South African Family Practice 2019; 61(5):190–196
https://doi.org/10.1080/20786190.2019.1643197

S Afr Fam Pract
ISSN 2078-6190 EISSN 2078-6204

ARTICLE

The use, knowledge and attitudes regarding hormonal contraceptive products of female first-year students in a Faculty of Health Sciences

PM van Zyl*, C Brisley, L Halberg, M Matthysen, M Toerien and G Joubert

Department of Pharmacology, University of the Free State, Bloemfontein, South Africa
**Corresponding author, email: vzylpm@ufs.ac.za*

Background: Effective contraception plays a major role in the economic advancement of women. New hormonal products offer more effective solutions with fewer side effects. This study aimed to assess the use, knowledge and attitudes regarding hormonal contraception of female first-year students across various health profession courses.
Methods: A descriptive study was conducted during August to October 2017 targeting all female first-year students of the Faculty of Health Sciences at the University of the Free State.
Results: Self-administered anonymous questionnaires were completed by 261 students (response rate 81.6%). At the time of the study, 29.6% of the study population reported using hormonal contraceptive products; 51.7% of users cited acne as the indication. Among users of hormonal contraceptives, combined oral contraception was the most commonly used (86.0%), and was regarded as the most effective (33.2%). A third of the students (36.2%) were aware that some medication could influence the effectiveness of combined oral contraception. Half (52.3%) had no knowledge of the subdermal implant and 34.8% did not know what an intrauterine system was. According to 28.2%, post-coital use of hormonal products is not an acceptable method of contraception. Almost 90% (87.3%) indicated that an education intervention regarding hormonal contraception is needed at the university.
Conclusion: The study population lacks detailed and sufficient knowledge of critical aspects of contraception, such as relative effectiveness, and factors that affect these; long-acting reversible contraceptives; and emergency contraception. A formal education intervention is proposed.

Keywords: emergency contraception, hormonal contraceptives, long-acting contraceptives, university students

Introduction

The introduction of oral hormonal contraception and its widespread acceptance revolutionised the lives of women across the globe. The seminal work of Bailey, Hershbein and Miller[1] described how oral hormonal contraception gave women control over their reproductive function, resulting in greater equality and economic freedom. The ability to postpone the first pregnancy allowed many women to complete their education; the ability to space their pregnancies allowed them to pursue a career, thus shrinking the wage gap between sexes. Economists[2] regard the implementation of effective contraception as primarily an economic intervention with health implications. Costing of health benefits such as reduction in child and maternal mortality shows these costs to be considerably lower for sub-Saharan Africa than for other developing regions.[2]

The topics of the use, knowledge and attitude towards contraception among young women are commonly investigated in economically disadvantaged groups in developed countries[3–4] as well as in developing nations,[5] including South Africa.[6–8]

The range of hormonal contraceptive methods has expanded to include products that are specifically formulated for the treatment of acne and long-acting reversible contraceptives (LARCs), as well as emergency contraception.[9] Hormonal products are commonly used as a treatment for acne, to regulate the menstrual cycle and to manage dysmenorrhea. Many adolescent girls and young women are therefore using these products, even before becoming sexually active.[9–11] Acne-specific hormonal contraceptive products include anti-testosterone agents, cyproterone acetate and drospirenone, which are effective methods of contraception.[9–11]

Progestogen-only injection remains a popular method for providing affordable long-term control of fertility in South Africa and was the only coitus-independent method that was widely available, provided free of charge at government clinics.[6–8] However, it is associated with delayed return of fertility and other adverse effects. New LARCs provide effective contraception options that are less dependent of compliance.[12] Intrauterine devices (IUDs) remain effective for five years. These products prevent fertilisation by disrupting sperm migration and trigger a foreign-body reaction in the endometrium to prevent implantation.[2] Intrauterine systems (IUSs) release small amounts of progesterone that change the composition of the cervical mucus.[9,12] In some cases the system even suppresses ovulation. The South African Government launched a sub-dermal implant-based programme in 2014, providing these hormonal devices free at state hospitals.[13] Once implanted, the system provides effective contraception for three years.

Emergency contraception is taken post-coitally to prevent pregnancy, often in cases of unprotected coitus such as rape and condom breakage.[9,14] The awareness of emergency contraception is low among South African women, though, and its use stigmatised.[14] Regimens for emergency contraception entail either high doses of combined oral hormonal contraception, high-dose progesterone-only containing products, anti-progestin tablets or the insertion of a copper-releasing IUD.

The safe and effective use of hormonal products requires the user to have sufficient knowledge regarding available options, proper administration, and common and serious side effects. Oral hormonal contraceptives are schedule 3 drugs in South Africa and require a prescription from a doctor as well as professional intervention during dispensing.[15] Emergency contraception can, however, be obtained from healthcare providers without a prescription.[14] School curricula include sex education. The question, however, remains as to whether school-leaving youth have adequate knowledge of hormonal contraception to manage their own reproductive function.

Female students studying for a healthcare profession represent a group that might benefit from contraceptive use, while they at the same time are developing a repository of knowledge for future healthcare users. This population thus provides an opportunity to study the state of current knowledge, attitudes and practice among a unique sub-group of young women and eventually may provide a basis for how transfer of knowledge regarding hormonal contraception may proceed.

Aim of the study

The aim of the study was to assess the use, knowledge and attitudes regarding hormonal contraceptive products of first-year female students across various health profession courses in the Faculty of Health Sciences, University of the Free State (UFS). Specific objectives were to assess aspects of personal use, knowledge of critical aspects of hormonal contraceptives and attitudes regarding the use of these products. Such knowledge may help to determine whether the student population could serve as a conduit of knowledge regarding the use of hormonal contraceptives to their peer group.

Methods

Study design

A descriptive study was performed.

Setting

The Faculty of Health Sciences at the University of the Free State consisted of three schools at the time when the research was conducted: The School of Medicine; the School of Nursing and the School for Allied Health Professionals. All three schools were included.

Selection of participating students

The target population included all female first-year students of the Faculty of Health Sciences in 2017, and comprised 320 students from the following courses: Medicine ($n = 114$), Radiation Science ($n = 4$), Physiotherapy ($n = 22$), Nutrition and Dietetics ($n = 12$), Biokinetics ($n = 11$), Occupational Therapy ($n = 42$), Optometry ($n = 25$) and Nursing ($n = 90$).

Students who were willing to complete the questionnaire were included in the sample. An age limit for inclusion was set at 18–35 years to ensure homogeneity. Students who were not present during the distribution and completion of the questionnaires were excluded.

Data collection and tools

Development and validation of the questionnaire

Participants completed an anonymous self-administered questionnaire in English. The questionnaire was compiled by the research team using information obtained from the literature.

The questionnaire contained limited demographic data to ensure anonymity. It covered items to ascertain personal use and related aspects, items to determine knowledge regarding key aspects of hormonal contraception, as well as items aimed at testing their attitude regarding hormonal contraception, discussing this with others and the need for formal intervention.

Ten second-year female medical students participated in a pilot study to test the application of the questionnaire. Participants were asked to comment on the intrusiveness and clarity of the questions. Data collected during the pilot study remained confidential and were not included in the main study.

Recruitment of study population and administration of questionnaire

The questionnaire was distributed to potential participants during August to October 2017 for immediate completion. A classroom setting was selected for data collection. Convenient timeslots on each of the different time schedules of the various disciplines were identified with the help of the class leader and the research team.

Permission was obtained from the respective lecturers to engage with students after a lecture. Completed questionnaires were deposited in empty sealed boxes.

Data management

Data were entered into an Excel spreadsheet (Microsoft Corp, Redmond, WA, USA). The answers were checked for consistency and contradictory answers were marked as missing data. Since not all students answered all of the questions, the number of participants for each question and each option are indicated in the Results section (for example, 66/211 indicates that 66 of the 211 students who responded to the question chose a specific option).

Data analysis

Data analysis was performed by the Department of Biostatistics, Faculty of Health Sciences, UFS using SAS version 9.4 (SAS Institute, Cary, NC, USA). Results were summarised by frequencies and percentages for categorical variables and medians and interquartile ranges (IQR) for numerical variables due to skew distributions.

Ethical considerations

The protocol was approved by the Health Sciences Research Ethics Committee, UFS (HSREC-S 26/2017) and adhered to the Declaration of Helsinki. Permission was obtained from the Dean of the Faculty of Health Sciences, the Heads of the School of Medicine, School for Allied Health Professions and School of Nursing, respectively, the Dean of Student Affairs and the Vice-Rector of Research of the UFS to conduct the study.

An information leaflet was distributed to the students stating that participation in the study was voluntary, that non-participation would not be held against the person in any way, that completion of the questionnaire implied consent and that participants could suspend participation at any time.

Results

Of the 320 first-year female students, 261 completed the questionnaire (response rate 81.6%). Almost half (46.5%) of the participants were 19 years of age, ranging between 18 and 26 years (median age 19 years, IQR 19–29).

Table 1: Current course that participants were enrolled in ($n = 261$)

Current course	Frequency ($n = 261$)	Population ($n = 320$)	Response rate per course (%)	Percentage of participants (%)
Medicine	106	114	93.0	40.6
Radiation Science	2	4	50.0	0.8
Physiotherapy	13	22	59.1	5.0
Nutrition and Dietetics	10	12	83.3	3.8
Biokinetics	11	11	100.0	4.2
Occupational Therapy	27	42	64.3	10.3
Optometry	19	25	76.0	7.3
Nursing	73	90	81.1	28.0

The highest percentage of participants (40.6%) was enrolled in Medicine followed by Nursing (28.0%). The response rates per course ranged between 50.0% and 100.0% (Table 1).

Personal use of contraceptives

A third (31.3%, 66/211) of participants reported that they had used hormonal contraceptives in the past and 29.6% (60/203) were using hormonal contraceptives at the time of the study. Only 2.3% (6/219) of all participants reported that they had ever used emergency contraception. Of these six individuals, five had used it twice or more.

Of the 134 participants who reported that they were not currently using hormonal contraceptives, 73.9% ($n = 99$) stated 'not sexually active' as reason, 14.2% ($n = 19$) used other forms of contraception, and 16.4% ($n = 22$) listed costs, effort of taking pills, stigma associated with the use thereof and embarrassment to talk to a healthcare worker.

Half (51.7%, 31/60) of the participants currently using hormonal contraceptives cited acne as the reason for the use of the products. Other reasons given included menstrual cycle regulation (36.7%, $n = 22$) and menstrual pain (28.3%, $n = 17$). Less than a quarter (23.3%, $n = 14$) stated preventing pregnancy as the reason.

Participants using hormonal contraception reported having started to use hormonal contraceptives between the ages of 12 and 26 years (median 17 years, IQR 16–19). Almost half (47.7%, 31/65) of the participants had been using hormonal contraceptives for less than 12 months followed by 26.2% who had been using hormonal contraceptives for 12–23 months.

Table 2: Type of hormonal contraceptive product used by participants at the time of study (current users) and by the participants who were not currently using contraceptive products (past users)

	Current users* ($n = 57$)		Past users* ($n = 52$)	
Type of hormonal contraception	***n***	**%**	***n***	**%**
Oral contraceptive pills	49	86.0	45	86.5
Post-coital contraception	0	0	6	11.5
Implant	2	3.5	1	1.9
Injection	6	10.5	6	11.5
Intrauterine system	1	1.8	0	0

*Participants, either current or past users, could select more than one option for the type of product used, for example oral contraceptives as well as emergency contraception.

The main type of hormonal contraception used was combined oral contraceptive pills (Table 2).

With regard to compliance, 77.0% (57/74) of participants took their oral contraceptive pill at more or less the same time each day, 21.6% ($n = 16$) took it at the same time, and 1.4% ($n = 1$) took it at different times. Most (61.2%, 30/49) reported that they never forget to take their contraceptive pill; 32.7% ($n = 16$) said that they forget one pill a month, while 6.1% ($n = 3$) forget to take their pill at least twice a month. More than half (55.1%, 27/49) would ingest two pills if they forget to take their pill and 42.9% ($n = 21$) would carry on with the rest of the month's supply.

Side effects reported by participants on hormonal contraception included weight gain (44.4%, 20/45), mood swings (28.9%, $n = 13$), breast tenderness (26.7%, $n = 12$), increased appetite (24.4%, $n = 11$) and headaches (22.2%, $n = 10$). Less than 20% reported nausea, water retention, spotting between periods, depression, and darkening of freckles or skin on the face.

Of the participants who indicated that they were sexually active, almost half (47.6%, 30/63) reported that their sexual partner encourages the use of hormonal contraception. A quarter (25.4%, $n = 16$) each reported that their partner was either neutral about hormonal contraception use or they did not know how their partner felt about this. Only one (1.6%) student's partner disagreed with using any form of contraception.

Knowledge of contraceptives

The majority of participants (70.4%, 183/260) perceived their own knowledge regarding contraceptive methods as 'moderate', 18.5% ($n = 48$) regarded their own knowledge as 'very little', and 11.2% ($n = 29$) 'a lot'.

As shown in Table 3, the highest percentage of participants believed that combined oral contraception is the most effective hormonal contraceptive in preventing pregnancy. Only a few individuals knew that the correct answer for how long, after unprotected sex, emergency contraception is still effective in preventing pregnancy is within 5 days. Almost half of the participants felt that these products would still be effective in preventing pregnancy when one pill is skipped. More than half were unsure about whether other medications might lower the effectiveness of hormonal contraceptives.

Most participants (89.6%, 232/259) learnt about contraceptive methods in high school.

Almost half of the participants reported that they had been informed about a subdermal contraceptive implant that releases

Table 3: Knowledge of hormonal contraceptives including combined oral contraception ('the pill') and emergency contraception ('the morning after pill')

Questions	*n*	%
According to your knowledge, what type of hormonal contraceptive is the most effective in preventing pregnancy? (*n* = 244)*		
The 'pill'	81	33.2
The 'morning after pill'	15	6.2
Implant	57	23.4
Injections	61	25.0
Intrauterine system	47	19.3
How long after unprotected sex can someone take the morning after pill to effectively prevent pregnancy? (*n* = 259)		
I don't know	72	27.8
Within 24 hours after unprotected sex	103	39.8
Within 48 hours after unprotected sex	25	9.7
Within 72 hours after unprotected sex	54	20.9
Within 5 days after unprotected sex	3	1.2
Within 7 days after unprotected sex	2	0.8
Do you know about the side effects of the hormonal contraceptive you are using? (*n* = 59)		
Yes, I know all about all the possible side effects	23	39.0
I know a lot of the side effects	14	23.7
I know of a few side effects	19	32.2
I am not aware of any possible side effects	3	5.1
How effective is the pill? (*n* = 258)		
It is 100% effective in preventing pregnancy	17	6.6
It reduces the chances of getting pregnant dramatically	197	76.4
It reduces the chances of getting pregnant slightly	42	16.3
It does not prevent pregnancy at all	2	0.8
If someone forgets to take the pill for one day, will the pill still prevent pregnancy? (*n* = 260)		
Yes, it will still be 100% effective	4	1.5
The chances are good that the pill will still be effective	119	45.8
There is a slight chance that the pill may be effective	108	41.5
No, the pill is definitely not effective when skipping a day	29	11.2
Is the pill effective when used with other medication? (*n* = 260)		
Not sure	144	55.4
Yes, it will still be effective when taking other medication as well	18	6.9
I know of some medication that may lower the effectiveness of hormonal contraceptives	94	36.2
All other medication lowers the effectiveness of hormonal contraceptives	4	1.5

*More than one option could be selected.

progesterone (Table 4). Of these, 41.1% correctly noted that it was effective in preventing pregnancy for more than a year.

Only 21.1% of the participants claimed to know how an intrauterine system works. Of these, 73.1% correctly stated that the system is effective in preventing pregnancy for more than a year.

Almost 90% of participants did not know the difference between an intrauterine system and an intrauterine device.

Personal attitude and opinions concerning hormonal contraceptives

Just over half (54.4%, 141/259) of participants reported that emergency contraception is only acceptable when used as an emergency contraceptive. More than a quarter (28.2%, *n* = 73) found this unacceptable while 17.4% (*n* = 45) felt that this was an acceptable method of contraception.

Table 4: Knowledge of the subdermal contraceptive implant and intrauterine system

Questions	*n*	%
Have you been informed of a subdermal (under the skin) contraceptive implant releasing progesterone? (*n* = 239)		
Yes	114	47.7
If you have heard of this device: (a) How long do you think it is effective in preventing pregnancy? (*n* = 112)		
A week	4	3.6
A month	6	5.4
Three months	25	22.3
Six months	18	16.1
A year	13	11.6
Longer than a year	46	41.1
(b) Where did you hear about this device? (*n* = 114)*		
In school	38	33.3
From parents	9	7.9
From friends	50	43.9
Other	24	21.1
Do you know what an intra-uterine system is? (*n* = 247)		
I don't know what it is	86	34.8
I have heard of it, but am not sure of how it works	109	44.0
I know how it works	52	21.1
If you do know what an intra-uterine system is, how long is it effective for prevention of pregnancy? (*n* = 52)		
A week	1	1.9
A month	0	0
Three months	4	7.7
Six months	3	5.8
A year	6	11.5
Longer than a year	38	73.1
Do you know what the difference between an intra-uterine system and an intra-uterine device is? (*n* = 258)		
Yes	28	10.9

*More than one option could be selected.

Regarding the discussion of hormonal contraception with different parties (Table 5), a minority of participants indicated that they would be unable to discuss matters regarding contraception. Participants expressed higher levels of confidence in more informal relationships. A similar trend appeared for discussion of sexual issues.

The vast majority of participants (87.3%, 227/260) indicated that they think an education intervention regarding hormonal contraception is needed at UFS.

Discussion

The current study shows that 60 (23.0%) of the study population of 261 female students at the Faculty of Health Sciences at the UFS currently use hormonal contraceptive products. Only 14 (23.3% of users) claimed to use these for contraception purposes, while 19 (7.3% of the total population) indicated that they use 'other forms of contraception'. Twenty-two (8.4% of the total population) indicated that they do not use hormonal contraception due to shyness, effort to obtain the product or

costs involved. Ninety-nine (37.9% of the total population) stated that they did not need contraception because they were not sexually active.

In a population-based survey, MacPhail *et al.*[6] reported that of 6217 South African women between the ages of 15 and 24, two-thirds were sexually active of whom 52.2% used contraception. They reported an association between using contraceptives and being employed or being a student. Among contraceptive users, 25.5% used male condoms and 66.6% only hormonal contraceptives, while 6.8% used dual methods. In another population-based survey across four provinces in South Africa among sexually active youth (n = 3 123), Seutlwadi *et al.*[7] found 89.1% of sexually active women using contraception, 57.6% using male condoms, 25.6% using injectables, 5.2% IUDs and 5.5% emergency contraception.

In a study by Coetzee and Ngunyulu[16] comprising 400 female undergraduate students at a Gauteng tertiary institution, 74% of participants were sexually active, of whom 79% used contraception: oral contraceptives were preferred by 38% and male condoms by 25%. An earlier study by Oyedeji and Cassimjee[17] among university students at KwaZulu-Natal showed a preference for male condom use among unmarried female students due to the stigma of using pills or visiting the clinic for injections.

The current study population therefore shows a relatively low percentage of participants being sexually active compared with both population-based studies and studies involving undergraduate female students elsewhere in the country, with relatively high use of hormonal contraceptive products and a high percentage of participants using oral hormonal contraceptives for medical reasons.

The preference for oral hormonal contraception in the current study is in line with the claim of medical use of hormonal products and is similar to the trend in Gauteng students,[16] where oral hormonal products are preferred.

Knowledge of hormonal contraception

Most of the participants (70.4%) regarded themselves as having 'a moderate amount of knowledge' regarding hormonal contraception and 18.5% admitted to having 'very little knowledge'. The wide range of methods of population selection and ways of reporting results complicate direct comparisons with other studies done in the region.

The study by Chersich *et al.*[8] found that a large proportion of South African women, especially younger ones, have never heard of IUDs and emergency contraception. Indongo[18] reported on the knowledge with regard to contraceptives among sexually experienced Namibian women aged 15–24 years. Most of these participants knew about the pill and injectables, while 50–55% knew about male condoms. In another neighbouring country, Akintade *et al.*[19] conducted a survey among undergraduate students at a university in Lesotho. Of the 360 participants, 95% knew about condoms; 79.2% about the pill; 75.6% about injectables; and 61.4% about emergency contraception.

In comparison, the current study population were aware of the majority of methods, yet lacked knowledge when more detailed questions were asked. Participants ranked combined oral contraceptives as the most effective form of hormonal contraception, followed by the injectable hormones. In fact, subdermal implants and IUSs are more effective than combined oral contraception.[9,12]

A considerable percentage of participants may be at risk of unintended pregnancies because of contraceptive failure, as only 36.2% of participants knew that some medication, such as antibiotics, certain diet pills and tuberculosis medication could lower the effectiveness of hormonal contraceptives.[9]

Participants knew about LARCs, yet lacked detailed knowledge. Over 61% of the total study population had heard of IUSs, yet 90% did not know how it worked or what the difference is between an IUD and an IUS.

Just over half (52.3%) of participants in the current study were informed about the subdermal hormonal implant provided at state hospitals.[13] Only 41.1% of these knew that this device is effective for more than one year.

Eisenberg *et al.*[20] reported that women who selected IUDs and implants were more likely to have accurate knowledge concerning the effectiveness of their method of contraception, while

Table 5: Participants' confidence in discussing hormonal contraception and sexual issues with different parties

	With a doctor		With patients		With fellow students		With friends	
Factor	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Hormonal contraception:	n = 258		n = 258		n = 256		n = 259	
I will not be able to	17	6.6	17	6.6	13	5.1	13	5.0
I will discuss only the most necessary	56	21.7	32	12.4	48	18.8	25	9.7
I will be uncomfortable but will discuss if needed	61	23.6	40	15.5	46	18.0	34	13.1
Cautious but confident	55	21.3	80	31.0	79	30.9	69	26.6
Very confident to discuss in detail	69	26.7	89	34.5	70	27.3	118	45.6
Sexual issues:	–		n = 258		n = 258		n = 258	
I will not be able to	–	–	18	7.0	24	9.3	19	7.4
I will discuss only the most necessary	–	–	37	14.3	64	24.8	39	15.1
I will be uncomfortable but will discuss if needed	–	–	73	28.3	56	21.7	40	15.5
Cautious but confident	–	–	73	28.3	68	26.4	74	28.7
Very confident to discuss in detail	–	–	57	22.1	46	17.8	86	33.3

60% of users of contraceptive pills and condoms overestimated the efficacy of their method of contraception.

In a society where rape is common, knowledge regarding emergency contraception is vital. Only 1.2% of the 259 participants in the current study were aware that emergency contraception is effective for up to five days after unprotected sex. Six students reported having used emergency contraception.

The study of Coetzee and Ngunyulu[16] done in Gauteng found that 53.3% of female undergraduate students were familiar with emergency contraception. Similar results were reported by Hoque and Ghuman[21] for female university students in KwaZulu-Natal where 49.8% of students had heard of emergency contraception and 21.2% of sexually experienced students had used emergency contraception.

Several studies have been done on emergency contraception knowledge and use among female student populations in a variety of African countries with wide ranging prevalence of use. Gebrehiwot et al.[22] reported on 616 female students at an Ethiopian University: 67.3% had heard of emergency contraception; 24.2% had used it. Nibabe and Ngutshini[23] undertook a study at three Ethiopian tertiary institutions among 352 female students: 69.9% of students had heard of emergency contraception; 10% had used it. Ahmed *et al*.[24] reported on female students at another Ethiopian university where 75% of students who had unprotected sex had used emergency contraception. Byamugisha *et al*.[25] reported that, among 379 female students at a Ugandan university, 45.1% had heard of emergency contraception; seven students had used it. In contrast, Kgosiemang and Blitz[26] reported that, among 371 female undergraduate students in Botswana, 58% were sexually active; and 22% had used emergency contraception. They suggested that the high figure may be because of abortions being illegal in Botswana.

Attitudes regarding hormonal contraception

Kistnasamay *et al*.[27] conducted a study among 162 undergraduate students at the Durban University of Technology. Almost a third (27%) of these students indicated that emergency contraception should not be used at all. In the current study a high percentage of participants indicated that emergency contraception is acceptable only when used as an emergency contraceptive, or is completely unacceptable.

The low awareness and uptake of subdermal implants are not surprising. Rees *et al*.[28] showed that the use of the implant by the South African population was only apparent in three provinces: Gauteng, Limpopo and KwaZulu-Natal. Even here, usage declined rapidly after introduction of this free service. The lack of uptake is ascribed to lack of training of nursing staff and lack of access at government hospitals.

Study limitations

The study population is not representative of all young South African adults, or of the university population as a whole. It is therefore not generalisable to the general population or to student populations in tertiary education. It does, however, provide a reference point for assessing use, knowledge and attitudes in similar student populations in South Africa and other developing countries.

The fact that the questionnaire was self-administered poses a risk of under-reporting. The researchers tried to counteract this by ensuring anonymity. The way in which the questionnaire was structured to enhance confidentiality during completion led to inconsistent responses.

The study did not assess the relationship status or sexual behaviour of students per se, or assess the influence of religion and culture. The study also did not include the use and knowledge of barrier methods; neither did it include information on whether participants obtained their contraception via prescription or over-the-counter. It is recommended that future studies on this topic take these issues into consideration.

Conclusion and recommendations

The participants showed an openness and confidence to discuss hormonal contraception yet lacked sufficient knowledge on vital aspects of hormonal contraception such as the relative effectiveness of different forms of hormonal contraception and factors that affect that emergency contraception, as well as long-acting reversible contraceptives.

There is a need for focused education interventions with regard to contraception at the UFS. Students within the Faculty of Health Sciences should be provided with adequate access to information to be able to use oral hormonal products safely themselves. This will enable them to convey these aspects accurately to their friends and future patients. The sensitivity of the issue of emergency contraception needs to be taken into account in the design and implementation of such an intervention.

Acknowledgements – The authors thank all the students who took the time to participate in this study, the lecturers who offered up their class time for completion of the questionnaires, Mr M Mamba, Department of Biostatistics, Faculty of Health Sciences, UFS, for computing assistance, and Ms T Mulder, medical editor, School of Medicine, UFS, for preparation of the manuscript.

Disclosure statement – No potential conflict of interest was reported by the authors.

Funding – None.

Conflict of interest – The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

References

1. Bailey MJ, Hershbein B, Miller AR. The opt-in revolution? Contraception and the gender gap in wages. Am Econ J Appl Econ. 2012;4(3):225–254.
2. Levine R, Langer A, Birdsall N, et al. Contraception. In: Jamison DT, Breman JG, Measham AE, editors. 2nd edition. Disease control in developing countries. New York: Oxford University Press; 2006. p. 1075–1090.
3. Craig AD, Dehlendorf C, Borrero S, et al. Exploring young adults' contraceptive knowledge and attitudes: Disparities by race/ethnicity and age. Womens Health Issues. 2014;24(3):e281–e289. doi:10.1016/j.whi.2014.02.003.
4. Frost JJ, Lindberg LD, Fine LB. Young adults' contraceptive knowledge, norms and attitudes: Associations with risk of unintended pregnancy. Perspect Sex Reprod Health. 2012;44(2):107–116. doi:10.1363/4410712.
5. Williamson LM, Parkes A, Wight D, et al. Limits to modern contraceptive use among young women in developing countries: A systematic review of qualitative research. Reprod Health. 2009;6:3, doi:10.1186/1742-4755-6-3. [cited 2019 Apr 11]

6. MacPhail C, Pettifor AE, Pascoe S, et al. Contraceptive use and pregnancy among 15-24 year old South African women: A nationally representative cross-sectional survey. BMC Med. 2007;5(31). [cited 2019 Apr 11]
7. Seutlwadi L, Peltzer K, Mchunu G, et al. Contraceptive use and associated factors among South African youth (18-24 years): A population-based survey. S Afr J Obstet Gynaecol. 2012;8(2):43–47.
8. Chersich MF, Wabiri N, Risher K, et al. Contraception coverage and methods used among women in South Africa: A national household survey. S Afr Med J. 2017;107(4):307–314. doi:10.7196/SAMJ.2017.v107i4.12141.
9. Steyn PS, Kluge J. Contraceptives: A guide to product selection. S Afr Fam Pract. 2010;52(6):499–504. doi:10.1080/20786204.2010.10874034.
10. Schindler AE. Non-contraceptive benefits of oral hormonal contraceptives. Int J Endocrinol Metab. 2013;11(1):41–47. doi:10.5812/ijem.4158.
11. Machado RB, Pompei Lde M, Giribela AG, et al. Drospirenone/ethinylestradiol: a review on efficacy and noncontraceptive benefits. Womens Health (Lond). 2011;7(1):19–30. doi:10.2217/whe.10.84 [Erratum in Womens Health (Lond Engl) 2011;7(2):254–5].
12. Dahan-Farkas NE, Irhuma MOE. Long-acting reversible hormonal contraception. S Afr Fam Pract. 2016;58(5):64–67.
13. South African Government News Agency. Government unveils free contraceptive device for women [internet]. South Africa: Department of Communications. c2014 [cited 2017 Apr 27]. Available from: http://www.sanews.gov.za/south-africa/government-unveils-free-contraceptive-device-women.
14. Lukhaimane TA, Adam Y. Women's willingness to use emergency contraception: Experience at Chris Hani Baragwanath Academic hospital, Johannesburg, South Africa. S Afr Med J. 2015;105(4):266–267. doi:10.7196/SAMJ.9411.
15. Rossiter D, Blockman M, Barnes KL, et al. South African Medicines Formulary. 12th ed Erasmuskloof, Pretoria: Health and Medical Publishing Group; 2016.
16. Coetzee MH, Ngunyulu RN. Assessing the use of contraceptives by female undergraduate students in a selected higher educational institution in Gauteng. Curationis. 2015;38(2):1535. doi:10.4102/curationis.v38i2.1535.
17. Oyedeji OA, Cassimjee R. A gendered study of young adult contraceptive use at one university in KwaZulu-Natal. Curationis. 2006;29(3):7–14.
18. Indongo N. Contraceptive choice and use of methods among young women in Namibia. African Population Studies. 2008;23(1):41–55. doi:10.11564/23-1-312.
19. Akintade OL, Pengpid S, Peltzer K. Awareness and use of and barriers to family planning services among female university students in Lesotho. S Afr J Obstet Gynaecol. 2011;17(3):72–78.
20. Eisenberg DL, Secura GM, Madden TE, et al. Knowledge of contraceptive effectiveness. Am J Obstet Gynecol. 2012;206(6):479.e1–9. doi:10.1016/j. ajog.2012.04.012.
21. Hoque ME, Ghuman S. Knowledge, practices, and attitudes of emergency contraception among female university students in KwaZulu-Natal. South Africa. PloS One. 2012;7(9):e46346. doi:10.1371/journal.pone.0046346. [cited 2019 Apr 11]
22. Gebrehiwot H, Gebrekidan B, Berhe H, et al. Assessment of knowledge, attitude, and practice towards emergency contraceptives among female college students at Mekelle Town, Tigray region, Ethiopia: A cross sectional study. Int J Pharm Sci Res. 2013;4(3):1027–1038.
23. Nibabe WT, Mgutshini T. Emergency contraception amongst female college students -knowledge, attitude and practice. Afr J Prim Health Care Fam Med. 2014;6(1):E1–E7. doi:10.4102/phcfm.v6i.538.
24. Ahmed FA, Moussa KM, Petterson KO, et al. Assessing knowledge, attitude, and practice of emergency contraception: A cross-sectional study among Ethiopian undergraduate female students. BMC Public Health. 2012;12:110. doi:10.1186/1471-2458-12-110. [cited 2019 Apr 11]
25. Byamugisha JK, Mirembe FM, Faxelid E, et al. Emergency contraception and fertility awareness among university students in Kampala, Uganda. Afr Health Sci. 2006;6(4):194–200.
26. Kgosiemang B, Blitz J. Emergency contraceptive knowledge, attitudes and practices among female students at the University of Botswana: A descriptive survey. Afr J Prim Health Care Fam Med. 2018;10(1):a1674. doi:10.4102/phcfm.v10i1.1674.
27. Kistnasamy EJ, Reddy P, Jordaan J. An evaluation of the knowledge, attitude and practices of South African university students regarding the use of emergency contraception and of art as an advocacy tool. S Afr Fam Pract. 2009;51(5):423–426. doi:10.1080/20786204.2009.10873896.
28. Rees H, Pillay Y, Mullick S, Chersich MF. Strengthening implant provision and acceptance in South Africa with the 'Any woman, any place, any time' approach: An essential step towards reducing unintended pregnancies. S Afr Med J. 2017;107(11):939–944. doi:10.7196/SAMJ.2017.v107i11.12903. [cited 2019 Apr 11]

Received: 27-11-2018 Accepted: 08-07-2019