DETERMINANTS OF HORMONAL CONTRACEPTIVE USE AND ITS EFFECTS AMONG MARRIED WOMEN OF REPRODUCTIVE AGE GROUP IN KATHMANDU, NEPAL

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ABSTRACT

The prevention of unwanted pregnancy, unsafe abortion and maternal mortality remains an important part of the practice of medicine. Several forms of hormonal contraception have been used to control female fertility. These are associated with benefits and risk. The current study aimed to study the determinants of hormonal contraceptive use and its effects among married women of reproductive age group in Kathmandu. This is a community based cross sectional study among 250 married women using hormonal contraceptives aged between 15-49 years residing in wards 8 and 9 of Gokarneshwor Municipality. The information was obtained using self-constructed structured questionnaire. Height, weight and blood pressure were recorded and hypertension was defined as per Joint National Committee (JNC) VII guidelines. Around one third of the participants were of 30-34 years and Depo-Provera was the most commonly used hormonal contraceptive. There were several side effects among the users and commonest were menstrual irregularities and weight gain. Around 47 participants had hypertension and 120 had raised BMI. The factors associated with hormonal contraceptive use were socioeconomic status, religion, BMI and monthly income of family of the study population. The present study provides valuable information regarding significant positive correlation of age, BMI and duration of hormonal contraceptive use with systolic and diastolic BP.

KEYWORDS

Hormonal contraceptive, women of reproductive age, determinants

***Received on**: February 21, 2022*
***Accepted for publication**: May 05, 2022*

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DOI: https://doi.org/10.3126/nmcj.v24i2.46038

INTRODUCTION

Contraception has been identified as an effective method of preventing unwanted pregnancy and unsafe abortion. It is an effective means of family planning and fertility control that plays a major role in promoting maternal and child health.[1] Among 1.9 billion female of reproductive age group (15-49 years) living in the world in 2019, over half (1.1 billion) were in need of family planning. Eight hundred and forty-two million were using modern methods of contraception while 80 million were using traditional methods or have an unmet need for family planning. Around 190 million women wanted to avoid pregnancy and were not using any contraceptive methods.[2]

Rapid population growth is common in most developing countries due to high fertility, high birth rates, and low contraceptive prevalence rate.[3] In low and middle-income countries, the incidence of unplanned pregnancies varies from 14% to 62% in which Nepal is having 41%, Pakistan 38.2%, Bangladesh 30.3% and Sri Lanka 23.3%.[4] Whereas in the developing world, increased contraceptive use has already decreased the number of maternal deaths by 40% over the past two decades, and it is estimated that further 30% could be avoided by fulfilling the unmet need for family planning, principally by lowering the number of pregnancies.[5]

High fertility rate leads to high population growth rate which results in leading economic and social problems faced by the developing world. Poverty and decreased life expectancy are believed to be associated with high population growth rate. Promotion of family planning has the potential of lowering poverty and hunger in countries with high birth rates. The increased access to family planning services offers benefits to the household, country, and the world at large. This can help women to achieve optimum spacing between births and also the number of births, which is likely to save lives of children. When the unwanted pregnancies declines, family planning services lowers injury, illness, and death associated with child birth, abortions, and sexually transmitted infections (STIs) including HIV/AIDS.[6]

The family planning program in Nepal was started with establishment of family planning association of Nepal in 1959. Family planning is one of the priority programs of Government of Nepal, Ministry of Health and Population. Among family planning methods, female sterilization (41%) covers the greatest part of the contraceptive method mix among all current user, followed by Implant (15%), Depo-provera (14%), male sterilization (12%), condom (7%), oral contraceptive pills (OCP) (6%) and lastly intra-uterine contraceptive device (IUCD) (5%) in 2076/77. The national modern contraceptive prevalence rate (mCPR) is 37% in the fiscal year (FY) 2076/77 which was 39% in FY 2075/76 and 40% in FY 2074/75 showing a declining trend.[7]

The modern contraceptive prevalence rate among married women of reproductive age (MWRA) increased worldwide from 55% to 57.1% in between 2000 and 2019. The varied reasons for this slow rate of increase include: limited choice of methods; limited access to services, particularly among young, poorer and unmarried people; fear or experience of side-effects; cultural or religious opposition; poor quality of available services; users and providers bias against some methods; and gender-based barriers to accessing services.[8] Hormonal contraception has made a difference in controlling female fertility. The popularity and widespread use of hormonal contraceptives is because of certain benefits, like: being a highly effective and reversible form of contraception; women can easily change the method of contraception; the failure rate is less than 1%; and they have got a well-established safety profile.[9]

MATERIALS AND METHODS

This is a community based cross sectional study using simple random sampling technique which was conducted among the married women using hormonal contraceptive of reproductive age group 15-49 years of 8 and 9 wards of Gokarneshwor Municipality. Sample size was calculated using formula z^2pq/d^2, where (p) was taken modern contraceptive prevalence rate (mCPR) in Nepal is 37% in 2076/77[7] and d was taken 6%. By using the formula, the total sample size was 250.

The study period was of six months from October 2021 to March 2022. Female <15 years and >49 years in the study area, married couple using other than hormonal contraceptive methods, married female of reproductive age group who are abroad, pregnant ladies and unmarried or divorced ladies in that area were kept in exclusion criteria. Participants in this study were explained about the purpose of the visit and consent was taken individually. During the interview with the participants the information included were about socioeconomic characteristics, hormonal contraceptive methods in practice, health effects following use of hormonal contraceptive method, reason for changing previous contraceptive method and anthropometric measurement of them. After measuring the height by measuring tape and weight by bathroom weighing scale, Body mass index (BMI) was calculated. Body mass index is based on weight and height of the individual

and measured by weight in kg and height in m^2.[10] The blood pressure was measured by auscultatory method using standard aneroid sphygmomanometer. The method of blood pressure measurement and criteria for diagnosis of hypertension was done according to Joint National Committee (JNC)-VII guidelines SBP ≥140 mmHg and/or DBP ≥90 mmHg and/ or use of anti-hypertensive medicines.[11]

RESULTS

A total of 250 married women of reproductive age group of 15-49 years were interviewed in which 141 (56.4%) used Depo-Provera, 55 (22%) used OCP and 54 (21.6%) used implant.

About one third of women i.e. 78 (31.2%) were of 30-34 years and 3 (1.2%) were of 15-19 years. Most respondents practiced Hinduism and 120 (48%) were of Janajati ethnicity. Respondents with secondary level of education were 63 (25.2%) and 118 (47.2%) were involved in some profession. Just under half (46.4%) of the respondents were of upper middle socioeconomic status and there were no participants who were of lower socioeconomic status (Table 1).

As shown in Table 2, ANOVA test was conducted for difference in means. The mean SBP in participants using OCP was 119.9±9.6, Depo-Provera 119.5±10.2 and implant 121.4±11. The mean DBP (mmHg) among the participants using OCP was 78.1±6.6, Depo-Provera 78.7±7.5 and implant 79.9±7.9. The mean BMI (kg/m^2) of the participants using OCP was 26.4±3.6, Depo-Provera 24.7±3.5 and implant 24.7±2.8. This result shows the association of BMI with hormonal contraceptive use. The 95% CI for BMI among OCP users was 25.4-27.3, among Depo-Provera users was 24.1-25.3 and among implant users was 24.02-25.5 kg/m^2.

As shown in Table 3, weight gain and menstrual irregularities were seen more among the participants using hormonal contraceptives. Other side effects were back pain, melasma, nausea, headache, dysmenorrhea, per vaginal discharge and heavy bleeding.

In table 4, the hormonal contraceptive use showed the association with socioeconomic status, religion, BMI and monthly income of family of the study population. In both upper and lower socioeconomic status of the participants, maximum were using Depo-Provera. Across all categories of religion, monthly family income and BMI, a majority of women were using Depo-Provera. Around 47 participants had hypertension and 120 had raised BMI.

As shown in table 5, Logistic regression analysis was conducted. With implant users as reference group, the participants having lower socioeconomic status had 2.9 times higher odds of using Depo-Provera than those having higher socioeconomic status (OR 2.968; CI 1.544-5.706;

Table 1: Sociodemographic characteristics of respondents

Variables	n	%
Age (Years)		
15-19	3	1.2
20-24	38	15.2
25-29	67	26.8
30-34	78	31.2
35-39	41	16.4
40-44	16	6.4
45-49	7	2.8
Religion		
Hindu	133	53.2
Buddhist	105	42.0
Cristian	11	4.4
Muslim	1	0.4
Caste		
Brahmin	43	17.2
Chhetri	37	14.8
Thakuri	1	0.4
Newar	25	10.0
Terai madhesi	15	6.0
Janajati	120	48.0
Dalit	9	3.6
Occupation of respondents		
Home making	132	52.8
Work outside home	118	47.2
Type of accommodation		
Rent	147	58.8
Own	103	41.2
Education of respondents		
Illiterate	20	8.0
Primary	59	23.6
Secondary	63	25.2
Higher secondary	58	23.2
Bachelor	42	16.8
Master and PHD	8	3.2
Family type		
Nuclear	185	74.0
Joint	61	24.4
Extended	4	1.6
Socioeconomic status		
Upper lower	40	16.0
Lower middle	92	36.8
Upper middle	116	46.4
Upper	2	0.8

Table 2: Mean values of SBP, DBP and BMI according to different hormonal contraceptive methods

Variables	Hormonal contraceptives	Min	Max	Mean	SD	Lower 95% CI	Upper 95% CI	p-value
SBP	OCP	100	150	119.9	9.6	117.3	122.5	0.524
	Depo-Provera	90	150	119.5	10.2	117.8	121.2	
	Implant	90	150	121.4	11	118.4	124.4	
DBP	OCP	60	90	78.1	6.6	76.3	79.9	0.439
	Depo-Provera	60	90	78.7	7.5	77.5	79.9	
	Implant	60	90	79.9	7.9	77.7	82.1	
BMI	OCP	20	36.4	26.4	3.6	25.4	27.3	0.006*
	Depo-Provera	18	38.7	24.7	3.5	24.1	25.3	
	Implant	17.6	30.4	24.7	2.8	24.02	25.5	

*Statistically significant

Table 3: Side effects of hormonal contraceptives among respondents

Side effects	OCP n=55 (%)	Depo-Provera n=141 (%)	Implant n=54 (%)
Weight gain	7 (33.3%)	21 (29.2%)	7 (26.9%)
Menstrual irregularities	6 (28.6%)	38 (52.8%)	16 (61.5%)
Back pain	2 (9.5%)	1 (1.4%)	-
Melasma	2 (9.5%)	-	-
Nausea	2 (9.5%)	1 (1.4%)	-
Headache	2 (9.5%)	1 (1.4%)	-
Dysmenorrhoea	2 (9.5%)	5 (6.9%)	1 (3.8%)
PV discharge	-	1 (1.4%)	1 (3.8%)
Heavy bleeding	-	4 (5.6%)	1 (3.8%)

-Multiple response were present

P=0.001). Those whose total monthly income was ≤36550 had 3.3 times higher odds of using Depo-Provera than those having >36550 (OR 3.343; CI 1.594-7.010; *P*=0.001). The participants whose total monthly income was ≤36550 were 2 times more likely to use OCP than those having >36550 (OR 3.026; CI 1.293-7.081; *P*=0.011). This table showed there is significant association of OCP use with monthly income of family and also Depo-Provera use with socioeconomic status and monthly income of family.

Correlation between duration of using hormonal contraceptives, BMI, BP and age with level of significance is given in table 6. There was significant positive correlation of duration of using hormonal contraceptives with age and both systolic and diastolic BP. It showed that BP increased with increase of age and BMI.

As shown in Table 7, 115 participants had used another contraceptive methods in past. The different reasons for changing previous contraceptive methods were inconvenience in using, wanted long duration contraceptives, menstrual irregularities, lower abdominal pain, heavy per vaginal bleeding, uterine infection, occasional using, used many years and lactating at present. Thirty-three of the participants used multiple methods where as 43 used condom in the past. Twenty-six participants had inconvenience in using condom by male and switched to hormonal contraceptive by female at present.

DISCUSSION

The study conducted by Gonie *et al*[12] showed more than half percent of women (55.6%) were of the age group 21–30 years and around 88.6% of the study participants were Muslim. Around 18% of the participants had completed their primary education whereas more than two-third of married women (64.6%) did not attend any formal education. Around 53% of the respondents had total annual income of 441-2200 USD and around 41% had 22-440 USD. In this study around one third of the participants i.e. 31.2% were of 30-34 years and most respondents practiced *Hinduism* and 48% were of *Janajati* ethnicity. Respondents with secondary level of education were 63(25.2%) and just under half (46.4%) of the respondents were of upper middle socioeconomic status.

In the study conducted by Sabatini *et al*[13] showed that blood pressure differences between hormonal contraceptive users and non-users tend to increase with age. Furthermore, obesity, seem associated with an increase of blood pressure during hormonal

Table 4: Association of different variables with hormonal contraceptive use				
Variables	**OCP**	**Depo-Provera**	**Implant**	**p-value**
Socioeconomic status				
Lower	26	87	19	0.03*
Upper	29	54	35	
Hypertension				
Yes	6	30	11	0.23
No	49	111	43	
Caste				
Brahmin and *Chhetri*	16	41	23	0.169
Other	39	100	31	
Religion				
Hindu	33	65	35	0.03*
Other	22	76	19	
Education of respondents				
Illiterate/Primary	19	44	16	0.85
Secondary and above	36	97	38	
Type of accommodation				
Rent	36	85	26	0.16
Own	19	56	28	
Age of marriage				
≤20	24	62	25	0.95
>20	31	79	29	
Type of family				
Nuclear	38	109	38	0.39
Joint	17	32	16	
Total pregnancy				
≤2	38	105	37	0.61
>2	17	36	17	
Total live children				
≤2	40	112	43	0.5
>2	15	29	11	
Total abortion				
No	48	123	47	0.9
Yes	7	18	7	
Total still birth				
No	54	139	54	0.6
Yes	1	2	0	
Monthly income of family				
≤36,550	24	65	11	0.04*
>36,550	31	76	43	
BMI				
Normal	20	78	29	0.04*
Overweight and obese	35	61	24	

*Statistically significant

In variable BMI, the 3 underweight participants were excluded while calculating this table

Table 5: Odds ratio of logistic regression models for determinants of current use of contraception

Hormonal contraceptive methods	Variables	B	Std error	df	Sig	Unadjusted odd ratio (95%CI)
OCP	**Socioeconomic status**					
	Intercept	-0.189	0.251	1	0.454	1.652 (0.765-3.565)
	SES lower	o.502	0.393	1	0.201	
	SES upper	_				
	Monthly income of family					
	Intercept	-3.27	0.236	1	0.165	3.026 (1.293-7.081)
	Income ≤36,550	1.107	0.434	1	0.011*	
	Income >36,550	_				
	Religion					
	Intercept	0.147	0.313	1	0.640	
	Hindu	-0.205	0.396	1	0.604	0.814 (0.375-1.770)
	Others	_				
Depo-Provera	**Socioeconomic status**					
	Intercept	0.434	0.217	1	0.046	
	SES lower	1.088	0.333	1	0.001*	2.968 (1.544-5.706)
	SES upper	_				
	Monthly income of family					
	Intercept	0.570	0.191	1	0.003	
	Income ≤36,550	1.207	0.378	1	0.001*	3.343 (1.594-7.010)
	Income>36,550	_				
	Religion					
	Intercept	1.386	0.256	1	0.00	
	Hindu	-0.767	0.331	1	0.21	0.464 (0.243-0.889)
	Others	_				

-The reference category is implant users
* Statistically significant

Table 6: Correlation between duration of hormonal contraceptives, age, BMI, SBP and DBP.

Variables	Duration of using the hormonal contraceptives	BMI	Systolic BP	Diastolic BP	Age
Duration of using the hormonal contraceptives	1	0.041	0.214**	0.235**	0.416**
BMI	0.041	1	0.205**	0.140*	0.211**
Systolic BP	0.214**	0.205**	1	0.668**	0.342**
Diastolic BP	0.235**	0.140*	0.668**	1	0.275**
Age	0.416**	0.211**	0.342**	0.275**	1

**. Correlation is significant at the 0.01 level (2 tailed)
*. Correlation is significant at the 0.05 level (2 tailed)

Table 7: Reasons for changing previous contraceptive methods

Reasons for changing previous contraceptive methods	Previous contraceptive methods used (115)						
	Condom (43)	OCP (19)	Emergency pills (1)	Depo-Provera (15)	IUCD (2)	Implant (2)	Multiple methods (33)
Inconvenience in using (43)	26	9	-	2	-	-	6
Wanted long duration contraceptives (34)	8	5	-	2	-	-	19
Menstrual irregularities (11)	-	1	-	7	1	-	2
Lower abdominal Pain (11)	6	2	-	-	-	-	3
Heavy pv bleeding(6)	-	-	-	2		2	2
Uterine Infections (4)	3	-	-	-	1	-	-
Occasional using (2)	-	-	1	-	-	-	1
Used many years (2)	-	1	-	1	-	-	-
Lactating at present(2)	-	1	-	1	-	-	-

contraceptive use. In a similar study carried out on hormonal contraceptive users and past users aged 28–75 years, showed that hormonal contraceptives seem to increase blood pressure and also women who take hormonal contraceptives have an increased risk of developing new hypertension.[14] In another similar study the highest weight gain was among those who used injections followed by users of combined contraceptive pills.[15] In this study around 47 (18.8%) participants were found to be hypertensive and 120 (48%) were overweight and obese. The maximum BMI was 38.7 in Depo-Provera user and followed by 36.4 in OCP user also showed significant positive correlation of duration of using hormonal contraceptives with age and both systolic and diastolic BP.

In the study conducted by Rana *et al*[16] Depo-Provera users were found to be more. The contraceptive users were highest among the 20 -34 year old females. Among the 120 women who were interviewed, 46.67 percent said that they had no bad health effects whereas rest of the respondents had different side effects like lower abdominal pain, mild/moderate bleeding, nausea, vomiting, weight gain/weight loss, mild backache and amenorrhea. In this study, also maximum respondents were Depo-Provera users and the side effects were weight gain, menstrual irregularities, back pain, melasma, nausea, headache, dysmenorrhea, per vaginal discharge, heavy bleeding and also around 47 (18.8%) of the hormonal contraceptive users had hypertension and 120 (48%) had raised BMI.

In the study, conducted by Wuni *et al*,[17] the factors associated with current contraceptive use among women attending child welfare clinic were level of education, occupation, discussing FP during ANC or with one's partner, desire to space children, resuming sexual intercourse and previous contraceptive use. In the similar study, women's age, duration of marriage and family income were significant determinant of contraception use.[18] In another similar study administrative division, place of residence, religion, number of household members, woman's age, occupation, body mass index, breastfeeding practice, husband's education, wish for children, living status with wife, sexual activity in past year, women amenorrheic status, abstaining status, number of children born in last five years and total children ever died were significantly associated with contraception use in Bangladesh.[19] In this study the socioeconomic status, religion, monthly income of the family and BMI of the participants were associated with use of hormonal contraceptives.

In the study done by Adeyemi *et al*,[20] the odds ratio of age group 40–49 years using contraception more than the age group of 15–19 years was 14.1 (OR 14.1; CI 3.06–73.24; *P*=0.0001), the married were above four times more likely to use contraception than the singles (OR 4.5; CI 3.03–6.72; *P*,0.0001) and those with tertiary level of education were three times more likely to use contraception in compare to those without formal education (OR 3.1; CI 1.13–9.95; *P*=0.0268). In this study, with implant users as reference group, the participants

having lower socioeconomic status had 2.9 times higher odds while using Depo-Provera than those having higher socioeconomic status (OR 2.968; CI 1.544-5.706; *P*=0.001). Those having total monthly income ≤36,550 had 3.3 times higher odds of using Depo-Provera than those having >36,550 (OR 3.343; CI 1.594-7.010; *P*=0.001). The participants whose total monthly income was ≤36,550 were 3 times more likely to use OCP than those having >36,550 (OR 3.026; CI 1.293-7.081; *P*=0.011).

The study showed that maximum respondents were Depo-Provera users and the socioeconomic status, religion, monthly income of the family and BMI of the participants were associated with use of hormonal contraceptives. The side effects while using hormonal contraceptives were weight gain, menstrual irregularities, back pain, melasma, nausea, headache, dysmenorrhea, pv discharge and heavy bleeding. Nearly half of the respondents had raised BMI and there was significant positive correlation between age, BMI and duration of using hormonal contraceptives with both systolic and diastolic BP.

Conflict of interest: None

Source of research fund: None

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