptive pills, DMPA, IUCD, spermicidal suppositories and male condom) used in Hawler city.
2. Estimate of :
 - a. The percentage used of each contraceptive method.
 - b. Efficacy and relative failure rate of each contraceptive method.
 - c. Adherence and compliance with each contraceptive method.
 - d. Adverse effects and complications of each contraceptive method.

Subjects and Methods

A retrospective, descriptive, comparative study was conducted in Hawler City over a period of 6 months from 22th November, 2010 to 15th May, 2011, during which data collection and subject follow up for three months have been achieved. A convenient sampling method was used to collect 429 married women in their reproductive age group 16-39 years old. The study population was collected from married women attending family planning unit in Azadi Health Care Center. Four hundred twenty nine subjects were included in this study; they had been followed up for three months (follow up had been done for all subjects except subjects who discontinued the used method because of adverse effects) and mean had been taken for the parameters. Subjects were utilized five different methods of contraception which were available in family planning unit of Azadi Health Care Center.

Group (I) Women utilized combined oral contraceptives (microgynon® EDFE, Bayer Schering Pharma, Germany)

- Number of subjects (113).
- Duration of use 2 month -17 years.

Group (II): Women utilized depot medroxy progesterone acetate (DMPA)

- Number of subjects (38)
- Duration of use 3 months-16 years.

Group (III) Women utilized Copper intrauterine contraceptive device (IUCD) (copper T® Leivas, Finland)

- Number of subjects (211).

- Duration of use 1 month- 6 years.

Group (IV) Women utilized vaginal spermicide (Lorophame® vaginal suppository, Ibn Roshd Industry, Syria)

- Number of cases (11)
- Duration of use 2-12 months.

Group (V) Husbands utilized male Condoms (Xiangbin® condom, China)

- Number of subjects (56)
- Duration of use 2 months-13 years.

Methods of Data Collection

It was by a direct interview with women attending family planning unit at Azadi Primary Health Care Center using a questionnaire form designed by researcher herself to cover required data, a questionnaire was constructed after extensive review of relevant literature.

Results

Four hundred twenty nine subjects were participated in this study, they were divided to five groups according to the method of contraception used; 113 subjects (26.3%) used oral combined contraceptive pills (OCCP), 38 individuals (8.8%) used DMPA, 211 individuals (49%) used IUCD, 11 subjects (2.5%) used vaginal spermicides and 56 subjects (13%) her husbands used male condom. Tables 1 to 6 showed the number of subjects and their percentage used the various contraceptive methods with their percentage of efficacy and failure rate, compliance and adverse effects and complication.

Table 1 : Number of subjects (and their percentage) used different contraceptive methods regarding effect, adherence and compliance, failure and acceptability.

Methods of contraception (duration of use)	Effect	Adherence and compliance	Failure			Acceptability
			antibiotic use pill	missed	failure	
OCCP (2 month-17 y)	98 (86.7%)	99 (87.6%)	1 (0.8%)	10 (8.8%)	4 (3.5%)	25 (22%)
DMPA (3 month-16y)	37 (97.3%)	28 (73.6%)	1 (2.6%)	---	---	8 (21%)
IUCD (1 month-13y)	204 (96.6%)	199 (94.3%)	7 (3.3%)	---	---	137 (64.9%)
Vaginal spermicide (2-12m)	10 (90.9%)	11 (100%)	1 (9%)	---	---	3 (27.2%)
Male Condom (2 month-13y)	52 (92.8%)	56 (100%)	4 (7.1%)	---	---	39 (69.6%)

Table 2 : Number of subjects (and their percentage) used different contraceptive methods showed gynaecological adverse effects.

Methods of contraception	Menstrual irregularity	Amenorrhoea	BTB	Spotting	Vaginal infection
OCCP	12 (10.6%)	13 (11.5%)	9 (7.9%)	2 (1.7%)	31 (27.4%)
DMPA	31 (81.5%)	25 (65.7%)	8 (21%)	4 (10.5%)	13 (34.2%)
IUCD	53 (25.1%)	----- -----	91 (43.1%)	25 (11.8%)	125 (59.2%)

Table 3: Number of subjects (and their percentage) used different contraceptive methods showed CNS adverse effects.

Methods of contraception	Headache	Dizziness	Nervousness	Depression	Fatigue
OCCP	48 (42.4%)	47 (41.5%)	50 (44.2%)	38 (33.6%)	15 (13.2%)
DMPA	11 (28.9%)	7 (18.4%)	7 (18.4%)	7 (18.4%)	2 (5.2%)

Table 4 : Number of subjects (and their percentage) used different contraceptive methods showed GI adverse effects

Methods of contraception	Nausea	Vomiting	Anorexia	Stomach pain	Anaemia
OCCP	26 (23%)	6 (5.3%)	19 (16.8%)	15 (13.2%)	7 (6.1%)
DMPA	7 (18.4%)	2 (5.2%)	2 (5.2%)	----- -----	1 (2.6%)

Table 5 : Number of subjects (and their percentage) used different contraceptive methods showed dermatological adverse effects

Methods of contraception	Skin rash	Skin pigmentation	Hair loss	Acne
OCCP	3 (2.6%)	8 (7%)	24 (21.2%)	1 (0.8%)
DMPA	1 (2.6%)	1 (2.6%)	4 (10.5%)	----- -----

Table 6 : Number of subjects (and their percentage) used different contraceptive methods showed other adverse effects

Methods of contraception	Weight gain	Hypertension	Oedema	Stroke	Breast pain	Breast tenderness
OCCP	45 (39.8%)	5 (4.4%)	1 (0.8%)	2 (1.7%)	6 (5.3%)	2 (1.7%)
DMPA	15 (39.4%)	1 (2.4%)	3 (7.8%)	----- -----	----- -----	----- -----

Discussion

Family planning allows individuals and couples to anticipate and attain their desired number of children and spacing and timing of their births. It is achieved through use of contraceptive methods and treatment of involuntary infertility. A woman's ability to space and limit her pregnancies has a direct impact on her health and well-being as well as the outcome of each pregnancy (1). This comparative study was conducted in Azadi Health Care Center in Hawler City. (429) subjects were included in this study, with varying percentage of five contraceptive methods used. (26.3%) of subjects were used OCCP, (8.8%) of them used DMPA, (49%) of subjects used IUCD, (2.5%) used vaginal spermicides and (13%) used male condoms. These percentages revealed that approximately half of subjects were used IUCD, whereas the other half were used OCCP, male condoms, DMPA, vaginal spermicides in a descending order. Our results regarding rate of usage is compatible with other studies done in USA, Nigeria and Jordan (12,13,14) in which most of women used IUCD as a contraceptive method. Similar results were reported in a study done by Falh *et al* in 2000⁽¹⁵⁾ in Baghdad, Wasset and Najaf, were the percentage of IUCD users was 35% in Baghdad, 30% in Wasset and 35% in Najaf, while the percentage of users of OCCP in Baghdad was 15%, in Wasset 25% and in Najaf 21.5%. The study showed that the efficacy of OCCP was 86.7% with a failure rate of 13.3%. This high failure rate is due to lack of adherence and compliance in pill users, 0.8% failure rate occurred in typical pill users, where as 8.8% failure rate occurred due to missing pill, 3.5% failure rate occurred due to concurrent use of antibiotic with OCCP. In a study on OCCP users, they showed failure rate 7.5% within 12 month of use (16). About DMPA, the results of this study showed that , it has efficiency about 97.3% with failure rate of 2.6%. These findings was compatible with the failure rate of study done by (17) in which failure rate was 0.3% in perfect users and 3% in typical users. The efficacy and failure rate of IUCD is 96.6% and 3.3% , respectively. These findings is compatible with two studies, first was done in India in which the failure rate had been observed among copper IUCD users (up to 200 subjects) had about 3% pregnancies (18), in the second study , the failure rate was 3.2% after twelve month of follow up (16). The high failure rate in our study possibly was due to lack of adherence and compliance among IUCD users even holding heavy things. In addition failure rate might be affected by

technical aspects. Another reason for this high failure rate, is that occurred in women under 25 year who were more fertile than older women. Regarding male condoms initialized in this study, the efficacy and failure rate were 92.8% and 7.1% , respectively. The results of this study are consistent with the study done by others (19,20), in which failure rate was 3-14% in typical user. About the results regarding vaginal spermicides the data obtain from this study showed that efficacy and the failure rate was 90.9% and 9% , respectively, although there are no reliable data on the effectiveness for pregnancy prevention of spermicide used alone. Some commonly quoted figures for correct and consistent use and for typical use were 6% and 26%, respectively (19,20). Regarding adherence and compliance, the data obtained from this study showed that in combined oral pills is 87.6%, in DMPA 73.6%, in IUCD 94.3%, in vaginal spermicides 100% and in male condom is 100%. In a study done on compliance among DMPA and OCCP users after 6 months of follow up, the results were 78% and 46%, respectively (21). The high rate of adherence and compliance among vaginal spermicide and male condom users reflects the high effectiveness and low failure rate with minimal side effects among these two groups. On the other hand, the failure rate among pill users reflects low adherence and compliance among pill users. Gynecological adverse effects which has been recorded in this work include menstrual irregularity, amenorrhea, BTB, spotting and vaginal infection. Using OCCP, DMPA and IUCD. Different percentages had been obtained from these gynecological adverse effects. Most of them were compatible with other studies (22,23,24,25). Incidence of CNS adverse effects (headache, dizziness, nervousness, depression and fatigue) among hormonal contraceptive method users were also reported. Again different percentages of these adverse effects were recorded and most of them were compatible with other studies (26,27,28). Regarding GI adverse effects, it has been reported among pill and DMPA users, incidence of nausea was 23% in OCCP users. This rate is lower than that seen in a study done by Beatris *et al*, 2002⁽²⁷⁾ which was 47.5%. Occurrence of nausea among DMPA users in this study was about 18.4%, this rate is higher than that seen in other studies which done by (David, 2010)²⁸ which was 1-10%, the result that reported by clinical trials of FDA which was 3.3% and also from that recorded in Nigeria which was 1.2% (29). Regarding dermatological adverse effects which have been occurred among hormonal contraceptive

method users. Hair loss had been occurred in a higher percentage in OCCP than DMPA users 21.2% and 10.5%, respectively. The rate of hair loss among DMPA users in this study is compatible with studies done by David, 2010⁽²⁸⁾ in which hair loss occurred in a rate of 1-10% and 10% respectively. Skin pigmentation is another finding which has been reported between hormonal contraceptive method users in a rate of 7% and 6% in OCCP and DMPA users respectively. Skin pigmentation had been reported by Katzung, 2007⁽³⁰⁾ in a rate of 5% within first year and 40% after 8 years among pill users. There are other adverse effects which were reported among hormonal contraceptive users in the studied sample including weight gain in a rate of 39.8% and 39.4% among OCCP and DMPA users, respectively. A study was done by Reubinoff *et al*, 1995⁽³¹⁾ initialize OCCP weight gain has been occurred by about 30.6% which is approximately near from our results. Hypertension incidence among hormonal contraceptive users was about 4.4% in OCCP and 2.4% among DMPA users. A study done by Baird, 1993⁽³²⁾ reported hypertension by 4-5% in COCs users. Regarding breast pain which has been reported among pill users was 5.3% which is much lower than that seen in study done by Beatris *et al* in 2002⁽²⁸⁾ which was about 70%. Breast tenderness was another finding which has been reported from the results of current study in a rate of 1.7% in OCCP users. Breast tenderness had been reported by Ruggerio in 1997⁽³³⁾. In conclusion, the most popular contraceptive methods used in Hawler City was IUCD, while DMPA was the most efficient contraceptive method in comparing with other methods. Male condom and vaginal spermicidal had been shown the higher rate of adherence and compliance and DMPA showed the lowest failure rate in compare with other methods. Male condom was the most acceptable method for contraception, followed by IUCD, vaginal spermicides, COCs and DMPA respectively. The percentage of menstrual irregularity was highest among DMPA users followed by IUCD users then COCs users, while IUCD showed the highest percentage of vaginal infection followed by DMPA users and then COCs users, and finally in comparison of CNS and GI and dermatological adverse effects of hormonal methods of contraception, COCs showed a higher percentage of occurrences of these adverse effects than DMPA.

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