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KNOWLEDGE AND ATTITUDE REGARDING VAGINAL RING AS A FORM OF CONTRACEPTION AMONG LEBANESE WOMEN

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KNOWLEDGE AND ATTITUDE REGARDING VAGINAL RING AS A FORM OF CONTRACEPTION AMONG LEBANESE WOMEN

Abstract

This study aimed to evaluate the knowledge of Lebanese women concerning the vaginal ring as a contraceptive means, and to assess their attitude regarding the usage of this form of contraception. 502 participants of ages 20-49 were recruited to complete a 10-minute questionnaire to assess their contraceptive knowledge, awareness, and attitude towards the vaginal ring. Knowledge was evaluated among those who had heard about the ring by completing 16 questions. While those of no previous knowledge of the ring were directed towards a brief description about it. All participants completed 7 questions to assess their attitude towards the vaginal ring, and whether or not they might consider using it. Of all the participants 79.8 % recorded having knowledge about different forms of contraceptives, but only 29.1% knew about the ring. Of the latter, 105 had a score less than 50, and were thus considered to have poor knowledge. Whereas, 34 participants had a score of 50 and above, and were considered to have sufficient knowledge. Of the participants, 66.5% would not consider using the ring in the future. Age, level of education and enrollment in the medical field among other factors had a significant impact on the attitude of women towards the vaginal ring. Lack of advertisement, poor counselling from medical professionals, and unavailability of the product had a significant role in the inadequate awareness towards it. The ring did not seem appealing for most of the participants.

Keywords

Contraceptive vaginal ring, contraception, knowledge, attitude, Lebanese women

Authors

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ABSTRACT: *This study aimed to evaluate the knowledge of Lebanese women concerning the vaginal ring as a contraceptive means, and to assess their attitude regarding the usage of this form of contraception. 502 participants of ages 20-49 were recruited to complete a 10-minute questionnaire to assess their contraceptive knowledge, awareness, and attitude towards the vaginal ring. Knowledge was evaluated among those who had heard about the ring by completing 16 questions. While those of no previous knowledge of the ring were directed towards a brief description about it. All participants completed 7 questions to assess their attitude towards the vaginal ring, and whether or not they might consider using it. Of all the participants 79.8 % recorded having knowledge about different forms of contraceptives, but only 29.1% knew about the ring. Of the latter, 105 had a score less than 50, and were thus considered to have poor knowledge. Whereas, 34 participants had a score of 50 and above, and were considered to have sufficient knowledge. Of the participants, 66.5% would not consider using the ring in the future. Age, level of education and enrollment in the medical field among other factors had a significant impact on the attitude of women towards the vaginal ring. Lack of advertisement, poor counselling from medical professionals, and unavailability of the product had a significant role in the inadequate awareness towards it. The ring did not seem appealing for most of the participants.*

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1. INTRODUCTION

According to the UN report in 2015, and regarding the MENA region, percentage of contraceptive use is highest in Morocco at 68%, followed closely by Tunisia with 64.4%, and Lebanon with 63% (ONU, 2015). In Lebanon, according to the world health organization in the report of Lebanon reproductive health profile the prevalence of contraceptive rate among married women is variable among the modern methods of contraception. For instance the intrauterine device was prevalent by 13.% compared to injectable by 0.6%.The vaginal ring was not reported as a modern method of contraception in Lebanon (World health Organization, 2010). While many studies regarding the vaginal ring have been conducted worldwide, there is a lack of data on the status of vaginal ring use in the MENA region and Lebanon.The contraceptive vaginal ring NuvaRing releases 120 µg of the progestogen etonogestrel (ENG) and 15 µg of the oestrogen (EE) each day. It should be used for one cycle, with 3 weeks of continuous ring use and a 1-week ring-free period (Bjarnadóttir, Tuppurainen, Killick, 2002). Going back into history in the late 60s, two scientists Mishell and Lumkin were the first to introduce the idea of contraceptive rings. They published a study using rings that released medroxyprogesterone acetate to show the contraceptive effects of varying dosage of progesterone in vaginal rings (Mishell, Lumkin, 1970). After performing numerous trials using estrogen and progestin releasing rings, and progestin-only releasing rings. The first ever vaginal rings were developed by The International Committee for Contraception Research of the Population Council (New York, NY, USA); the Contraceptive Vaginal Ring (CVR) got the FDA approval in 2001 (Barnhart et al, 2005). According to Raine et al's study in 2009, on women aged 15-26 years, participants thought that the vaginal ring works as a mechanical barrier, like the female condom. They doubted its effectiveness since it is an open ring unlike the closed condom. The participants were also concerned about the ring getting "lost" inside their reproductive system (Raine et al, 2009). As stated by Schurmans and colleagues in 2015, in Latin America, Europe and the United States, vaginal rings are widely used as a means of contraception and estrogen replacement therapy. This open

label single center cohort study enrolled 120 women to test the effect of NuvaRing on changes of pre and post changes of the vaginal microbial environment. Their study “the ring plus project” showed that the percentage of CVR users that were satisfied or very satisfied was 85%, with 85% to 90% of users assuring that they would recommend CVR to others (Schurmans et al, 2015). A comparative study between Oral Contraceptive Pill (OCP) and CVR, conducted in the United States by Stewart et al, revealed that although there was 65% acceptability, a significant number of women stated that in contrast to OCP, the CVR interfered with sexual intercourse. Consequently, partners were not fond of the ring (Stewart et al, 2007). Another study in Europe reported that about 15% of women and 29% of partners felt the ring during sexual intercourse (Novak et al, 2003). The International Partnership of Microbicides (IPM) published in 2018 an open label cross section study, phase one designed to assess the safety and acceptability of vaginal rings. The study was based in Tanzania and South Africa enrolling 170 healthy, sexually active women between the ages of 18 and 35 years. The used rings did not contain active drugs. The trial was a clinical trial using placebo rings. It was concluded that most of the women were able to insert and remove the ring with comfort, and their acceptability of the ring increased with continuous use (Nel et al, 2018). Thus, the aim of this study is to assess the knowledge and attitude of women in Lebanon towards the vaginal ring.

2. METHODS AND MATERIALS

2.1 Study Design

This cross-sectional questionnaire-based study was conducted among Lebanese women of reproductive age in the range of 20-49. The participants’ age range was chosen to avoid any conflict respecting the society’s norms. Approval was acquired from Beirut Arab University institutional review board (IRB) (2018H-0083-M-R-0287). The population size of concern is 998,375 taking into consideration the 5% margin of error and 95% confidence level, the required sample size of 384 participants was calculated using Raosoft sample size calculator. Anticipating that 20% of participants may drop out the sample size turned out to be 480 (384*1.25). The investigators were able to collect 502 questionnaires, and decided not to discard them, since it would not affect the research’s results.

2.2 Data Collection, Tools, and Methods

Data collection took place during the period of June to December 2018. All the research investigators and well-trained volunteers of both genders participated in collecting the data.

The questionnaire was created by all of the research investigators. Thereafter, it was reviewed by a gynecologist for accuracy and validity. The final version of the questionnaire was written in English then translated to native language Arabic. The translation was done by the research team and examined by a professional translator. Minor changes in translation were performed.

A convenience sampling type was used to approach participants in health care clinics, universities, homes and public places. The questionnaires were given to participants from the following governorates of Lebanon: (36.1%) Mount Lebanon, (19.3%) North Lebanon, (19.3%) South, (14.1%) Beqaa, (11.2%) Beirut according to the population distribution to avoid bias. The participants read, agreed and signed an informed consent document acknowledging the confidentiality and anonymity of personal data and that no incentives are to be given for completing the survey. The participants read to themselves and completed the 5-10 minutes survey.

2.3 Knowledge Assessment

To assess the knowledge of the vaginal ring the participants were asked to answer 16 questions that were recoded. Each right answer was given 1 point, while the wrong answer was given 0 points. The scores of the participants were converted to be out of 100. Based on this, those who scored 50 and above were considered to have good knowledge while those who scored below 50 were considered to have poor knowledge. The scores ranged from 0 up to 81.25.

Data was entered, sorted, cleaned and analyzed using IBM SPSS Statistics Version 25.0 Armonk, NY, USA. Implausible answers and coding errors were carefully reviewed and corrected. Chi square was used to compare categorical data. Whereas, independent t-test and ANOVA were used to compare continuous data. A probability value of < 0.05 was considered to be statistically significant.

3. RESULTS

The most frequent age range in this study was between 20 and 29 with a percentage of 60.8%. 52.9% of the participants were single and 41.7% were married. More than half of the participants received a Bachelor degree (57.8%). 35.3% of the participants were enrolled in the medical field, as indicated in Table 1.

There was a significant relation between the age and the source of contraceptive information ($p=0.001$). The internet and literature recorded the highest percentage among females who aged between 20 and 29 (30%). However, women who aged between 30 and 39 (40%), as well as between 40 and 49 (53.8%) preferred receiving contraceptive information from a healthcare professional. A significance was noted between enrollment in the medical field and familiarity with contraceptive methods ($p=0.003$). The majority of participants were familiar with multiple methods. Of those who chose a single answer, pills recorded the highest percentage among medical (9.9%) and non-medical (13.1%) participants. 146 of the participants answered "Yes" to the question "Have you ever heard of the vaginal ring?", thus they were eligible to answer the questions related to knowledge towards it. The highest score was 81.25 with $n=1$ and the lowest score was 0 with $n=4$. The majority of them had poor knowledge (score < 50; $n=105$) as indicated in Table 2.

There was a significance between occupation and knowledge towards the vaginal ring, where employed participants had better knowledge ($p=0.023$). Those that were enrolled in the medical field were more knowledgeable ($p=0.007$). Furthermore, by using the ANOVA test, it was shown that Pharmacy achieved higher scores than Education ($p=0.03$).

There was a significance between the marital status and the comfort in discussing the vaginal ring with a doctor ($p=0.012$), where the majority were not comfortable. Most of the participants had multiple factors that encouraged them to use the vaginal ring. A significance was noted between those factors and each of the following: marital status ($p=0.024$), enrollment in medical field ($p=0.033$), contraceptive methods information sources ($p=0.022$), and familiar contraceptives ($p=0.014$) as indicated in Table 3. In addition, there was a significance between the encouraging factors and the usage of the vaginal ring ($p=0.003$) as indicated in Table 4.

The study showed that most of the participants had multiple factors that discouraged their use of the vaginal ring. Such factors were significantly associated with age ($p=0.015$) and occupation ($p=0.017$). Among the single discouraging factors, fear of a foreign object in the vagina recorded the highest percentage in ages between 20 and 29 (10%), and between 30 and 39 (6.7%). However, in the age range from 40 to 49, possible slippage was the most discouraging factor (15.3%) as indicated in Table 5.

Finally, the majority of the participants had multiple fears regarding the use of the vaginal ring. Those fears were significantly related with the level of education ($p=0.032$), where it was noted that 50% of uneducated participants had no fear. Moreover, fears were significantly associated with enrollment in the medical field ($p=0.005$), as well as familiar contraceptive methods ($p=0.006$).

4. DISCUSSION

The younger generation (20-29) are more dependent on literature and internet, while the older generation (30-49) are not familiar with them, so they tend to seek the advice of a healthcare professional. As it was expected, those enrolled in the medical field were familiar with most of the contraceptive methods, due to their educational background.

As hypothesized, the majority of the participants had poor knowledge regarding the vaginal ring because it is not offered as a means of contraception in clinics during contraceptive counselling. Moreover, there is no sufficient advertisement and it is not available in most local drugstores. Although contraceptive information is taught in the Lebanese curriculum, yet it does not cover modern contraceptive methods including the vaginal ring. The employed participants had relatively better knowledge because they are more involved in the society, thus they are more up to date. Since NuvaRing is a pharmaceutical product, pharmacists are evidently more informed about it.

The Lebanese society is conservative, hence women of all ages, regardless of their marital status, are not comfortable in discussing the vaginal ring with their physician.

To obtain significant results, factors encouraging and discouraging the vaginal ring use were recoded. For comparing those factors with other studies, the variables before recoding were considered. Most of the participants considered multiple characteristics of the vaginal ring as appealing (69.5%). From those who chose a single factor, the most encouraging one was a healthcare professional's recommendation, in contrast to Maheux-Lacroix et al's study where it was the second most encouraging one. According to their study, the most encouraging factor was a friend's testimony, which was not considered as an important factor in this study (Maheux-Lacroix et al, 2011). On the other hand, in RamaRao et al's study about the progesterone vaginal ring, self-administration and removal encouraged more than a third of their participants to use it (RamaRao et al, 2015), this was also reported in McLellan-Lemal et al's study (McLellan-Lemal et al, 2017).

Out of the 502 participants, only 9 have actually used the vaginal ring. From their experience with the ring, the feature they liked the most was the ability to insert and remove it themselves (n=3). The same result was noted in the study done by Kestelyn et al, where the majority of their participants found the ring easy to insert and remove (Kestelyn et al, 2018).

Fear of a foreign object in the vagina discouraged young females to consider using the vaginal ring. This reflects their unfamiliarity with the use of different vaginal products. Older participants were hesitant to use the vaginal ring because of possible slippage, this might be due to fear of contamination. McLellan-Lemal and colleagues reported that females who experienced ring slippage faced both physical and mental discomfort (McLellan-Lemal et al, 2017).

When asked about the ring's mechanism of action, about half of the participants (46.5%) knew that it was hormonal, 29.2% thought that it was mechanical and the rest did not know how it worked. The ring's mechanism of action was thought to be mechanical in Raine et al's study, where the young females confused it with barrier methods (Raine et al, 2009).

To assess the attitude towards the vaginal ring, this brief description was provided in the questionnaire "The vaginal ring is a contraceptive method that releases a hormone called estradiol. It is used for three weeks with a one-week break. It is inserted in the vagina." The results showed that the ring's adverse effects made the participants fear using it, this was probably due to their prior knowledge about hormonal contraceptives and their adverse effects. However, the participants were not aware that the vaginal ring hormone levels are lower than other contraceptives, thus causing fewer and less severe adverse effects.

5. STUDY LIMITATIONS

This was the first study conducted in Lebanon regarding the contraceptive vaginal ring. It represents the knowledge and opinions of a wide diversity of religions and socioeconomic classes. Nonetheless, it has few limitations.

The questionnaire included a number of sensitive and private questions to which some participants did not feel comfortable answering. So, they were reassured of the anonymity of their identities and responses. Their names were not required, since the questionnaire identifications were with numbers. Unfortunately, there was some missing data.

Yet, this study's results were statistically significant. Those results were able to convey Lebanese women's knowledge and attitudes towards the vaginal ring.

6. CONCLUSIONS

- A. Most participants showed absent or poor knowledge of the contraceptive vaginal ring.
- B. There is a lack of knowledge and unavailability of advertisement, inaccessibility in drug stores, and poor counseling by medical professionals regarding the vaginal ring. Thus, this emphasizes the need to provide the public with more information regarding the ring from trusted informers.
- C. Most participants stated unfavorable opinions on the use of the vaginal ring as means of contraception.
- D. Education, enrollment in the medical field and familiarity with different contraceptive methods had a significant impact on encouraging and discouraging the use the vaginal ring. Thus, shedding the light on the necessity of providing adequate information about the ring to clarify certain misconceptions.

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Table 1. Demographics

Variable	N	n	%
Total, N=502			
Age	502		
20-29		305	60.8
30-39		92	18.3
40-49		105	20.9
Marital Status	501		
Single		265	52.9
Married		209	41.7
Divorced		18	3.6
Widowed		6	1.2
Separated		3	0.6
Level of Education	500		
Uneducated		20	4.0
High school		116	23.2
Bachelor		289	57.8
Masters Degree		75	15.0
Are you in the medical field	498		
Yes		176	35.3
No		322	64.7
Occupation	498		
Education		80	16.1
Law		19	3.8
Sales		52	10.4
Business		54	10.8
Medicine		54	10.8
Dentistry		16	3.2
Pharmacy		32	6.4
Nursing		22	4.4
House wife		46	9.2
Others		123	24.7
Governate	502		
Beirut		56	11.2
Mount Lebanon		181	36.1
Bekaa		71	14.1
South Lebanon		97	19.3
North Lebanon		97	19.3

Table 2: Vaginal ring knowledge score

Scores	Frequency	Valid Percent
0-25	56	40.3
26-50	58	41.7
51-75	24	17.3
76-100	1	0.7

Table 3. Factors Encouraging Vaginal Ring Use in Relation to Marital Status, Enrollment in Medical Field, Contraceptive Methods Information sources and Familiar Contraceptive Methods

			Feedback	Efficacy	Unique properties of Vaginal Ring	Multiple options	None	p<0.05
Marital Status	Single	n	26	12	7	186	16	0.024
		%	10.5%	4.9%	2.8%	75.3%	6.5%	
	Married	n	24	15	13	125	21	
		%	12.1%	7.6%	6.6%	63.1%	10.6%	
	Divorced	n	0	2	4	12	0	
		%	0.0%	11.1%	22.2%	66.7%	0.0%	
	Widowed	n	1	1	1	2	0	
		%	20.0%	20.0%	20.0%	40.0%	0.0%	
	Separated	n	1	0	0	2	0	
		%	33.3%	0.0%	0.0%	66.7%	0.0%	
Enrolled in Medical Field	Yes	n	15	8	4	130	9	0.033
		%	9.0%	4.8%	2.4%	78.3%	5.4%	
	No	n	36	22	21	196	27	
		%	11.9%	7.3%	7.0%	64.9%	8.9%	
Contraceptive Methods Information sources	Healthcare	n	24	10	15	105	17	0.022
		%	14.00%	5.80%	8.80%	61.40%	9.90%	
	Family members	n	7	4	3	37	5	
		%	12.50%	7.10%	5.40%	66.10%	8.90%	
	Internet/ Literature	n	14	5	2	92	9	
		%	11.50%	4.10%	1.60%	75.40%	7.40%	
	Friends	n	3	4	1	14	0	
		%	13.60%	18.20%	4.50%	63.60%	0.00%	
Multiple Options	n	3	6	4	74	6		
	%	3.20%	6.50%	4.30%	79.60%	6.50%		
Familiar Contraceptive Methods	Pills	n	13	4	5	29	4	0.014
		%	23.60%	7.30%	9.10%	52.70%	7.30%	
	Male/Female condom	n	1	0	2	8	1	
		%	8.30%	0.00%	16.70%	66.70%	8.30%	
	Hormone patches	n	0	0	0	2	0	
		%	0.00%	0.00%	0.00%	100.00%	0.00%	
	IUD	n	1	4	4	14	0	
		%	4.30%	17.40%	17.40%	60.90%	0.00%	
	Tubal ligation	n	0	1	0	0	0	
		%	0.00%	100.00%	0.00%	0.00%	0.00%	
Multiple options	n	35	19	13	261	31		
	%	9.70%	5.30%	3.60%	72.70%	8.60%		

Table 4. Usage of Vaginal Ring in Relation to Encouraging Factors

		Cheap	High efficacy	No effect on sexual intercourse	Friends'/relatives' positive feedback	Self-administration / self-removal	Monthly use	Positive advertisements	Efficacy not compromised by nausea and vomiting	More information from a health professional	Multiple options	None	P value
Usage of Vaginal Ring	Yes	0	0	0	1	3	0	0	0	0	4	0	0
	No	1	6	3	0	0	2	1	3	8	89	3	

Table 5. Factors Discouraging Vaginal Ring Use in Relation to Age and Occupation

			Family and social feedback	Possible slipping	Fear of foreign object in your vagina	Increase in vaginal discharge	Multiple options	None	p<0.05
Age	20-29	%	5.70%	4.30%	10.00%	3.20%	70.70%	6.10%	0.015
	40-49	%	5.10%	15.30%	8.20%	8.20%	59.20%	4.10%	