

Knowledge and practice of hormonal contraceptives among females aged 18-45 in 3 districts of Belize. Is prescription still a barrier to contraceptives?

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Abstract

Aims: Hormonal contraceptives have been used to prevent unwanted pregnancies, reduction of maternal and infant mortalities, and enhancements of women economic productivity. Demands for contraceptives are mainly dependent on the knowledge and access to contraceptives by women of childbearing age. Prescriptions only access to contraceptives, have been considered as barriers to contraceptives, and many countries are making efforts to remove that barrier. This study examined the knowledge, practice, and access to hormonal contraceptives with a view to provide vital information to review or strengthen current contraceptives policies in the country of Belize.

Methods: A descriptive cross-sectional study designed was employed to collect data from 381 women aged 18-45 in 3 districts of the country of Belize. A well-structured modified questionnaire was used for data collection. Data were entered and analysed using Statistical Package for Social Sciences (SPSS) version 25 and Epi-Info, respectively. Data are presented and described by means of frequency tables, percentages, mean, and standard deviations.

Results: The mean age of the participants was 24 ± 0.9 years, with 98% being knowledgeable of hormonal contraceptives. 87 percent of women reported using hormonal contraceptives, with 47% indicating oral contraceptives. About 70% of the women experienced side effects with contraceptives, and the most common side effect reported was weight gain (36%). Finally, 75% of participants reported obtaining hormonal contraceptives using prescriptions, while 77% of the respondents indicated that hormonal contraceptives should still be obtained through prescriptions.

Conclusion: The results of this survey showed that women aged 18-45 who participated in the study were aware and familiar with hormonal contraceptives. Women had access to contraceptives and were using hormonal contraceptives majorly for the prevention of pregnancy. Prescription was not seen to be a barrier to accessing contraceptives among the women studied, possibility because of active school advocacy for contraceptive use and the literacy level of the study participants.

Introduction

In 1999, a nationwide family health survey (FHS) of 3,613 women aged 15 to 49 was conducted in Belize with the aim of providing useful data for the development of sustainable programs to improve the quality of women in the country [1]. The survey reported 92% oral contraceptive usage while 88% and 85% use injectable contraceptives and condoms, respectively. Access to hormonal contraceptives in Belize requires prescriptions, but presently, it is a common practice for women in Belize to access hormonal contraceptives without a prescription. The last accessible data on a national survey on contraceptive usage in Belize was in 1999 [1]. There is a need for an updated survey to present current realities in the use of contraceptives as a means to prevent unwanted pregnancies, improve school attendance, enhancements of women economic productivity, and reduction of maternal morbidity and mortality [2].

Hormonal contraceptives are effective in preventing pregnancies when used appropriately. They reliably prevent pregnancies by a singular or combinatorial mechanism depending on the contraceptive

being used [3]. Majorly, hormonal contraceptives produce their effect by effectively preventing ovulation [4]. Others hinder the implantation of fertilized eggs in the womb, while the rest causes the production of thick and sticky cervical mucus, thereby preventing the ease of sperm motility and subsequent prevention of the sperm reaching the eggs⁴. A number of hormonal contraceptives are available, but all have similar effects in preventing pregnancies by influencing hormonal levels. The most common forms of hormonal contraceptives include the vaginal ring, oral contraceptives, hormone-releasing contraceptive coils, and contraceptive skin patches [2,5]. A few adverse effects have

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been reported with hormonal contraceptives. Mild adverse effects reported include breast tenderness, nausea, vomiting, decreased libido, headaches, mood swings, and vaginal yeast infections or spotting menstrual periods. The risk of developing thrombosis and certain cancers are some of the serious adverse effects reported. Women aged 40 years and above seem to have higher risks of adverse effects when compared to those of younger women. Regardless of these adverse effects, hormonal contraceptives have the advantages of preventing pregnancies, relieving premenstrual and menstrual pain, and reducing the incidence of acne while improving skin health [4].

The population division of the United Nations Department of Economic and Social Affairs, reported a 63% increase in global use of traditional and modern contraceptives by women of reproductive age [2]. The report further stated that 58% of women used modern contraceptive methods in 2017, making modern contraceptives the most used contraceptives globally by 92%. Worldwide, an increase in the number of women of reproductive age coupled with increased awareness of contraceptive usage is expected to cause an escalation in contraceptive use. This increase is projected to rise from 778 million women in 2017 to 798 million in 2030 [2]. The demand for modern contraceptive methods for family planning was reported to have increased among women to 78% in 2017 when compared with 75% in 2000.

Furthermore, in 2016, the World Bank collection of development indicators reported Belize's contraceptive prevalence among women aged 15-49 to be 51.4% (Trading Economics). The prevalence of contraceptive use was high because the reproductive population (aged 15-49) in Belize is currently estimated to be about 47% of the total population [1]. Despite the high percentage of reproductive population and the seeming demand for contraceptives, access to hormonal contraceptives in Belize is by prescription only. This might create barriers to contraceptive access leading to intermittent or complete abandonment of hormonal contraceptive use [6,7]. Studies have demonstrated that women of childbearing age using hormonal contraceptives are capable of determining their suitability to use hormonal contraceptives using self-screening tools [4,7-9].

Based on the numerous evidence supporting women of childbearing age to have access to contraceptives without prescriptions, the ACOG [7] committee Opinion number 788 of October 2019 provided a strong recommendation and support for hormonal contraceptives to be made available over the counter, while prescription restrictions are removed. The report concluded that increased access provides continuation rates as compared to prescription-only access. Also, women prefer to access the hormonal contraceptives over the counter as compared to using prescriptions [7]. Without ease of access to hormonal contraceptives, unintended pregnancies and sexually transmittable diseases will increase public health concerns [10,11].

In Belize, despite the apparent increase in the reproductive age population¹ and the seemingly prescription restrictions to access hormonal contraceptives, women still access contraceptives with or without prescriptions. A hormonal contraceptive can be obtained at any hospital, clinic, or health centre at no cost to the woman. Women can also purchase contraceptives from most pharmaceutical stores over the counter. The prescription barrier to hormonal contraceptives, therefore, has been a debatable issue to the point that recently the American College of Gynaecologist presented a strong opinion in support of allowing women to access contraceptives without the obstacle of a prescription [7].

This study therefore was conducted to examine the knowledge and practice of hormonal contraceptives among women of childbearing

age (18-45) in 3 districts of the country of Belize. The study was also designed to identify if prescription was a barrier to accessing contraceptives. Finally, the study intends to provide some information on hormonal contraceptives that might assist in reinforcing national programs and strategies on hormonal contraceptives in Belize.

Methods

Study population

A descriptive cross-sectional study design was employed for this survey and was carried out in 3 districts of the country of Belize. Women of childbearing age (aged 18-45) were the population of the study. The 3 districts for the study were randomly selected as representation districts for data collection. Belize, Cayo, and Orange Walk districts were selected, and data were collected from May to November 2019.

Sample size determination

A sample size of 381 females aged 18-45 was obtained using Fisher's formula with 95% confidence level and a precision of 0.05 [12]. Further adjustment to the sample size was made for a 10% nonresponse. Women for the study were selected from households within the selected districts of the study.

Sampling technique

A multistage and stratified sampling technique was employed in this study. In the first instance, the districts were selected randomly then stratified into towns/cities. The sample size was proportionally distributed between districts and towns/cities within the districts. The representative samples were selected from towns/cities. Lastly, in each town or city women aged 18-45 were stratified based on age range and from each stratum, a section of the women was randomly selected to participate in the study based on the inclusion criteria. 127 samples were collected from each district making a total of 381 women for the 3 selected districts.

Data collection

Data were collected using a self-administered questionnaire. The development of the questionnaire followed a review of a number of studies and modified for the current survey [13-16]. The developed questionnaire was first pre-tested among 30 women and identified ambiguity corrected. Basic respondent's socioeconomic characteristics such as sex, age, marital status, and educational status were included in the first section of the questionnaire. The second section of the questionnaire included 13 items on hormonal contraceptive access, knowledge, and attitude. The third section of the questionnaire explored the practices and experiences of hormonal contraceptive use. The section had 10 items included. Experts from the Faculty of Health Sciences University of Belize reviewed the questionnaire for face and content validity after it was pretested.

Inclusion and exclusion criteria

Women between the ages of 18 and 45 residing in the 3 selected districts of Belize were included in the study. Women who were willing to participate and gave voluntarily informed consent were included in the study. Women who were not willing to participate and did not give informed consent were excluded from the study.

Ethical consideration

The study was approved by the Faculty of Health Sciences. All ethical issues related to the conduct of the study were strictly observed

throughout the entire study. Informed consent was obtained from the participants before they were included in the study. Participation was voluntary with full right to withdraw at any point in the study without penalty. Assurance of confidentiality and anonymity of the data was provided and ensured throughout the study period [17]. The research was strictly conducted in accordance with the ethical standards as laid down in the 2013 Declaration of Helsinki ethical standards [18].

Data analysis and management

Data were entered and analysed using Statistical Package for Social Sciences (SPSS) version 25 [19] and Epi-Info [20], respectively. Descriptive statistics were majorly applied to assess the distribution of the variables. Frequency tables, percentages, mean, and standard deviations were used to present the results in tables and charts. $P < 0.05$ was set as the level of significance. Variables with a p -value < 0.05 during the bivariable analysis were fitted to multiple logistic regression analysis. Further, adjusted odds ratio (AOR) with 95% CI and p -value less than 0.05 were used to determine variables significantly associated with self-access to hormonal contraceptives.

Results

The mean age of the participants was 24 ± 0.9 years. The majority (53%, 202) of the participants reported belonging to the Mestizo ethnic group, while Creole, 25.7% (98), Maya 7.6% (29), and Garifuna 6.8% (26). Other ethnicities were represented by 6.8% (26) made up the rest of the participants. The socioeconomic factors of the respondents are presented in table 1. The majority (35.7%) were single, while about 27% were in a common law relationship while 25% were married. Participants were asked about their religious affiliation and the majority (49.1%) of the participants were Catholics with evangelicals and Pentecostals represented by 27% and 5.2%, respectively. The educational status of the respondents indicated majority (64.3%) had attained tertiary-level education, while about 30% had completed primary school education. 52.2% were gainfully employed, while 26.2% were students (Table 1).

Table 2 presents the knowledge of the participants regarding hormonal contraceptives. About 98% of the participants reported that they were aware of hormonal contraceptives with media

Table 1. Socioeconomic factors of the participants (n=381)

	Frequency	Percentage
Marital status		
Single	136	35.7
Common Law	102	26.8
Married	96	25.2
Separated	28	7.3
Divorced	5	1.3
Religious affiliation		
Catholics	187	49.1
Evangelicals	104	27.3
Pentecostals	20	5.2
Other	66	17.3
Education		
No formal education	1	0.3
Primary	22	5.8
Secondary	113	29.7
Tertiary	245	64.3
Employment		
Unemployed	32	8.4
Student	100	26.2
Employed	199	52.2
Housewife	50	13.1

Table 2. Knowledge of hormonal contraceptives (n=381)

Aware/know of HC	Frequency	Percentage (%)
Yes	373	97.9
No	8	2.1
Sources of information		
Media	39	10.2
Family	53	13.9
School	91	23.9
Clinic	80	21
Friends	41	10.8
Other	12	3.1
No response	6	1.6
Multiple sources	59	15.5
Duration of HC knowledge		
Less than 1 year	48	12.6
2-5 years	119	31.3
6-9 years	60	15.7
10 years and above	152	39.9
No response	2	0.5
What to consider in the choice of HC		
How it works	78.8	20.70%
Ease of use	112.8	29.60%
Affordability	112.4	29.50%
Adverse effect	77	20.20%
Knowledge of if contraceptives are safe		
Yes	309	18.9
No	72	81.1
What contraceptives are used for		
Prevent unwanted pregnancies	191	50.1
Family Planning	163	42.8
Emergency Contraceptive	1	0.3
Other	26	6.8
Contraceptive Known by Participant		
Oral Pills	128	33.6
Injections	100	26.2
Vaginal ring	1	0.3
Implants	28	7.3
Condoms	8	2.1
Multiple responses	108	28.3
No response	8	2.1
Knowledge on contraceptives side effects		
Yes	326	85.6
No	14	3.7
Sources of contraceptives		
Pharmacy	135	35.4
Hospital	33	8.7
Clinic	79	20.7
Friends	21	5.5
Multiple responses	107	28.1
No response	6	1.6
Opinion on if HC should be prescribed or not		
Yes	293	76.9
No	88	23.1

(10.2%), family (14%), school (24%), clinic (21%), and friends (11%) as sources of knowledge on hormonal contraceptives (HC). Some participants indicated multiple sources (15.5%) of information for hormonal contraceptives. All participants reported having knowledge of hormonal contraceptives. The knowledge of HC ranged from less than a year (13%), 2-5years (31.3%), 6-9 years (16%), and 10 years and above (40%). The ease of use (30%) and affordability were, respectively

reported as considerations for choosing hormonal contraceptives. Other considerations included how the contraceptive works (21%) and side effects (20.2%) associated with the contraceptive. Participant's knowledge of contraceptive safety revealed that the majority (81.1%) were knowledgeable of hormonal contraceptive safety, while about 19% were not aware if they were safe or not. The purpose of which contraceptives were used was reported to be prevention of pregnancy (50%) and family planning (43%). Oral contraceptives were reported to be the most common (34%) hormonal contraceptives known to participants. Other reported contraceptives were injectable (26%), implants (7.3%), vaginal ring (0.3%), and some (28%) chose more than one option. Further probing on the knowledge of participants on whether HC produces side effects, indicated that 86% believe they cause side effects with only 3.7% reporting that HC does not cause side effects. Finally, the participants reported that HC could be obtained from the pharmacy (35.4%), hospital (8.7%), and clinic (21%). Many (28%) respondents chose more than one source for contraceptives (Table 2).

Table 3 shows hormonal contraceptive practices among Belizean women aged 18-45. 87% of the women reported having used a hormonal contraceptive while 13.4% indicated not use hormonal contraceptives. Of the 13.4% who reported not using hormonal contraceptives, 9.2% stated concerns about side effects as the reason while 2.5% indicated

Table 3. Hormonal contraceptive practice (n=381)

	Frequency	Percentage (%)
If participant used contraceptive before		
Yes	330	86.6
No	51	13.4
Reason for not using contraceptive (n=51)		
Not sexually active	10	19.6
Concern about side effects	35	68.6
Postpartum tubal ligation	2	3.9
Religious belief	2	3.9
Abstinence	2	3.9
Type of contraceptive used		
Oral Pill	178	46.7
Injection	80	21
Emergency Contraceptive	20	5.2
Implants	15	3.9
Vaginal ring	7	1.8
Female condom	28	7.3
None	2	0.5
No response	51	13.4
Reason for using contraceptives		
Prevent pregnancy	222	58.4
Irregular menstruation	29	7.6
Skin condition	51	13.5
Irregular bleeding	18	4.7
Family planning	1	0.3
Other	8	2.1
No response	51	13.4
How long since you have been using HC		
Less than 1 year	94	24.7
2-5 years	111	29.1
6-9 years	85	22.3
10 years and above	40	10.5
No response	51	13.4
Currently using contraceptives		
Yes	244	64
No	86	22.6
No response	51	13.4

Table 4. Experience with contraceptives (n=381)

	Frequency	Percent (%)
Types of contraceptive used		
Skip	86	22.6
Microgynon (oral)	55	14.4
Diane 35 (oral)	26	6.8
Femiane (oral)	15	3.9
Microlut	2	0.5
Qlaira	5	1.3
Yasmin	26	6.8
Yaz (oral)	24	6.3
Novular	1	0.3
Noristerat (2-month Inj)	11	2.9
Depo Provera (3-month Inj)	35	9.2
Nomagest (inj)	7	1.8
Mesigyna (inj)	11	2.9
Implanon (sub dermal)	20	5.2
Mirena (vaginal)	5	1.3
Mesygest	1	0.3
No response	51	13.4
If HC was prescribed		
Prescribed	284	74.5
OTC	45	12
No response	52	13.5
Frequency of HC intake		
Regularly	211	55.4
Not regularly	117	30.7
No response	53	13.9
Experienced side effects with HC		
Yes	268	70.3
No	62	16.3
No response (not taking HC)	51	13.4
Side effect experienced		
Weight gain	136	35.7
Acne	31	8.1
Tiredness	17	4.2
Irregular bleeding	32	8.4
Dizziness	1	0.3
Mood changes	19	5
Absence period	28	7.4
Bruising	4	1.3
No response	113	29.7
Response to side effects		
Sought medical attention	133	35
Sought Pharmacist advice	62	16.2
Sought a friends/online counsel	65	17.1
Stopped taking HC	70	18.3
No response	51	13.4

they were not sexually active. Religious beliefs (0.5%), abstinence (0.5%), and postpartum tubal ligation (0.5%) were the other reasons given for not practicing contraception with hormones. Oral contraceptives were the major hormonal contraceptive reported (47%) by the participants, while prevention of pregnancy (58.4%) was the foremost reason given for hormonal contraceptive practice. Table 3 also presents data indicating that 64% of the women surveyed were at the time survey using hormonal contraceptives, with the majority (51.4%) indicating having been using contraceptives for 2-9 years. 77 percent of the respondents opined that hormonal contraceptives should be prescribed, while 23% indicated that they should access contraceptives without prescriptions

Table 4 presents reported data on types of hormonal contraceptives used, if it was prescribed to the participants, frequency of intake, side effects experienced, and how participants responded to hormonal contraceptive side effects. As indicated in Table 3, most of the hormonal contraceptives used by the participants were oral pills. Some of the oral pills reported were Microgynon (14.4%), Diane 35 (6.8%), and Yasmin (6.8%). Depo Provera was the major injectable (9.2%) reported by the participants. Virginal (Mirera 1.3%) and sub-dermal (Implanon 5.2%) were also reported by the respondents. While the majority (75%) of the respondents reported obtaining contraceptives through prescription, 55.4% practiced hormonal contraction regularly. Approximately 70% experienced side effects such as weight gain (36%), irregular bleeding (8.4%), acne (8.1%), and absence of menstruation (7.4%) were all reported. Among those who reported experiencing side effects with hormonal contraception, 35% of them sought medical attention, 16.2% sought counselling from a pharmacist while 18.3% stopped taking the hormonal contraceptive.

Discussion

Knowledge and practices of hormonal contraceptives have continued to increase in both developed and developing countries globally. Even though the practice of hormonal contraceptive practice was high among youths, women of reproductive age generally use hormonal contraceptives for various reasons. No statistically significant variations in knowledge and practice of hormonal contraceptives were seen among the districts or ethnicities of the participants.

In the present study, the knowledge and practice of hormonal contraceptives was evaluated among women of reproductive age 18-45. The mean age of the participants 24 ± 0.9 years. The mean age of hormonal contraceptives users observed in this study was a good indication that younger women are actively involved in the use of hormonal contraceptives. Most reported studies on contraceptives targeted women between the ages of 15 and 49 [22]. Socioeconomic factors, religion, prevention of pregnancies or sexually transmittable diseases, educational and employment status, and access to contraceptive services are some of the factors that make women to seek contraceptives.

The results of our study showed that the majority of the participants were single (36%). Also, about 27% and 25% of the respondents were in a common law or marital relationship, respectively (Table 1). Previous studies [21] on unmarried women and unplanned pregnancies in the United States reported that women who have single partners are more likely to use contraceptives that are most effective, control the choice of contraceptive method used, and not likely to indulge in sex in combination with drugs. The study further stated that such unmarried women are more likely to indulge in unprotected sex. Almost half (49%, $P < 0.05$) of the respondents were Catholics. Multivariate logistic analysis of the independent effects (unadjusted) shows the odds of hormonal contraceptive usage among Catholics was 22.32 times higher than that of Pentecostals. Overall, religion did not seem to be a barrier to the use of hormonal contraceptives by women in the current study. Similar studies in other countries have shown religion as a factor influencing contraceptive use among women [22-24]. Respondents in the current study had attained a significant level of educational status, with the majority (64%) having a tertiary-level educational qualification. A significant association was seen among educated women with tertiary education when compared to women with secondary education. A woman with tertiary education had a 22% higher chance of using hormonal contraceptives than a woman with primary school education (AOR: 1.23, 95% CI: 1.12-1.32). Sex education in Belizean schools

promotes the use of contraceptives more than abstinence. Education has been reported in many other studies as a marker for contraceptive usage [25-29].

With regard to the knowledge of contraceptives, about 98% of the respondents reported being knowledgeable about hormonal contraceptives; however, when asked about the types of contraceptives, 2% reported condoms (Table 2). This response was insignificant in terms of women unaware of hormonal contraceptives. The level of awareness of hormonal contraceptives seen in this study is in line with a recent study on family planning in the southern Belize [16]. The study reported that 87.2% of women were aware of injectable depot progesterone, while about 81% indicated knowledge of oral contraceptive pills. In the current study, about 47% of the women reported using oral pills, while 21% used the injectable (Table 3). This result is in line with a previous SIB's country-wide survey [1], where the survey reported 92% oral contraceptive use, while 88% and 85% use injectable contraceptives and condoms, respectively, in a country-wide survey. The media, family, school, or friends were the commonly reported sources of hormonal contraceptives information by the survey participants. The level of awareness of hormonal contraceptives in this study was seen to be high among the participants, the results corroborate similar studies both in Belize [16] and other countries [30]. Other studies have shown that women have poor or low knowledge of contraceptives among the population studied [31-33]. Similarly, the results of this study showed not only that women have knowledge of contraceptives, but also that women demonstrated having a good knowledge of the hormonal contraceptives available in the market. Some of the respondents reported being familiar with both oral pills (34%), injections (26%), and implants (7%).

The results of our study further showed that in addition to being knowledgeable about hormonal contraceptives. The reasons given by respondents for using hormonal contraceptives are in line with previously reported studies [22-24]. Prevention of pregnancy (58%), irregular menstruation (12.3%), and skin conditions (16%) were reported by the respondents (Table 3). The respondents obtained their contraceptives through prescriptions (75%) and regularly (55%) use contraceptives (Table 4). Only a few (12%) reported obtaining their hormonal contraceptives over the counter. The results of this study, therefore, did not show prescription as a barrier to accessing hormonal contraceptives in Belize. This is contrary to the position of the American College of Gynecologist as well as other reports in support of their position that women prefer to access the hormonal contraceptives over the counter as compared to using prescriptions. Although increased access provides continuation rates as compared to prescription only access, the participants of the current study did not report prescription as a barrier to access [7]. Without ease of access to hormonal contraceptives, unintended pregnancies and sexually transmittable diseases will increase public health concerns [10,11,34,35]. A direct relationship therefore exists between contraceptive use and reduction in maternal and infant mortality. The increased access rate seen in this study could be attributed to the high literacy level of respondents as well as the advocacy of contraceptive use in schools.

Out of the about 47% of the women who reported using oral contraceptives also indicated provided the names of oral contraceptives they use. Microgynon (14%), Diane 35(7%), Femiane (4%), Yasmin (7%), and Yaz (6%) were some of the oral contraceptives mentioned by the respondents (Table 4). The common injectable hormonal contraceptives mentioned by the participants included Depo Provera (9%), Noristerat (3%), Nomagest (2%), and Mesigyna (3%). The

knowledge of hormonal contraceptives by the participants could make it possible for them to access the contraceptives directly over the counter, thereby overcoming the barriers of a prescription. Only about 23% of the women interviewed did not remember the names of the hormonal contraceptives they were currently taking².

Side effects with contraceptives have been reported as a major cause of contraceptive stoppages³³. Contradiction with our findings, reports from other countries indicate that women stopped the use of contraceptives when they experienced side effects. In Nepal, for instance, more than 50% of women studied stopped using contraceptives within 12 months of usage [34]. Similarly, 22.3% of women using over the counter oral contraceptives reported side effects as compared with 30.4% of women who attended clinics, as reported by the Border Contraceptive Access Study [37]. Equally in Columbia, 51% of over-the-counter contraceptive users and 44.4% of clinic contraceptive users both reported side effects in the use of oral contraceptives [38]. The results of our survey showed that 70% of the women experienced side effects with hormonal contraceptives. Weight gain (36%) was the most common side effect experienced by the participants. None of the respondents reported more serious side effects, such as thromboembolism or thrombophlebitis. Additionally, respondents did not stop using contraceptives because of side effects; rather, they sought some professional counsel. Only 18% of the survey participants stopped using contraceptives because of side effects (Table 4). The level of education of the participants in this study and the level of hormonal advocacy in schools was probably associated with the level of contraceptive use in the current study. Providing a high level of education regarding contraceptives and their side effects to women have shown that such women are likely going to continue using contraceptives despite their side effects [2,39,40].

Finally, the results of this study showed that 13% of women did not use hormonal contraceptives. Concerns about side effects, not sexually active, postpartum tubal ligation, religious beliefs, and abstinence were the reasons given for not using contraceptives.

Conclusion

Hormonal contraceptives have been used to prevent unwanted pregnancies, decrease maternal and infant morbidity, and mortality and enhance women productivity. Access to hormonal contraceptives improves continuity in usage and reduces the negative consequences that arise when they are not accessed.

In this study, women had access to contraceptives with prescriptions and did not consider obtaining contraceptives with a prescription as barrier to access. The participants of the study also had remarkable knowledge about hormonal contraceptives, their names, and side effects. The study participants had tertiary-level education as their measure of literacy status. The possible explanation for the high knowledge and practice seen in this study could be attributed to the high advocacy of contraceptives in Belize's schools and the literacy levels of the participants. Despite being knowledgeable about contraceptive side effects, participants still use contraceptives as a measure for preventing pregnancies. The religion of the participants did not seem to present a barrier to contraceptive usage in this survey.

From the results of current study, we recommend that advocacy for contraceptives use and safety be sustained in Belize's schools as well as other media. Although prescription was not seen to be a barrier to accessing contraceptives, a framework to cater to the needs of those who see prescription as a barrier need to be articulated to ensure access

and improve consistency in contraception. The American College of Gynaecologists recommended Pharmacists-provided over the counter access to hormonal contraceptives while encouraging women to intermittently submit themselves to health checks at the hospitals⁷.

Finally, even though the side effects reported by the respondents in this study did not include thromboembolism and other cardiovascular complications, a study investigating the cardiovascular status of women on hormonal contraceptives should be conducted, especially in women of advanced age. A nationwide study on contraceptive use has been overdue since the last accessed report was from 1999.

Limitations

Many casual relationships could not be established because the study employed a cross-sectional study as the design for the survey. Additionally, recall bias such as over-reporting or under-reporting might be a limitation since the study was self-reported. Despite these limitations, we believe that this study has its strengths. To the best of our knowledge study on hormonal contraceptives at the chosen districts have not been conducted in recent times. Also, since the study was to evaluate the knowledge, practice, and access to hormonal contraceptives, we believe the results of this study have achieved the said objectives of the study. The study results however cannot be generalized to all women in the country of Belize, hence the need for a nation-wide study on contraceptive use in the country of Belize.

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References

1. Statistical Institute of Belize. Available from: http://sib.org.bz/wp-content/uploads/2017/05/Family_Health_Survey_Females_1999.pdf
2. United Nations (2019) Department of Economic and Social Affairs, Population Division.
3. Himes NE (1936) Medical History of Contraception. Pennsylvania: Williams & Wilkins.
4. Frost J, Singh S, Finer L (2007) U.S. women's one-year contraceptive use patterns, 2004. *Perspect Sex Reprod Health* 39: 48-55.
5. Contraception: Hormonal contraceptives. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441576/>
6. Trading Economics: Belize-Contraceptive Prevalence (% of women ages 15-49). Available from: <https://tradingeconomics.com/belize/contraceptive-prevalence-percent-of-women-ages-15-49-wb-data.html>
7. ACOG Committee Opinion No 788. (2019) Over the counter access to Hormonal Contraception. American College of Obstetricians and Gynecology. *Obstet Gynecol* 134: e96-105.
8. Grindlay K, Burns B, Grossman D (2013) Prescription requirements and over-the-counter access to oral contraceptives: a global review. *Contraception* 88: 91-96. [[Crossref](#)]
9. Grindlay K, Grossman D (2016) Prescription Birth Control Access Among U.S. Women at Risk of Unintended Pregnancy. *J Women's Health (Larchmt)* 25: 249-254. [[Crossref](#)]
10. Finer LB, Zolna MR (2014) Shifts in intended and unintended pregnancies in the United States, 2001-2008. *Am J Public Health* 104: S44-S48. [[Crossref](#)]
11. Grossman D, Fernandez L, Hopkins K, Amstae J, Garcia S, et al. (2008) Accuracy of self-screening for contraindications to combined oral contraceptive use. *Obstet Gynecol* 112: 572-578. [[Crossref](#)]
12. Aday LA, Cornelius LJ (2006) Designing and Conducting Health Surveys: A Comprehensive Guide. (3rd edn), Jossey-Bass, San Francisco, CA, USA.
13. Rakotonirina JEC, Razafimahefa M, Vololonarivelo BEE, Andriantoky VB, Razafimahatratra MJJ, et al (2014). Self-medication with oral contraceptives in the Urban District of Antananarivo. *Int J Reprod Contracept Obstet Gynecol* 3: 26-30.

14. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, et al. (2014) Self-medication practices and risk factors for self-medication among medical students in Belgrade, Serbia. *PLoS One* 9: e114644. [[Crossref](#)]
15. James H, Handu SS, Al Khaja KA, Ootom S, Sequeira RP (2006) Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. *Med Princ Pract* 15: 270-275. [[Crossref](#)]
16. Phillippi LM, Hood CM, Anderson CK, Brown LD, Manzanero M, et al. (2017) Family planning in the Toledo District of Southern Belize: survey of knowledge, contraceptive use, and preferences. *Front Womens Health* 2: 132.
17. WHO (2009) Research ethics committees: Basic concepts for capacity-building. Available from: https://apps.who.int/iris/bitstream/handle/10665/44108/9789241598002_eng.pdf;jsessionid=5A0A83BB80D947E9EA7FF587B413502B?sequence=1
18. The Helsinki Declaration of the World Medical Association (WMA) (2014) Ethical principles of medical research involving human subjects. *Polish Mercury: A body of the Polish Medical Association* 36: 298-301.
19. IBM Corp (2016) IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.
20. Epi Info™, Division of Health Informatics & Surveillance (DHIS), Center for Surveillance, Epidemiology & Laboratory Services (CSELS). Available from: <https://www.cdc.gov/epiinfo/pc.html>
21. O'Campo P, Faden RR, Gielen AC, Kass N, Anderson J (1993) Contraceptive and sexual practices among single women with an unplanned pregnancy: partner influences. *Fam Plann Perspect* 25: 215-219. [[Crossref](#)]
22. Alemayehu GA, Fekadu A, Yitayal M, Kebede Y, Abebe SM, et al. (2018) Prevalence and determinants of contraceptive utilization among married women at Dabat Health and Demographic Surveillance System site, northwest Ethiopia. *BMC Womens Health* 18: 118.
23. Obasohan PE (2015) Religion, Ethnicity and Contraceptive Use among Reproductive age Women in Nigeria. *Int J MCH AIDS* 3: 63-73. [[Crossref](#)]
24. Lakew Y, Reda AA, Tamene H, Benedict S, Deribe K (2013) Geographical variation and factors influencing modern contraceptive use among married women in Ethiopia: evidence from a national population based survey. *Reprod Health* 10: 52. [[Crossref](#)]
25. Hossain MB, Khan MHR, Ababneh F, Shaw JEH (2018) Identifying factors influencing contraceptive use in Bangladesh: evidence from BDHS 2014 data. *BMC Public Health* 18: 192. [[Crossref](#)]
26. Islam MS (2014) Determinants of contraceptive method choice in Bangladesh: Male perspectives. *Southeast Asia J Public Health* 3: 50-56.
27. Frost JJ, Darroch JE (2008) Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspect Sex Reprod Health* 40: 94-104. [[Crossref](#)]
28. Darroch JE, Sedgh G, Ball H (2011) Contraceptive Technologies: Responding to Women's Needs, Guttmacher Institute. New York, USA.
29. Thapa P, Pokharel N, Shrestha M (2018) Knowledge, Attitude and Practices of Contraception among the Married Women of Reproductive Age Group in Selected Wards of Dharan Sub-Metropolitan City. *J Contracept Stud* 3: 18.
30. Osaro BO, Tobin-West CI, Mezie-Okoye MM (2017) Knowledge of modern contraceptives and their use among rural women of childbearing age in Rivers State Nigeria. *Ann Trop Med Public Health* 10: 1043-1048.
31. Gosavi A, Ma Y, Wong H, Singh K (2016) Knowledge and factors determining choice of contraception among Singaporean women. *Singapore Med J* 57: 610-615. [[Crossref](#)]
32. Rios-Zertuche D, Blanco LC, Zúñiga-Brenes P, Palmisano EB, Colombara DV, et al. (2017) Contraceptive knowledge and use among women living in the poorest areas of five Mesoamerican countries. *Contraception* 95: 549-557. [[Crossref](#)]
33. Frost JJ, Singh S, Finer LB (2007) U.S. women's one-year contraceptive use patterns, 2004. *Perspect Sex Reprod Health* 39: 48-55. [[Crossref](#)]
34. Landau SC, Tapias MP, McGhee BT (2006) Birth control within reach: a national survey on women's attitudes toward and interest in pharmacy access to hormonal contraception. *Contraception* 74: 463-470. [[Crossref](#)]
35. Kennedy CE, Yeh PT, Gonsalves L, Jafri H, Gaffield ME, et al. (2019) Should oral contraceptive pills be available without a prescription? A systematic review of over-the-counter and pharmacy access availability. *BMJ Global Health* 4: e001402.
36. Khan MA (2001) Side effects and oral contraceptive discontinuation in rural Bangladesh. *Contraception* 64: 161-167. [[Crossref](#)]
37. Berin E, Sundell M, Karki C, Bynhildsen J, Hammar M (2014) Contraceptive knowledge and attitudes among women seeking induced abortion in Kathmandu, Nepal. *Int J Womens Health* 6: 335-341. [[Crossref](#)]
38. Potter JE, McKinnon S, Hopkins K, Amastae J, Shedlin MG, Powers DA, Grossman D (2011) Continuation of prescribed compared with over-the-counter oral contraceptives. *Obstet Gynecol* 117: 551-517. [[Crossref](#)]
39. Measham AR (1976) Self-prescription of oral contraceptives in Bogota, Colombia. *Contraception* 13: 333-340.
40. Gubhaju B (2009) Barriers to sustained use of contraception in Nepal: quality of care, socioeconomic status, and method-related factors. *Biodemography Soc Biol* 55: 52-70. [[Crossref](#)]