

ORIGINAL RESEARCH ARTICLE

Knowledge and Practice of Family Planning in Dschang Municipality, Cameroon

Catherine K Fusi-Ngwa^{*1}, Vincent K Payne^{1,2}, Augustine N Asakizi¹, Bridget F Katte³

¹Department of Animal Biology, Faculty of Science, University of Dschang, West Region, Cameroon; ²Chair, Department of Animal Biology, Faculty of Science, University of Dschang, West Region, Cameroon; ³Department of Animal Production, Faculty of Agronomy and Agricultural Sciences, University of Dschang, West Region, Cameroon

*For correspondence: Email: fncathkesah@yahoo.com Tel: 00447780211246

Abstract

This study was conducted to examine factors which influence contraception in order to ameliorate services. For 12 consecutive months, 706 consenting women on fertility control presenting at the Dschang District Hospital, Cameroon were interviewed and cervical/blood samples collected for analysis. Study respondents were aged 15-50 years (mean 33.61±6.29 years). Levonorgestrel implants (46.7%) and medroxyprogesterone injections (27.6%) were cost effective over the intrauterine copper device (9.5%), Norgestrel (7.8%), Norethisterone enanthate (6.7%), male condoms (6.4%), Progestin only pills (1.4%) and spermicides (1.1%). Lack of expertise precluded tubal ligation or implants and vasectomy. Stigmatization, male rejection, giving or taking methods without adequate laboratory services or regular health checks and failure to recognize or report adverse reproductive health changes impacted on contraception. Genital infections were identified in 33.7% respondents, vaginal candidiasis 20%, bacterial vaginosis 19%, HIV/AIDS 9%, chlamydia 6% and <2% other traditional venereal diseases. Sensitization, education, improved diagnostics and attitude change were adopted (*Afr J Reprod Health 2013; 17[1]:137-148*).

Résumé

Cette étude a été menée pour examiner les facteurs qui influent sur la contraception dans le but d'améliorer les services. Pendant 12 mois consécutifs, 706 femmes consentantes sur le contrôle de la fertilité qui fréquentent l'hôpital de district de Dschang, au Cameroun ont été interviewées et des échantillons des cols de l'utérus /du sang ont été prélevés pour analyse. Les participantes à l'étude étaient âgées de 15-50 ans (moyenne ± 33,61 6,29 années). Les implants au lévonorgestrel (46,7%) et les injections de médroxyprogestérone (27,6%) étaient rentables sur le dispositif intra-utérin (9,5%), Norgestrel (7,8%), Norethisterone énanthate (6,7%), les préservatifs masculins (6,4%), les pilules progestatives seulement (1,4%) et les spermicides (1,1%). Le manque d'expertise a empêché la ligature des trompes ou des implants et la vasectomie. La stigmatisation, le rejet du mâle, le don ou la prise des méthodes sans des services de laboratoire adéquats ou des bilans de santé réguliers et l'incapacité à reconnaître ou à déclarer des changements défavorables de santé de la reproduction a eu une influence sur la contraception. Les infections génitales ont été identifiées chez 33,7% des personnes interrogées, la candidose vaginale 20%, la vaginose bactérienne 19%, le VIH / sida 9%, 6% et chlamydia <2% d'autres maladies vénériennes classiques. La sensibilisation, l'éducation, ont amélioré les diagnostics et l'on a adopté les changements d'attitude (*Afr J Reprod Health 2013; 17[1]:137-148*).

Keywords: contraception, women, socio-demographics, barriers, genital health

Introduction

Family planning has been instrumental in maintaining reproductive health for many decades, with the United Nations Population Fund being at the forefront of funding and promoting such programs¹. Natural family planning, fertility awareness, withdrawal or abstinence has caused many difficulties such that artificial family

planning or contraception has been promoted over the decades in the bid to resolve reproductive health issues. Contraception has been hailed to reduce unwanted pregnancies and population growth in Cameroon²⁻⁷ and elsewhere⁸⁻¹⁴. Emergency contraception has been applied after sex to help avoid pregnancy especially in the absence of a birth control method or suspicion of failure of an existing method¹⁵⁻¹⁷. Numerous factors are considered when reviewing

contraception options such as underlying health condition of the recipient, access to care and prescription, contraindications and medical risks like thrombosis, stroke, and adverse bone health effects among others¹⁸⁻¹⁹. Hitherto, the spermicidal foam, female and male condoms, diaphragm, cervical cap and shield, birth control sponge, pill and patch, vaginal ring, film, birth control shot and implant, intrauterine device (IUD- a T-shaped piece of plastic comprising two types-a copper IUD and a hormonal IUD), tubal ligation and implants, and vasectomy are in application¹⁹.

Safe, effective or correct use of contraception and routine examination and follow up of women on birth control is advocated to detect and take care of, among many health issues, sexually transmitted infections (STIs) and incidental genital health infirmities. This is a strategy to foster reproductive health in the sexually active group. An unhealthy reproductive tract could militate against certain contraceptives, just as there is evidence that barrier methods of contraception and spermicides lower the risk of transmitting sexually transmitted infections or agents such as gonorrhoea, Chlamydia, syphilis, trichomoniasis, the human immunodeficiency virus (HIV), hepatitis B virus, herpes simplex virus type II and cytomegalovirus^{9, 11}.

In Dschang, contraception can pose health risks in users due to poor healthcare practices and covertness. It was paramount to uncover ills or lapses in reproductive health delivery in the study region in order to improve services rendered to the community while safeguarding the health of users, create awareness, change deeply rooted negative attitude on contraception and help women make informed choices about their reproductive health. This work was a pioneer report on sampling of women on pregnancy prevention for one year in Dschang, situated in the West Region of Cameroon.

Materials and Methods

Study area: This study was carried out in Dschang, the Divisional Head Quarters of Menoua Division in the West Region of Cameroon. Dschang is situated between latitude 05°20'N and longitude 10°03'E, at an altitude of 1382 – 1500m

in the Western Highlands of Cameroon. The climate is Sudano – Guinean type with characteristic seasons: a dry season beginning mid – November to mid – March, and a rainy season from mid – March to mid – November. Dschang has an annual rainfall of 1872mm, a relative humidity of 76.8% and an average daily temperature of 20°.

Hydrology and Social characteristics

There are a few flowing streams that meander around the town and one, which is fast flowing forming a waterfall. There are also some water reservoirs notably the municipal lake, which is in Foto/Keleng (people live very close to this lake) and the University ponds. The soils are the ferrallitic type²⁰. The population of Dschang has increased tremendously due to the increasing population of students in the University. The natives are the Bamileke ethnic group, with the main religious groups being Christians and Muslims. The principal occupation is commerce and subsistence farming (where the main cash crop is coffee) but the majority of youths are students or pupils. There is electricity, pipe borne water, wells, and protected and unprotected water sources for most of the population. There are pit toilets in most houses and schools, as well as indiscriminate urination and defecation in the surroundings of houses, unfenced playgrounds and bushes.

Ethical clearance (Declaration of Helsinki)

Authorization to carry out this study was obtained from the Chief Medical Officer (CMO) of Menoua Division, West Region, Cameroon. In the West Region, there is no ethical committee to approve research on human subjects. Authorities of institutions grant permission to carry out projects on humans.

Study centre

The Dschang District Hospital (DDH), a government general hospital in the Menoua Division was the healthcare centre used for the research. The Chief Medical Officer of this hospital was officially informed about the study

which he endorsed. Consulting medical officers (clinicians and nurses) were subsequently notified who then explained the purpose of the study to eligible patients who attended the family planning unit of this hospital to get their consent to partake in the study.

The DDH was the only provider of contraceptive services in Menoua Division at the time of this study, with contraceptives sent by the Ministry of Health which unfortunately failed to provide trained personnel to deliver such services. Only one out of eight staff in this unit had the appropriate tuition to render contraceptive delivery. The family planning centre of the DDH was visited daily from Monday to Friday for data and specimen collection by the researchers from January to December 2008.

Study subjects

This study involved consecutive consenting heterosexual women presenting at the family planning unit of the DDH for family planning from January-December 2008.

Administration of Questionnaires to patients

Information relevant to the study was collected from respondents by the consulting nurses or clinicians, and each questionnaire completed by the researchers following the responses given by the patients. The researchers took turns to complete the questionnaire as each patient was interviewed. However, sometimes the consulting officer's notes in structured health forms were used to complete the questionnaire. Such data included the date of examination or visit to the family planning centre, age and place of residence, ethnicity, religion, marital status and type of marriage, number of sexual partners, occupation and that of spouse/partner, level of education, the underlying clinical condition and genital health. Other data collected were the number of children alive and desired, ages of the first and last children, and whether or not the woman was breast-feeding. More data included the weight of each subject, previous method(s) of family planning, new method, who recommended method(s), medication, reasons for contraception

and adverse effects. Furthermore, information was obtained on knowledge on contraception and reproductive health, and whether patients already on contraception reported for regular health screens. Other information sought on genital health and risk factors for STIs included using chemicals to wash the genitalia; handling and storage of sanitary towels; cleaning schedules for domestic lavatories, number of users and use of disinfectants for cleaning; use of public lavatories, urinating and defecating outdoors, and direction of wiping after voiding. Healthcare providers in the family planning service (8) as well as previous workers (7) serving in other units of the DDH at the time of the study, were also interviewed to find out various factors (environmental, healthcare, social, cultural, political, and occupational) which influence contraception in this region and how such services can be improved.

Collection and processing of specimens

Three high vaginal swabs were collected from all the women by the consulting nurses; two of these samples from each patient were transported immediately to the Applied Biology and Ecology Laboratory of the Department of Animal Biology of the University of Dschang for analysis according to standard techniques²¹. One of the two cervical swabs from each patient was used for a direct examination, while the second was used for culture. The third cervical swab was sent to the DDH laboratory for serological testing for *Chlamydia trachomatis*.

The Chlamy-Check-1 kit (Chlamy check one-step Generation Trachomatis LPS Antigen Test marketed by KENZA Diagnostics KYA SAND) was used to test for *C. trachomatis* at the DDH using the third cervical swab. All the patients were also sent to the DDH laboratory for collection of blood samples for serological testing of syphilis, hepatic B and HIV/AIDS. The Rapid Plasma Reagin (RPR) test and the Wellcosyh HA 1000 VO B5 8E 59-01 haemagglutination screening kit for the detection of antibodies to *Treponema pallidum* were used. The sera of patients was also tested for hepatitis B using the hepatitis B virus (HBV) blood test for the detection of antibodies of hepatitis B virus Hesa test strip for hepatitis

BsAg5110079 fabricated by Acumen diagnostics Inc. USA). All patients were also screened and confirmed for antibodies to the HIV using the Abbot Determine HIV-1/2 which is an in vitro visually read quantitative immunoassay for detecting antibodies to HIV-1 and HIV-2 in human serum.

The patients involved in this study paid for all their serological tests (carried out at the DDH laboratory) as part of their routine screening. Genital herpes and warts, and pediculosis (pubic lice) were diagnosed clinically.

Results

In a prospective study, 706 consecutive women aged 15 to 50 years (mean 33.61±6.29 years) attending the Family Planning Unit of the DDH from January to December 2008 for contraception were interviewed and examined to determine their socio-demographic, and reproductive health characteristics, and various difficulties, problems, complaints or concerns about contraception. The magnitude and risk factors of STIs were analyzed in the study population. The 706 women were all heterosexuals and gave informed consent to participate in the study. A total of fifteen personnel who had worked and those still working at the family planning centre were interviewed to establish factors which influence contraception in the study milieu.

The majority of the study population 572 (81.0%) was in their twenties 205 (27.2%) and thirties 367(52%). A total of 134 (19.0%) women were in the 40-49 years age range, 12 (1.7%) were less than 20 years and 1 (0.14%) lady was aged 50. In terms of level of education, 83 (11.8%) women had no formal education although 4 (0.6%) of them had Qur'anic (Koran) education, 208 (29.4%) had primary, 285 (40.4%) secondary, 62 (8.8%) high school and only 68 (9.6%) university education. Their body weights and delivery status averaged 69.34±11.61kg and 5.36±2.2 births or children respectively (Table 1). The majority of them 608 (86.1%) were married, 494 (70%) practiced monogamy, 111 (15.7%) polygamy, 3 (0.4%) traditional marriage, while 35 (5%) were cohabiting. Thirty (4.3%) of the women were single, 8 (1.1%) divorced and 25 (3.5%) widowed.

Based on occupation, 399 (56.5%) of the women were housewives and 163 (23.1%) privately involved in unskilled jobs such as farming, trading and cleaning, and married to spouses with similar occupational status. Only 10.6% were civil servants, 28 (4%) were students and 19 (2.7%) farmers. Roman Catholics made up a surprising 52.8% of the population, while 22.2% of them were pagans (Table 2). The various contraceptives in use during the study period are indicated in Table 3. Age group, level of education, marital status and occupation did not influence contraceptive choice.

Norplant (46.7%) and Depo-provera (27.9%) were most preferred. Female tubal ligation and vasectomy were not in practice due to lack of technology, technical know and financial constraints. However, male sterilization (vasectomy) was viewed as a taboo in this region. Female condoms, the diaphragm and cervical cap available were never used. The birth control sponge and patch, vaginal ring, tubal implants, the film and hormonal IUDs were not in stock then. Of 706 women studied, 510 (72.2%) were old cases i. e. were already on contraception and 196 (27.8%) were new cases (took method at the inception of the study). Reasons advanced by the study population for contraception were mainly termination of child bearing and sexual dissatisfaction from natural family planning (Table 4). Changes in contraception observed during the period of study and the reasons put forward by the concerned are depicted in Tables 5 and 6. One hundred and thirty women (18.4%) changed contraceptive type once and 11 (1.6%) changed method twice.

Common side effects of various methods of contraception reported by the study population included irregular menstrual bleeding, light spotting or bleeding between periods, heavier or prolonged menstrual periods sometimes up to six months, stomach upset or abdominal pain, headache, amenorrhea, weight gain, nausea, and for condoms, uncomfortable or reduced sensation, irritation, itching and discharge.

Detailed knowledge on contraception was non-existent in the study subjects i.e. they did not know existing methods and what each entails, including their pros and cons, and what they were supposed

Table 1: Descriptive Characteristics of the Study Population

Feature	N	Mean	Minimum	Maximum	Std Deviation
Age (years)	700	33.61	15	50	6.291
Weight (kg)	704	69.34	12	119	11.614
Number of births	699	5.36	0	11	2.238
Number of children	693	5.36	1	11	2.214

Table 2: Classification of the Study Population by Religion

Religion	Number (%) identified
Christianity	510 (72.2)
• Catholicism	373 (52.8)
• Protestant	97 (13.7%)
• Charismatic/Pentecostal	26 (3.7)
• Jehovah witness	10 (1.4)
• Baptist	4 (0.6)
Paganism	157 (22.2)
Animism	15 (2.1)
Islam (Muslims)	12 (1.7)
Atheism	12 (1.7)

to do to go on fertility control. They claimed they were simply told to practice birth control during their ante-natal screens to avoid pregnancies or unwanted children, and hardly thought nor were informed about sourcing information.

Medical personnel at the family planning centre on their part did not give in-depth details of family planning methods to users; but however told the researchers about unsatisfactory medical facilities particularly inadequate laboratory services, users not reporting for regular health checks and inability to administer certain methods- no specialists for methods like vasectomy or tubal ligation, no training provided by the Ministry of Health to refresh staff, cultural and social barriers like stigmatization and male rejection of contraception, and difficulties dealing with a generally impoverished community with no awareness on contraception. Staff expressed their concern about inappropriately trained staff being posted to the centre sometimes, thereby casting doubts on the quality of services rendered to users. Most of the women reported that their husbands did not like contraception, reason why some

husbands were polygamous for sexual satisfaction. Also, since contraception was stigmatized in the study milieu, the women did not like to be identified with methods. As such, about 40% of them decided on their own (self) to take contraceptives to enhance sexual satisfaction while safeguarding their health (Fig. 6). Irrespective of level of education, 23.1% of study participants consulted friends for advice on family planning and medical personnel ranked third in source of recommended birth control. Primary school leavers got information for birth control more from friends than other sources (Table 7). Generally, <30% of respondents in each age group consulted medical personnel for birth control. One girl, a pupil took the mothers advice and another girl was advised by the brother.

Generally, 38.1% of respondents practiced breast feeding during the survey, but the percentage differed significantly among age groups ($p < 0.01$, $X^2 = 30.02$). Most respondents aged 30-39 years were not breast feeding at the time of contraception (Table 8).

Correlation analysis revealed that the number of children desired and the number of births strongly and positively correlated ($r = 0.99$, $p < 0.01$). This finding buttressed the need for contraception among the study subjects as they no longer wanted more children.

A total of 402 episodes of genital infections were recorded in 238 patients out of the 706 women screened, giving an overall prevalence of 33.7%, 81 (11.5%) patients had multiple infections excluding HIV/AIDS. Majority of the infections (in 204 women, 28.9%) were symptomatic and most symptomatic women (198, 28.1%) recognized and reported their symptoms. Asymptomatic and unrecognized infections were observed in 31 (4.4%) cases, 17 (2.4%) were healthy carriers (harboured pathogens but were not ill) and 14 (2%) convalescent carriers.

Table 3: Contraceptives in use at the Family Planning Unit of the Dschang District Hospital

Type of Contraceptive	No.(%) of women using a particular type (N=706)
Norplant-6 capsules: Levonorgestrel implants,36mg, LEIRAS OY, Turku Finland	330 (46.7)
Depo-Provera injection-DMPA: Medroxyprogesterone acetate sterile aqueous suspension 150mg/ml, Pharmacia and Upjohn company, Kalamazoo, MI 49001, USA	197 (27.9)
TCu 380A: Intrauterine copper contraceptive-IUD, copper T model TCu 380A, FEI Products, LLC, North Tonawanda, NY, 14120, USA	67 (9.5)
Lo-Femenal/ferrous fumarate tablets-Norgestrel 0.03mg with ethinyl estradiol 0.03mg tablets and ferrous fumarate tablets 75mg, Wyeth laboratories inc., Philadelphia, PA 19101, USA	55 (7.8)
Noristerat: Norethisterone enanthate NET EN 200mg, Schering AG, Germany	47 (6.7)
Progestin only pills: ovrette: Wyeth laboratories USA	10 (1.4)
Spermicides: Laboratoire Innotech International, 7-9 Avenue Francois-Vincent Raspauil-94110 Arcueil France	8 (1.1)
Male Condoms: Pharmatex and Neosampon, USA	45 (6.4)

Table 4: Reasons advanced by the Study Population for Contraception

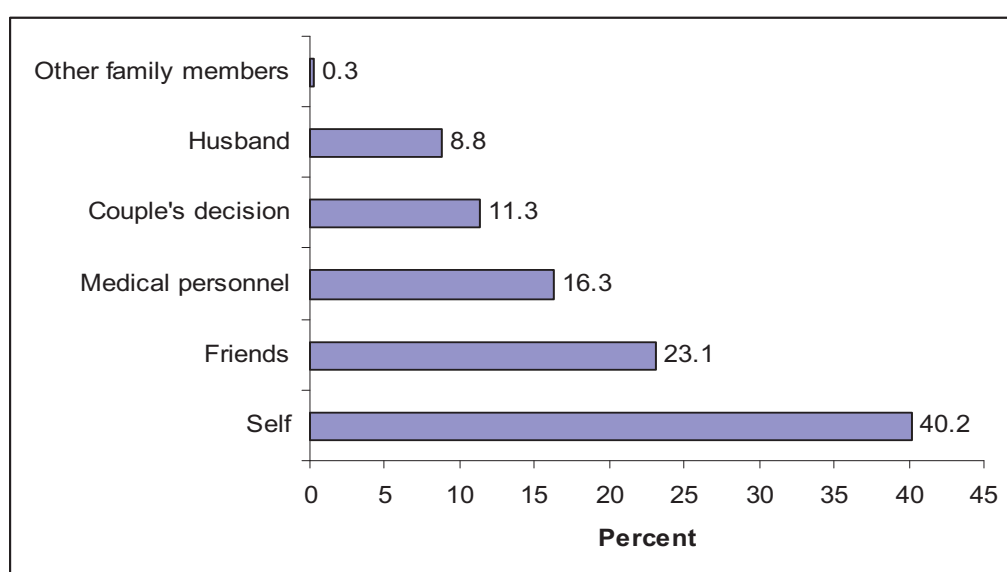
Reason	No. (%) of women (n=706)
Sexual dissatisfaction	398 (56.4)
End of child bearing, couple no longer desired to have children	337 (47.7)
Early marriage (<20 years of age) which led to early termination of delivery	290 (41.1)
Lack of means to continue child bearing	139 (19.7)
Break from delivery or long term rest from delivery	127 (18.0)
Abortions, sometimes more than four	32 (4.5)
Unwanted pregnancies resulting from failure of natural family planning, the use of condoms and/or spermicides	28 (4.0)
Irregular periods resulting in unwanted pregnancies or abortions	14 (2.0)
To gain weight	1 (0.1)
Woman with dementia placed on a contraceptive to limit number of children	1 (0.1)

Table 5: Changes in Birth Control Methods observed during the period of study

Old methods	No. (%) of women on new methods (n=141)						
	Norplant	DMPA	Noristerat	Lofemenal	IUD	Ovrette	Spermicide
From abstinence to contraception	71 (50.4)	37 (26.2)	32 (22.7)	27 (19.1)	19 (13.5)	4 (2.8)	3 (2.1)
Condoms	20 (14.2)	12 (8.5)	3 (2.1)	5 (3.5)	4 (2.8)	-	-
Lofemenal	14 (9.9)	11 (7.8)	2 (1.4)	-	2 (1.4)	-	-
Depo-provera	12 (8.5)	-	8 (5.7)	2 (1.4)	3 (2.1)	-	-
Intra-uterine device (IUD)	6 (4.3)	1(0.7)	3 (2.1)	-	-	1 (0.7)	-
Noristerat	7 (5.0)	-	-	-	-	-	-
Ovrette	-	2 (1.4)	1 (0.7)	1 (0.7)	1 (0.7)	-	-
Spermicide	4 (2.8)	-	-	1 (0.7)	-	-	-
Norplant	-	2 (1.4)	1 (0.7)	-	-	-	-
Condom-spermicide	1 (0.7)	-	-	-	-	-	-

Table 6: Reasons put forward by Women who changed Contraceptive during the study period

Reason	No. (%) of women (n= 141)
Severe adverse effects from previous method	52 (36.9)
Previous method of shorter duration (2 or 3 months) and expensive	27 (19.1)
Method ineffective (the pill) due to irregularities in administration resulting in abortions and/or unwanted pregnancies	19 (13.5)
Discontinued method to deliver, and later took a method of longer duration	13 (9.2)
• Failure of condoms and spermicides	11 (7.8)
• Condoms uncomfortable and unpleasant	9 (6.4)
• Condoms caused irritation, burning and itching	2 (1.4)
• Condoms caused irritation, itching and discharge	1 (0.7)
• Spermicides caused irritation, itching and discharge	1 (0.7)

**Figure 1: Sources of Recommended Birth Control****Table 7:** Relationship between Education and Source of information for Birth Control

Educational status	% from particular source			
	Self	Friend	Medical personnel	Others
No education	60	30	3	7
Primary school	24	54	15	7
Secondary school	57	15	18	10
High school	55	24	21	-
University	62	16	22	-

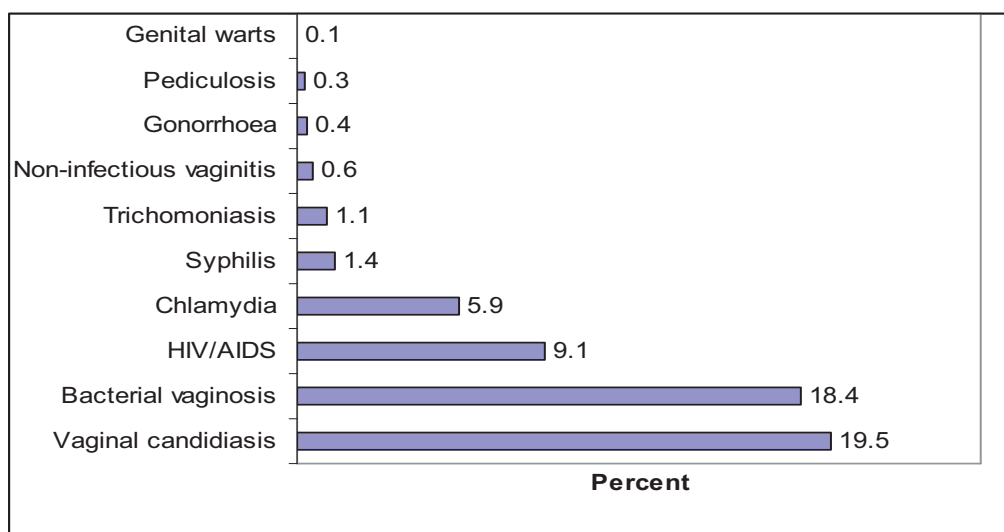
Convalescent carriers were persons who had a genital infection in the preceding six months and recovered from it but still harboured the causative agents. Nineteen (2.7%) patients reported recurrent genital infections, with 16 (2.3%) being positive for HIV/AIDS.

Vaginal candidiasis was diagnosed in 19.5% of the women and bacterial vaginosis in 18.4% (Fig. 7).

The prevalence of patients with serological evidence of exposure to HIV/AIDS was 9.1%, with majority (55, 7.8%) having concurrent multiple genital infections and only 9(1.3%)

Table 8: Relationship between Age Group and Breast Feeding

Breast feeding	Total	Age group (years)				
		<20	20-29	30-39	40-49	50
Yes	269	1	92	145	30	0
No	407	2	77	230	97	1

**Figure 2:** Prevalence of Sexually Transmitted infections in the Study population

having just one type of genital infection. Classical STIs recorded low prevalence; Chlamydia 5.9%, syphilis 1.4% and trichomoniasis 1.1%. Sixty-two patients (8.8%) had two types of genital infections and 19 (2.7%) three types of infections excluding HIV/AIDS. Bacterial vaginosis and candidiasis (45, 6.4%), and bacterial vaginosis, candidiasis and Chlamydia (16, 2.3%) occurred most in mixed states. The most common pathogen associated with bacterial vaginosis was *Staphylococcus aureus* (16.4%); rates were 2.1% for *Escherichia coli* and 1.6% *Gardnerella vaginalis* (Table 9).

Contraceptive types did not influence the occurrence of STIs. Major determinants of STIs identified in these women were poor sanitary conditions, infidelity, unprotected sex, immunosuppression, re-infections from spouses or partners and medication or drug therapy mistakes (i.e. mixing drugs and alcohol, mixing drugs and herbal remedies, undertaking of drugs due to side effects or occasional forgetfulness, self medication due to ignorance, illiteracy, low level of education, scarcity or inaccessibility of qualified medical personnel, and no control tests after treatment).

Table 9: Prevalence of Aetiologic Agents of Sexually Transmitted infections in the study population

Pathogens	No. (%) isolated or identified (n=706)
<i>Candida albicans</i>	138 (19.5)
<i>Staphylococcus aureus</i>	116 (16.4)
<i>Chlamydia trachomatis</i>	42 (5.9)
<i>Escherichia coli</i>	15 (2.1)
<i>Gardnerella vaginalis</i>	11 (1.6)
<i>Trichomonas vaginalis</i>	8 (1.1)
<i>Proteus spp.</i>	7 (1.0)
Other Gram-negative bacilli	6 (0.8)
<i>Klesiella spp.</i>	5 (0.7)
<i>Pseudomonas spp.</i>	4 (0.6)
<i>Neisseria gonorrhoeae</i>	3 (0.4)
<i>Streptococcus agalactiae</i>	3 (0.4)
<i>Phthirus pubis</i> (pubic lice)	2 (0.3)
<i>Enterococcus spp.</i>	2 (0.3)
<i>Enterobacter spp.</i>	2 (0.30)
<i>Treponema pallidum</i> (syphilis)	10 (1.4)
HIV/AIDS	64 (9.1)
Human papilloma virus (warts)	1 (0.1)

Other factors identified included unhygienic handling (with unwashed hands) and storage of sanitary towels (exposed to dusty and dirty air), the use of untreated water from springs, wells and streams, and rain water to wash the genital region, heavy usage and infrequent cleaning of personal lavatories without using disinfectants, use of dirty public toilets, urinating and defaecating in open dirty and dusty environments would have exposed the vagina to contamination with faecal and environmental organisms which can lead to infection. Wiping from the posterior to the anterior position could also expose the vagina to faecal contamination.

Discussion

Regular and emergency contraception have been used globally for pregnancy prevention over the decades predominantly by woman^{13, 15, 17}. Vasectomy is seldom practiced particularly in Africa^{8, 22} and data on male sexual health and responsibility is very limited²³. Contraception has been problematic where males exclusively take decisions on sexual and reproductive health issues¹⁰⁻¹². Contraception has been known and practiced in Cameroon since the eighties especially in regions where there is male and community leaders' approval^{4, 6, 7}. Communication between spouses' or partners has also been positively linked to contraceptive use⁸.

Literature presents contraception to have both positive and negative impact on users. The use of oral contraceptives has been related to prostate cancer¹⁸. Various birth control methods so far applicable are known to have some side effects or to pose some complications from wrong administration which can lead to adverse changes in the reproductive system such as abnormal bleeding, itching, irritations or allergic reactions and internal infection^{1, 14}. Certain uncommon complications of surgery that can occur following sterilization include infection or bleeding at the incision, internal infection or bleeding and injury to internal organs. Oral and injectable hormonal methods or implants can cause changes in vaginal bleeding. Spermicides may cause irritation to the woman or her partner, especially if used several times a day. Spermicides may also cause local

allergic reaction in the woman or her partner, and can further make urinary tract infections more common. Contamination of the diaphragm or cervical cap by extraneous matter may eventually lead to infection. An intrauterine device (IUD) is not a good method for women with recent sexually transmitted infections (STIs) or with multiple sex partners (or partners with multiple sex partners). Pelvic inflammatory disease (PID) is more likely to follow a STI if a woman uses an IUD. PID can lead to infertility. Latex condoms may cause itching; a few people are allergic to latex. In addition, some people may be allergic to the lubricant on some brands of condoms¹. In Cameroon, contraception has been associated with infertility⁷.

In this study, some 513 women currently on contraception and 193 women coming for contraception were interviewed using structured questionnaires and examined to determine the socio-demographic and health features associated with contraception in this region, and to further examine STIs in the study population. Contraception herein was practiced mainly by women of low economic and educational background who were married to or had sexual partners with similar social status. These women did not like to be identified with contraceptives because of stigma, and as such preferred methods which were not easily noticed as a security measure. Also, due to poverty, most participants preferred long lasting methods, thus, the high use of implants (Norplant). All the 706 participants did not have detailed knowledge on contraception; they decided or were just advised to prevent pregnancy by taking a contraceptive, which most women preferred to abortions which can have grave consequences. In 1998, a study on prevalence and determinants of contraception in the South West Region of Cameroon among "educated" female workers in a palm oil company (the least study subject had secondary education) revealed that economic power, a strong social reproductive network and positive attitude of men greatly influenced family planning decision of women⁴. Cultural deterrents to the use of contraceptives by men and women have also been documented in Swaziland¹² and in women in the United Arab Emirates¹⁰. Most of the study subjects

were of the opinion that during breast-feeding, the risk of pregnancy was high since the menstrual cycle was irregular, thus the need for contraception, 38% of the women screened were breast-feeding. Generally, sexual dissatisfaction, early marriage (< 20years old) and poor economic situation greatly influenced contraception in this study. Similarly, severe adverse side effects, poor economic factors and irregularities in administration immensely contributed to changes in methods. Adverse side effects of methods recorded in this study have also been documented elsewhere^{1, 13}. Strange enough, Catholics whose religion stands strictly against these methods patronized them most, though the population was predominantly Catholic.

The prevalence of genital infections in this work was about 34%, with the most frequent being vaginal candidiasis and bacterial vaginosis highly linked to poor personal and environmental hygiene, and douching or washing the genital region with chemicals as a result of poor sanitary conditions. Classical STIs identified were Chlamydia (6%), syphilis (1.4%), trichomoniasis (1.1%), gonorrhea (0.4%), pediculosis (0.3%) and genital warts (0.1%); 9.1% were positive for HIV/AIDS. These results are similar to those of Hopcraft et al²⁴, Wilkinson et al²⁵, Mbizvo et al²⁶, Sullam et al²⁷ and Buscemi et al²⁸. STIs such as Chlamydia, gonorrhea and trichomoniasis have been identified in women requiring emergency contraception¹⁶.

Asymptomatic carriage of genital pathogens in this study might be attributed to therapeutic failure due to poor compliance to antibiotic therapy, traditional herbal therapy and failure to go for controlled tests due to lack of means. Other factors which predisposed to genital infections in this study were immunosuppression, multiple sex partners, unprotected intercourse, using medicated soap or chemicals to wash the vagina and poor sanitary conditions. The use of condoms and spermicides might have contributed to vaginal candidiasis and non-infectious vaginitis. With incessant cuts of pipe-borne water and power, it was common practice for study respondents to use contaminated water for personal and domestic purposes. Heavy usage and infrequent washing of personal lavatories in a warm humid locality could

lead to multiplication of infectious agents and cross-contamination. Dschang being a windy and dusty environment, sanitary towels were liable to contamination by dirty air when exposed especially on the shells of vendors and these could constitute sources of cross contamination.

Generally, male contraception is culturally disapproved in this region, and family planning in women is stigmatized. The elderly still consider contraception a taboo. Paradoxically, males are generally also not interested in natural family planning since abstinence is difficult, reason why polygamy is still highly approved and there are numerous unwanted pregnancies or abortions. Thus, it was not surprising that many women did not discuss contraception with their spouses because of the spouse's disapproval of it. Certain couples in this work also exceeded the desired number of children due to either unwanted pregnancies or want of either a male or a female child.

Medical personnel at the family planning unit reported lack of expertise and insufficient laboratory tests for contraceptive methods. Hormonal tests which women have to do before the use of most contraceptives were not done in Dschang, and were not easily affordable elsewhere. Medical personal did not insist or ensure that women seeking methods go elsewhere to do the necessary tests before taking the methods. Normally patients are asked to report back regularly for check up and when any adverse effects are noticed with a method taken, but patients encountered during the study came either to take, renew, change, discontinue or to continue methods and not for routine checks. Also, although most of the study subjects infected recognized abnormal symptoms in the reproductive tract, this was not their primary reason for visiting the centre. Women already on methods who reported back to the centre were however very conscious of the side effects of contraceptives in use. Recommendations put forth by staff in the family planning unit included empowering women and society at large on the advantages and dangers of contraception through continuous education. Continuous training for medical personnel in charge of reproductive health is mandatory since it was remarked that ordinary nurses without such

training have been posted to render such services in the past which was not proper. Improvement in laboratory services for the unit was a foregone conclusion. The researchers were not certain whether weight increments observed in women already on contraception were due to the use of contraceptives or otherwise.

Suggested forms and forums for continuous education in a community like Dschang included lectures or talks in health clinics, posters and/or banners in health structures and institutions of higher learning, fliers and stickers circulated at the family planning centre, in schools, at bus and train stations, in transport vehicles, pharmacies, shopping centres, female organizations and non-governmental organizations. Radio and television programmes could also be used to pass information. Also, the involvement of opinion leaders (political, traditional and administrative) in the conduct of awareness, encouraging them to come up initiatives for educating the masses were considered beneficial, and perhaps change the deeply cultivated negative attitude on contraception in this region. The provision of safe, effective contraception acceptable and valued by the community was deemed imperative. Thus, women in this study locality had to be educated on contraception to avoid health risks and to help them make informed choices about their reproductive lives.

Acknowledgement

We are very grateful to the management and all workers of the DDH for their corporation to make this study successful. Immense thanks to all study participants.

Contribution of Authors

Fusi-Ngwa and Payne designed and supervised the work, and sought ethical approval. Payne informed staff and study participants and got their consent to partake in the study. Fusi-Ngwa, Katte and Asakizi transported and analyzed collected specimens. All authors completed the questionnaires, contributed to the writing of the paper and approved the final version. A statistician was paid to analyze the data.

References

1. United States Agency for International Development (USAID). Population Information Program, The John Hopkins School of Public Health, 111 Market Place, Suite 310, Baltimore, Maryland 21202-4012, USA, October 1996. www.infoforhealth.org/Pr/j44edsum.shtml-7R.
2. Family Planning Folk Media. AIDS prevention through drama in Cameroon. *Network*, 1989; 11(1): 12-13.
3. Valente TW, Watkins SC, Jato MN, van der Straten A, Tsitsol LP. Social network associations with contraceptive use among Cameroon women in voluntary associations. *Soc Sci Med* 1997; 45(5): 677-87.
4. Ekani-Bessala MM, Carre N, Calvez T, Thonneau P. Prevalence and determinants of current contraception method use in a palm oil company in Cameroon. *Contraception* 1998; 58(1): 29-34.
5. Visness CM, Pfannenschmidt S, Ulin P, Zekeng L. Views of Cameroonian sex workers on a woman-controlled method of contraception and disease protection. *Int J STD AIDS* 1998; 9(11): 695-699.
6. Adonis T, Joseph K, Francoise N, Bergis SE, Charles K. Family Planning among teenage mothers in a Cameroonian centre. *Afr J Reprod. Health* 2001; 5(2): 105-15.
7. Richards SC. "Spoiling the Womb": Definitions, aetiologies and responses to infertility in North West Province, Cameroon. *Afr J Reprod Health* 2002; 6(1): 84-94.
8. Hardee-Cleveland K. Communication key for family planning. *Network* 1992; 13(1): 13.
9. D'Oro LC, Parazzini F, Naldi L, Vecchia CL. Barrier methods of contraception, spermicides and sexually transmitted diseases: a review. *Genitourin Med* 1994; 70: 410-417.
10. Ghazal-Aswad S, Rizk DEE, Al-Khoori SM, Shaheen H, Thomas L. Knowledge and practice of contraception in United Arab Emirates women. *J Fam Plann Reprod Health Care* 2001; 27(4): 212-216.
11. Anderson RA, Baird DT. Male contraception. *Endocr Rev* 2002; 23(6): 735-762.
12. Ziyane IS, Litt et Phil D, Ehlers VJ. Swazi men's contraceptive knowledge, attitudes and practices. *J Transcult Nurs* 2007; 18: 5-11.
13. Juttner I. Combined hormonal contraception. *InnovAiT* 2012; 5(3): 164-175, doi: 10.1093/innovait/inr/29.
14. Gainer E, Kenfack B, Mboudou E, Doh AS, Bouyer J. Menstrual bleeding Patterns following levonorgestrel emergency. *Contraception* 2006; 74(2): 118-24.
15. Cleland K, Zhu H, Goldstuck N, Cheng L, Trussell J. The efficacy of intrauterine devices for emergency contraception: a systematic review of 35 years of experience. *Hum Reprod* 2012; 27(6): doi 10.1093/humrep/des140
16. Varma R. P97 Women requiring emergency contraception are a high risk group for sexually transmitted infections in future. *Sex Transm Infect* 2012; 88: A42 doi: 10.1136/sextrans-2012-050601c.97.

17. Wilkinson TA, Fahey N, Shields C, Suther E, Cabral HJ, Silverstein M. Pharmacy communication to adolescents and their physicians regarding access to emergency contraception. *Pediatrics* 2012; 129(4): 624-629.
18. Margel D, Flesher NE. Oral contraceptive use is associated with prostate cancer: an ecological study. *BMJ open* 2011; 1: e000311 doi: 10.1136/bmjopen-2011-00311
19. Gordon CM, Pitts SAB. Approach to the adolescent requesting contraception. *The Journal of Clinical Endocrinology and Metabolism* 2012; 97(1): 9-15. doi: 10.1210/jc.2011-1780
20. Mpoame M, Essomba LI. Essai de traitement contre des parasites gastrointestinale du poulet avec des decoctions aqueuse de graines de papaya (*Carica papaya*) *Revue Elev Med Vet Pays Trop* 2000; 51(1): 23-25.
21. Murray, P.R., Baron, E.J., Pfaller, M.A., Tenover, F.C., Tenover, R.H. *Manual of Clinical Microbiology* 6th edn. ASM press, Washington DC, 1995: 1482p.
22. Ashley E, Frost F, Nii-Amoo Dodoo. Men are missing from African Family Planning. *Contexts* 2009; 8: 44-49.
23. Brown S. Young men, sexual health and responsibility for contraception: a qualitative pilot study. *J Fam Plann Reprod Health Care* 2012; 38: 44-47. doi: 10.1136/jfprhc-2011-100119.
24. Hopcraft M, Verhagen AR, Niji S. Genital infections in developing countries: experience in a family planning clinic *Bull World Health Organ* 1973; 48(5): 581-6.
25. Wilkinson D, Ndovela N, Harrison A, Lurie M, Connolly C, Sturm AW. Family planning services in developing countries: an opportunity to treat asymptomatic and unrecognized genital infections *Genitourin Med* 1997; 73(6): 558-60.
26. Mbizvo EM, Msuya SE, Stray-Pedersen B, Sundby J, Chirenje ZM, Hussain A. Determinants of reproductive tract infections among asymptomatic women in Harare, Zimbabwe *Cent Afr J Med* 2001; 47(3): 57-64.
27. Sullam SA, Malifouz AA, Dabbous NI, el-Barrawy M, el-Said MM. Reproductive tract infections among married women in Upper Egypt. *East Mediterr Health J* 2001; 7(1-2): 139-46.
28. Buscemi L, Arecharala A, Negroni R. Study of acute vulvovaginitis in sexually active adult women with special reference to candidiasis in patients of the Francisco Diseases Hospital, Argentina *Rev Iberoan Micol* 2004; 21(4): 177-81.