INTRODUCTION

Millions of women around the world have used contraceptives since their debut in 1957. Contraceptives remain the most prescribed medications for women ages 18-44 [1]. They enable women to control their reproduction and, thereby, other aspects of their lives, such as career and family [2].

Over the past 40 y, there have been significant advances in their development [3]. However, current policies and health care practices in some countries are based on scientific studies of contraceptive products that are no longer widely used [4]. Because country situations and program environments vary so greatly, it is inappropriate to set firm international guidelines on criteria for contraceptive use [5]. It is expected that national programs will use these recommendations for updating or developing their own contraceptive eligibility guidelines according to national health policies, needs, priorities and resources, while reflecting upon local values and preferences [6].

There are many contraceptive methods. Some of the most commonly used are: intrauterine devices (IUDs), long-acting and reversible contraceptive devices [7], an emergency contraceptive pill (ECP) taken orally after unprotected sex [8], and Levonorgestrel (LNG) also taken post-coitally “after intercourse”, a method of emergency contraception (EC) that arrests or delays ovulation [9-11], and, the vaginal ring, which administers the delivery of selective progestosterone receptor modulators (SPRs) into the body [12].

Besides the methods listed above, a less complex method is the condom. Scientifically recommended as potential products for preventing infections attributable to human immunodeficiency viruses (HIV), condoms act as a barrier to keep sperm from entering the uterus [13]. Another wearable contraceptive choice is the patch which provides the systemic delivery of steroid hormones by transdermal technology using patches that contain estrogen or estrogen plus a progestin that has been successfully used for contraception [14]. Yet another product of choice, but more invasive, is the Implantable birth control rod, a matchstick-sized, flexible plastic, the surgically inserted device that releases progestin [15].

Female patients requiring treatment for pulmonary arterial hypertension (PAH) are advised to avoid pregnancy because of the high associated mortality rate [16], and oral contraception is one of the main methods of preventing pregnancy. They may be combined, or progestogen alone, the combined oral contraceptive pills (COCs) contain different combinations of the synthetic estrogens and are given to interfere with ovulation. In contrast, Progestin-only pills (POPs) may interfere with ovulation or with sperm function by thickening cervical mucus, making it difficult for sperm to move [17]. In most countries, various types of pills are available, and studies have shown an increased risk of venous thromboembolism with the use of combined oral contraceptives [18-20]. This risk differs according to a type of progestogen and decreases with both duration of use and decreasing estrogen dose [21, 22].

A progestogen-only injectable contraceptive is also available that acts for a long time and involves an injection of a progestin as a depot. Progestogen-only injectable contraception is highly effective, reversible and safe for most women [23].

A less scientific alternative is the natural method. This involves recording the fertile and infertile times of a woman’s cycle to plan when to avoid pregnancy [24].

Using contraceptives in recent years, an integral part of a healthy lifestyle remains one of the most significant challenges for human beings; this challenge is the need to expand the use of contraceptives in Saudi Arabia and the world in controlled ways and to seek to address the effects of overpopulation. The who forecasts that the world’s population, at present, which is about six billion people and is estimated to rise until it reaches almost eight billion by 2025, more than nine billion in 2050 [25].

The present study aims to determine the extent of use of contraceptives between people in Saudi Arabia. Moreover, its aim is to evaluate the knowledge about contraceptives and their use among the population as well as the intervention and effective communication between pharmacists and patients.
MATERIALS AND METHODS

Methods

The study was a community-based, cross-sectional survey conducted in Jeddah, Saudi from 28 September 2015 to 10 December 2015. The current study was carried out on 618 adult participants ages 13-50 y for an assumed prevalence of contraceptives use. Each participant was asked through direct contact to complete a structured self-administered questionnaire, available in Arabic and English. Pilot questionnaires were distributed for validation. Population samples were selected randomly through the distribution of the questionnaires through four high schools, one university, hospitals and an electronic survey. The collected data were pooled and analyzed by description.

A structured questionnaire (table 1) consisted of three sections (i) the socioeconomic and demographic characteristics of the participant; (ii) participants’ knowledge and attitudes regarding contraceptives use; and (iii) the intervention and effective communication between physician, pharmacist and patients.

Table 1: Survey questionnaire

| Section (I) | Question                                                                 |
|-------------|--------------------------------------------------------------------------|
| How old are you? | What is your nationality? What is your level of education? What is your occupation? Why is your income? Are you a smoker? What is your skin color? What is your husband’s educational level? What is your husband’s occupation? |
| Do you have general information about the menstrual cycle and what the best time would be for intercourse in order to conceive or avoid pregnancy? | Do you have any general information about the different ways to prevent pregnancy or do you just know one thing? What do you think about contraception, in general? If you answered that it is not good, what is the reason? Do you or have you used contraceptives before? If you answered “yes”, what are the types? At what age did you start to use contraceptives? Do you use contraceptives after having a child? What is the reason for contraceptive use? Do you have any chronic diseases? If you answered “yes”, which? Do you take any other drugs with contraceptives? If you answered “yes”, what are these drugs? Are you fully aware of the side effects of contraceptives? During your use of contraceptives, did any side effects appear? If you answered “yes”, what were they? Did any psychological changes occur while using contraceptives? Did you stop using immediately if you saw one of the following symptoms? - Headaches accompanied by nausea, vomiting and blurred vision - Obesity - Continuously feeling nervous Did the side effects persist after you stopped contraceptives? If you answered “yes”, did you consult a doctor? Did the pharmacist refuse to allow you to buy contraceptive pills without a prescription? Did you get pregnant while you were on a contraceptive? Did you try to change the type? If you answered “yes”, what is the reason? What is the appropriate time to use contraception? Section (II) Did you consult a physician before using a contraceptive? Did you have not consulted a doctor, what was your source and choice of contraceptive? Did your doctor ask you to do some tests? If you answered “yes”, which one(s)? Did your doctor ask if you suffer from depression or psychological issues? Did you tell your doctor if you use some form of contraceptive? |

RESULTS

A questionnaire was distributed in the Jeddah community, 618 women were included in the study. The current study showed that the most commonly used contraceptive is an IUD, and intrauterine device (fig. 1).

We found that 47.6% of participants started to use contraceptives after giving birth to their first child, and 64.8% decided to use them due to family planning (fig. 2). Furthermore, around 60% of the participants were using contraceptives without prescriptions. Their source for information about contraceptives was obtained mainly from general information (30.6%), and 24.2% of participants used relatives for advice on how to use contraceptives (fig. 3). Socio-demographics of participants and its relation to the type of contraceptive use is shown in table 2. Furthermore, knowledge and attitude about contraceptives are stated in table 3. The role of physicians and pharmacists were obtained from participants’ responses, as presented in table 4.
Table 2: Socio-demographics of participants and its relation to the type of contraceptive use

| Type of contraceptives | Male condom | Tablets | Implant | Patch | Natural | IUD | Female condom | Injection | Ring |
|------------------------|-------------|---------|---------|-------|---------|-----|--------------|-----------|------|
| Total: 618             | 482 (77.99) | 534 (86.4) | 143 (23.13) | 403 (65.21) | 421 (68.12) | 507 (82.03) | 172 (27.83) | 290 (46.92) | 224 (36.24) |
| Age:                   |             |         |         |       |         |     |              |           |      |
| -13-18                 | 1 (0.20)    | 2 (0.37) | 0       | 2 (0.49) | 1 (0.23) | 2 (0.39) | 1 (0.58) | 0         | 0      |
| -19-30                 | 98 (20.33)  | 117 (21.92) | 62 (43.35) | 65 (16.1) | 89 (21.41) | 102 (15.1) | 42 (24.41) | 57 (19.65) | 53 (23.66) |
| -31-40                 | 177 (36.72) | 196 (36.70) | 53 (37) | 53 (37) | 102 (17.10) | 187 (36.88) | 56 (32.55) | 116 (40) | 77 (34.37) |
| ->40                   | 7 (18.04)   | 25 (17.48) | 153 (29.6) | 75 (41.7) | 36.57 | 154 (26.33) | 49 (16.89) | 41 (18.30) |       |
| Education level:       |             |         |         |       |         |     |              |           |      |
| low                    | 96 (19.9)   | 77 (14.41) | 20 (13.98) | 75 (18.61) | 71 (16.86) | 104 (20.51) | 28 (16.27) | 54 (18.62) | 38 (16.96) |
| moderate               | 312 (64.73) | 241 (45.13) | 29 (20.27) | 55.33 (55.33) | 60 (14.25) | 273 (53.84) | 29 (16.86) | 54 (18.62) | 47 (16.20) |
| high                   | 68 (14.10)  | 74 (13.85) | 20 (3.98) | 55 (13.6) | 60 (14.25) | 59 (11.63) |           |           |      |
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| Work: | Response, number (%) |
|-------|-----------------------|
| Work  | 174 (36.09) 196 (36.70) 73 (51.04) 152 (37.71) 164 (38.95) 190 (37.4) 76 (44.18) 122 (42.06) 88 (39.2) |
| Don’t work | 191 (29.62) 221 (41.38) 47 (32.86) 154 (38.21) 167 (39.66) 205 (40.4) 64 (37.20) 102 (35.17) 85 (37.90) |

| Husband’s work: | Response, number (%) |
|-----------------|-----------------------|
| Work | 10 (2.07) 256 (47.9) 1 (0.69) 52 (12.9) 2 (0.47) 43 (8.48) 0 (0.0) 17 (5.86) 4 (1.78) |
| Don’t work | 0 (0) 23 (4.3) 0 (0) 6 (1.48) 0 (0) 5 (0.98) 0 (0) 0 (0) 0 (0) |
| Irregular work | 1 (0.2) 256 (47.9) 23 (4.3) 28 (5.24) 2 (0.47) 0 (0) 0 (0) 0 (0) 0 (0) |

| Social level: | Response, number (%) |
|---------------|-----------------------|
| Low | 92 (19.08) 157 (32.57) 116 (23.13) 70 (17.36) 71 (16.86) 100 (20.12) 20 (11.62) 42 (14.48) 30 (13.39) |
| Mid | 145 (30.08) 156 (30.52) 132 (32.75) 137 (31.55) 13 (2.97) 0 (0) 0 (0) 0 (0) 0 (0) |
| High | 23 (16.08) 163 (32.91) 52 (36.36) 137 (32.54) 15 (3.47) 0 (0) 0 (0) 0 (0) 0 (0) |

| Skin color: | Response, number (%) |
|--------------|-----------------------|
| White | 171 (35.47) 180 (36.0) 53 (37.06) 138 (34.24) 146 (34.67) 170 (34.67) 63 (36.62) 100 (20.12) 85 (37.94) |
| Brown | 18 (3.73) 28 (5.24) 64 (4.19) 6 (1.48) 13 (2.97) 0 (0) 0 (0) 0 (0) 0 (0) |
| Wheaten | 261 (54.14) 286 (53.55) 84 (58.74) 246 (61.04) 225 (53.44) 303 (59.76) 88 (51.16) 12 (4.13) 113 (50.44) |

| Smoking: | Response, number (%) |
|-----------|-----------------------|
| Smoke | 1 (0.2) 56 (10.4) 13 (2.22) 8 (1.57) 0 (0) 15 (5.17) 1 (0.44) |
| Don’t smoke | 9 (1.86) 251 (47) 51 (12.6) 2 (0.47) 47 (9.27) 0 (0) 15 (5.17) 3 (1.33) |

Table 3: Knowledge and attitude about contraceptives

| Knowledge | Response, number (%) |
|-----------|-----------------------|
| Consult a physician before using | • Yes 447 (72.21%) |
| Knowing about side effects | • No 128 (20.68%) |
| Knowing about contraceptive types | • Yes 328 (52.99%) |
| Getting pregnant while using | • No 20 (3.23%) |
| knowing about contraceptive types | • Not well 242 (39.10%) |
| Tablets and pills 437 (70.60%) | • Intrauterine device 70 (11.31%) |
| Hormone patch 16 (2.58%) | • Vaginal ring 4 (0.65%) |
| Cultivation under the skin 1 | • Female medical condoms 1 (0.16%) |
| Injection 3 (0.48%) | • Others 19 (3.07%) |
| Others 19 (3.07%) | • Injection 3 (0.48%) |
| Others 19 (3.07%) | • Others 19 (3.07%) |
| If you answered “yes”, what is the reason (for changing) | • Yes 86 (13.89%) |
| • Yes 20 (3.23%) | • No 467 (75.44%) |
| • Others 19 (3.07%) | • No 244 (39.42%) |
| • No 244 (39.42%) | • Yes 301 (48.63%) |
| • No 244 (39.42%) | • No 244 (39.42%) |
| • If you answered “yes”, what is the reason (for changing) | • Got pregnant 58 (9.37%) |
| • Got pregnant 58 (9.37%) | • Nausea 6 (1.29%) |
| • Nausea 6 (1.29%) | • Others 19 (3.07%) |
| • Discomfort 167 (26.98%) | • Other 98 (15.83%) |

Table 4: Role of physicians and pharmacists

| Role | Response, number (%) |
|------|-----------------------|
| Doctor asked to do some investigations | • Yes 198 (31.99%) |
| • No 320 (51.70%) | • Fat level 30 (4.05%) |
| • Fat level 30 (4.05%) | • Liver function 8 (12.9%) |
| • Liver function 8 (12.9%) | • Blood sugar 13 (2.10%) |
| • Blood sugar 13 (2.10%) | • Pregnancy tests 73 (11.79%) |
| • Pregnancy tests 73 (11.79%) | • I do not know 49 (7.92%) |
| • I do not know 49 (7.92%) | • Yes 82 (13.25%) |
| • Yes 82 (13.25%) | • No 429 (69.31%) |
| Finding refusal from the pharmacist (being denied) while buying without a prescription | • Yes 15 (2.42%) |
| • No 491 (79.32%) |
DISCUSSION

Since contraceptives first became available in the 1960s, they have been in extensive use throughout the world. Convenient and useful, birth control pills are also beneficial in treating menstrual disorders [26]. Effective contraception is a significant factor in a woman's ability to plan her pregnancies, that is to achieve desired birth spacing and family size [27], changes in contraceptive method choice and use have not decreased the overall proportion of pregnancies that are unintended due to compositional changes in race, marital status, age, place of residence, education and income [28].

Most women in the US used pills (51%), with approximately 50% of users in the age range of 15–19, 40% being 20–24 y of age, and 10% at age 40–44 y [29]. There were changes in current method choice by race and education; pill use decreased among Black women to 18%, but still higher than for White women. Three times as many women with a bachelor's degree or higher relied on the pill (33%) [30]. And, 77.4% of women with public insurance, incomes above 5,500$/month and who lived in nonmetropolitan areas were much more likely to use the pill as a contraceptive method compared with 22.6% without insurance; and, those living in central cities were more likely to rely on the condom [31].

Oral contraceptives (OCs) have been available in Canada for over 50 y and now with decreasing estrogen doses, new progestins, and different dosing regimens. However, pill use in Canada is a second choice (36%) [32]. Among oral contraceptive users (36%) reported smoking either daily or occasionally. Almost all (99%) OC users took combined formulations containing ethinyl estradiol (EE) and progestin. Others took formulations containing 30 or more mcg of EE [33].

OC use decreased with age, 60.4% of women aged 15-30 reported taking OCs, 36.6% women aged 31-49 [34]. Oral contraceptives use was significantly higher for women with post-secondary education (44%) than for those for women who did not have this level of schooling, and finally, among those who reported having prescription drug insurance coverage (57.2%) more than women who had no such benefits [35]. The percentage of White women using oral contraceptives was markedly lower (19%) compared with Black women who said they were not on the pill (30%) [36]. The World Health Organization (WHO) considers the prevalence of contraceptive usage among Saudi society in Riyadh city as one of the determinants of women's health and empowerment in that society. Some societies use contraceptives to regulate pregnancies and in birth spacing. Religious issues may also play a significant role in determining how couples view such issues as contraception. Certain religions do not permit the use of contraception, and children from religious families may not even know the essentials on birth control methods [22]. The current study shows that the preferable type of contraception among Saudi women is the pill (71.7%). Use of different types of contraception according to age in the current study revealed that young females preferred the use of the vaginal ring and older females preferred either the IUD or pills. The percentage of highly educated women was higher (66.2%). The average income of IUD users was more than 13,000 riyals/month [51]. In this research study, we found that the preferred method in Saudi Arabia was the IUD (29.1%); most having an average income of more than 10,000 riyals/month (75.5%).

Younger women from 19-30 were less likely to use IUD's, but others ages 31-40 used them more (57.1%) and ages 40-above (24.4%). Most women the IUD having a bachelor's degree (51%) and employed (53%). Also, Blacks at (69.3%) which is much more than Whites [52].

The contraceptive injection is a shot of hormones either in the muscle or under the skin that lasts for one up to 3 m. It contains hormones, either alone or in combination with progesterone, together that prevent the body from releasing eggs and thicken the mucus at the cervix. The way it works is similar to the pill or the ring, except the user does not have to remember to take it every day or week [33]. Women residing in the US are less likely to use the injection (2.1%) [54] then (1.7%) for Canadians and women in Riyadh (0.4%) [55], respectively. Contraceptive injection is probably not the best choice for those afraid of needles, so many countries do not utilize this method [56]. In Saudi Arabia, 7% of women used injectable contraceptives, and of this number, 87.5% were employed and not smokers.

The types of contraceptive devices and methods have increased with the development of the transdermal patch. The efficacy and safety of this method is similar to those of combined oral contraceptives. However, it differs from the pill in the route of hormone delivery and frequency of administration [57]. The contraceptive patch is just as it states, it is a patch that resembles polished plaster and sticks to the skin. The patch is highly effective in preventing unwanted pregnancies by releasing hormones. The hormones, estrogen and progesterin, are released continuously, entering the bloodstream through the skin [57]. Approximately 2.7% of US women had used the transdermal patch. Physicians did not consider combined hormonal contraceptives to be a suitable method for participating women, mainly due to the presence of contraindications or medical conditions [58]. Also, having a low usage rate is Riyadh at (2.4%)
REFERENCES
Declared none

CONFLICTS OF INTEREST
findings of this work.

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Nil

FUNDING
on the use of contraceptives.

CONCLUSION
study has potential limitations includes inadequate sample size
methods that did not use contraception medications reported due to medical

similar to the implant, a contraceptive ring is available that also eliminates the need for daily dosing. The contraceptive ring, also known as the vaginal ring, is a bright and flexible ring of polyethylene vinyl acetate that, once inserted into the vagina, slowly releases the hormones progesterin and estrogen into the body to stop the ovaries from releasing eggs [39].

It may cause vaginal discharge, discomfort and irritation in the vagina, and weight gain. Because of these problems, the vaginal ring has the lowest rate of use by women in the United States (1.1%) [65], Canada (0.6%) [66] and Riyadh (1.2%) [67]. Vaginal ring usage is shallow among Saudi Arabian women (12%) but almost (99.6%) all having a higher income (more than 10,000 Riyals/month).

Contraceptive use and method choice may change over time for various reasons, including the availability of new methods and more considerable societal changes in fertility patterns. For example, the average age at first birth for women in the United States has increased in recent decades, at least partially because of an increase in first births to women aged 35 [60]. This suggests potential changes over time in the use of contraception by age as first births are delayed. Acceptance of and ability to correctly and consistently use this technology may create challenges for future ring-based microbe-cide trials in settings where this technology has not been introduced [69]. Natural Family Planning (NFP) is the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births [47]. Only 0.6% of women had previously used contraceptive methods in the US [70]. If compared with Canadian women, only 0.2% were in natural family planning [71]. 1.8% of women in Riyadh did not use contraception medications reported due to medical reasons; so, they depend on natural family planning. Women need methods that provide them with greater control; so, natural family planning is typically reflected by Saudi women (0.9%) [47]. This study has potential limitations includes inadequate sample size compared to population and lack of enough previous studies in the same geographical region.

CONCLUSION
Pharmacists and medical health providers have to fill the gap to improve the use of contraceptives. Government, policymakers, decision-makers and other stakeholders should intensify education on the use of contraceptives.

FUNDING
Nil

AUTHORS CONTRIBUTIONS
Alaa Bagalagel write the final manuscript and supervised the findings of this work.

CONFLICTS OF INTEREST
Declared none

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