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Family physicians' perceptions about their practice in infertility management at primary care centers, PSMMC, Riyadh, Saudi Arabia 2020

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Abstract

Background: Later childbearing trend is seen worldwide. Primary health care physicians are at the heart of all issues relating to infertility, and they continue to be the first line of contact with couples struggling to conceive. We conducted this study aiming to assess family physicians perceptions about their practice in infertility management at primary care centers, PSMMC, Riyadh, Saudi Arabia 2020.

Methods: This was a cross-sectional survey study among family physicians working at PSMMC health care centers. Data was collected using a questionnaire that has been developed and validated by the study authors. It was self-administered, to 165 family physicians working at PSMM primary care centers. The questionnaire consisted of 5 sections: the socio-demographic data, exposure to infertility cases, perception about Practice in the evaluation of an infertile couple, perception about Practice in the treatment of an infertile couple, and the perception about practice in the diagnosis and referral of an infertile couple.

Results: A total of 150 family physicians participated in the study, the vast majority (94%) has previously dealt with infertile couples, and 87.3% reported starting to investigate newly married couple with a minimum of at least one year after marriage. More than three-quarters of the participants were either strongly agree or agree (33.3%, and 48.7%, respectively) that they feel comfortable initiating the diagnostic evaluation of patients that present with infertility. Semen analysis was the first step in the evaluation of infertile couples by 51.3%, but 42% reported that they start with both semen analysis and blood work for females. Only 12% of the participants performed ovulation induction with clomiphene citrate. The highest frequent causes of referral were either infertility >2 years among subjects aged <35, or those aged >35 years with infertility of >1 year at 57.3%, and 56.7%, respectively

Conclusion: family physicians participated in the current study showed Positive attitude, perception, and practice in infertility management. However, still there is a need for evidence-based training regarding infertility management to improve family physicians' practice and management of infertility.

Keywords: Family physicians, perceptions, infertility, primary care centers, PSMMC

Introduction

Background

Later childbearing trend is seen worldwide ^[1]. Globally, infertility affects one in six couples and over 180 million people ^[2,3], causing substantial personal suffering and representing an important public health problem. Increased obesity rates and sperm counts decline mainly in developed countries, all point to increasing demand for the medical management of infertility ^[4,5]. Primary infertility is the failure to achieve a pregnancy within one year of regular unprotected intercourse, while secondary infertility is the condition where a couple has conceived previously but became unable then ^[6,7]. However, the updated guidelines (NICE, 2013) have changed the definition to 'the period people have been trying to conceive without success after which formal investigation is justified and possible treatment implemented'. Such a broader definition takes into account the diversity of clinical features and preferences represented by each couple that consults about fertility issues ^[8].

Infertility postures not only as a medical problem, but also a social stigma. the notorious effect of infertility from a social point of view has been reported in several studies ^[9,10]. Infertility can hurt an individual's health, quality of life, and life expectancy ^[11]. Therefore, social and psychological support besides medical diagnosis and treatment is of great

importance while treating couples with infertility^[12].

Infertility causes can be generally classified into ovulation disorders, sperm problems, tubal factors, and unexplained infertility. Most general practitioners can undertake a basic assessment of the infertile couple with semen analysis and blood tests for ovulation disorders. An infertility assessment should emphasize on establishing the problem nature and identifying its potential risk factors. Family physicians at primary healthcare centers must decide on the circumstances under which infertility couples should be referred to specialist reproductive health centers^[13,14]. Even when they refer these cases to specialists, they are still expected to provide counseling, investigations, and information for patients^[15]. This places primary health care physicians at the heart of all issues relating to infertility.^[16, 17] They continue to be the first line of contact with couples struggling to conceive. The primary investigation of the infertile couple is essential to ensure appropriate management and onward referral. Family physicians at PHCs can start with investigations including an assessment of ovulation with hormonal studies, a malefactor with semen analysis, and tubal status with HSG. For management strategies at PHCs, obesity management and treatment of co-morbid conditions are essential. After the initial assessment, male factor infertility or tubal infertility couples should be referred to a specialist^[18].

In Saudi Arabia, and unlike other types of diseases, not enough importance has been given to the provision of family physicians perception and practice of infertility management services by family physicians at PHC. We conducted this study aiming to assess family physicians perceptions about their practice in infertility management at primary care centers, PSMMC, Riyadh, Saudi Arabia 2020.

Methods

This was an observational, cross-sectional survey study that has been conducted among family physicians working at PSMMC. The data collection form for the current study was a questionnaire that has been developed by the study authors after a literature review of similar studies. The developed questionnaire was then reviewed by 3 experts in the field to give their opinion and assess the questionnaire relevancy to the study objectives. Then a pilot study was conducted on 10 family physicians who answered it clearly within few minutes without facing any problems. The questionnaire was then self-administered. The questionnaire was distributed to 160 family physicians working at PSMC primary care centers then collected back.

It was mentioned at the beginning of the questionnaire that participation is completely voluntary, and data will be kept confidential and will be used for research purposes only. The questionnaire consisted of 5 sections: the first section was for socio-demographic data of the participated family physicians, the second was for exposure to infertility cases, the third was for perception about Practice in the evaluation of an infertile couple, the fourth was for perception about Practice in the treatment of an infertile couple, and the fifth was for perception about practice in the diagnosis and referral of an infertile couple. The study was conducted after taking the ethical approval of the institutional review board at PSMMC. Approval number: 1183 date: 1 April 2019

Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean \pm standard

deviation and categorical variables were expressed as percentages. Chi-square test was used for categorical variables. A p-value <0.05 was considered statistically significant.

Results

We set out this observational cross-sectional survey study to assess Family physicians' perceptions about their practice in infertility management at primary care Centers, PSMMC, Riyadh, Saudi Arabia 2020. The questionnaire was sent to a total of 165 Family physicians, 150 of them filled up the questionnaire and returned it, giving a response rate of 90%. The baseline characteristics of the study participants are shown in table (1). More than half (52.7%) of the respondents were males, 58.7% were in the age group of 25-35 years, and 54.7% were registrars. For their qualifications, 41.3% of family physicians who participated in the current study have the Saudi board, and the highest percentage (39.3%) have <5 years experience in family medicine practice.

As shown in table (2), The vast majority (94%) of the respondents have previously dealt with infertile couples. According to 79.3% of the participated family physicians, the average number of infertile couple consulted per month is < 5 cases. The majority (87.3%) reported that they are starting to investigate newly married couple with a minimum of at least one year after marriage.

Participants perception about practice in the evaluation of an infertile couple is shown in table (3). More than three-quarters of the participants were either strongly agree or agree (33.3%, and 48.7%, respectively) that they feel comfortable initiating the diagnostic evaluation of patients that present with infertility (Figure 1). Semen analysis was the first step in the evaluation of infertile couples by 51.3%, but 42% reported that they start with both semen analysis and blood work for females. The

highly cited ordered investigations in the current study were semen analysis, prolactin level, Day 3 FSH level, LH, and thyroid stimulation hormone at 92.7%, 86%, 85.3%, and 84%, respectively (figure 5).

Only 12% of the physicians reported that they ever performed ovulation induction with clomiphene citrate in their practice, and 46% said that the initial dose of clomiphene citrate usually prescribed for ovulation induction is 50M (5days). Restricted hospital policy was the main barrier to prescribe clomiphene citrate according to 40.7% of the participated physicians, as shown in table (4), and figure (6).

The highest frequent causes of referral according to our participants were either infertility >2 years among subjects aged <35 , or those aged >35 years with infertility of >1 year at 57.3%, and 56.7%, respectively, and the referral is mostly to infertility specialist by 73%, as shown in table (5), and figures (2, 3, 4).

The difference in the perception about practice in the evaluation of an infertile couple by physicians gender is shown in table (6). The difference was statistically significant in the first evaluation step, where males mostly start with semen analysis at 67.1%, while females start with both semen analysis and blood work for females at 60.6%, with a P-value of <0.001 . Females physicians showed statistically significant (all P values <0.05) higher percentages of requesting prolactin level, day 3 LSH level and LH, luteal phase progesterone level, transvaginal

ultrasound, and thyroid-stimulating hormone at 93%, 92.5%, 78.9%, 59.2%, 93% vs. 79.7%, 79.7%, 57%, 29.1%, and 75.9%, respectively. On the other hand, other assessed variables showed no significant difference between the two genders.

For infertility treatment practicing, the results of the current study showed no significant differences between male and female family physicians, as shown in table (7). In regards to gender differences in diagnosis and referral, a

significantly higher percentage of female physicians were found to refer patients aged 35 and more with a history of infertility for six months compared to males at 38% vs 19%, with a P-value of 0.01. Similar results were obtained for females ≤ 42 years, where they were more referred by female doctors at 22.5% compared 8.9% referral rate by male physicians, with a P-value of 0.02, as shown in table (8).

Table 1: Demographic characteristics of the participants

		Number (n=150)	%
age (mean \pm SD)		35.74	9.55
	25-35 y	88	58.7
	36-46 y	36	24.0
	47-57 y	20	13.3
	≥ 58 y	6	4.0
Gender	Male	79	52.7
	Female	71	47.3
Position	Consultant	31	20.7
	SHO	10	6.7
	Senior Registrar	27	18.0
	Registrar	82	54.7
Years of experience in family medicine practice	<Less than 5Years	59	39.3
	5-10Years	42	28.0
	More than 10Years	49	32.7
Qualification	Saudi Board	62	41.3
	Arab Board	9	6.0
	Other	60	40.0
	Both	19	12.7
Having previously dealt with Infertile couple	Yes	141	94.0
	No	9	6.0
Average Number of infertile couple consulted per month	Less than 5	119	79.3
	5-10 Cases	28	18.7
	More than 10 cases	3	2.0
minimum duration of (not conceive while trying) to start investigation of newly married couple	6 months	4	2.7
	1 year	131	87.3
	2 year	15	10.0

Table 2: Exposure to infertility cases

		Number	%
Having previously dealt with Infertile couple	Yes	141	94.0
	No	9	6.0
Average Number of infertile couple consulted per month	Less than 5	119	79.3
	5-10 Cases	28	18.7
	More than 10 cases	3	2.0
Minimum duration of (not conceive while trying) to start investigation of newly married couple	6 months	4	2.7
	1 year	131	87.3
	2 year	15	10.0

Table 3: Perception about Practice in the evaluation of an infertile couple

		Number	%
I am comfortable initiating the diagnostic evaluation of patient that present with infertility	Strongly agree	50	33.3
	agree	73	48.7
	Neutral	24	16.0
	Disagree	1	.7
	Strongly disagree	2	1.3
What is the first step in evaluation of infertile couple?	Do blood work for female	10	6.7
	Do semen analysis	77	51.3
	All	63	42.0
Which of the investigation would you order			
CBC		69	46.0
HSG		38	25.3
Semen Analysis		139	92.7
Prolactin level		129	86.0

Day 3 FSH level,LH		128	85.3
Luteal phase progesterone level		101	67.3
Serum cortisol level		20	13.3
trans-vaginal ultrasound		65	43.3
Free Testosterone		88	58.7
Thyroid stimulation hormone		126	84.0
Estradiol level		66	44.0
Growth hormone level		11	7.3
DHEA level		37	24.7

Table 4: Perception about Practice in the treatment of an infertile couple

		Number	%
Have you ever performed ovulation induction with clomiphene citrate in your practice?	Yes	18	12.0
	No	132	88.0
Do you think that you are privileged to start ovulation induction with clomiphene citrate?	Strongly agree	8	5.3
	agree	31	20.7
	Neutral	53	35.3
	Disagree	42	28.0
	Strongly disagree	16	10.7
What is the initial dose of clomiphene citrate usually prescribed for ovulation induction?	50M (5days)	69	46.0
	100M (5days)	29	19.3
	150M (5days)	4	2.7
	Other	48	32.0
What are the barriers to prescribe clomiphene citrate			
Medication availability		33	22.0
Lack of knowledge on my part about medication		45	30.0
Side effects of medication		21	14.0
Restricted by hospital policy		61	40.7
All of the above		55	36.7

Table 5: Perception about Practice in the Diagnosis and Referral of an infertile couple

		Number	%
Which patient would you routinely refer			
Less than 35 years - more than 1 year		81	54.0
Less than 35 years - more than 2 years		86	57.3
35 and older - more than 6 months		42	28.0
35 and older - more than 1 year		85	56.7
Female \leq 42 years		23	15.3
Patients with BMI \leq 30 kg/m ²		16	10.7
Female with parity \leq 4		4	2.7
Where do you refer patients with infertility?	OB/GYN	38	25.3
	Reproductive endocrinology	1	.7
	Infertility specialist	110	73.3
	Other	1	.7

Table 6: Perception about Practice in the evaluation of an infertile couple by gender

		Male		Female		P value
		Number	%	Number	%	
I am comfortable initiating the diagnostic evaluation of patient that present with infertility	Strongly agree	29	36.7	21	29.6	0.401
	agree	33	41.8	40	56.3	
	Neutral	15	19.0	9	12.7	
	Disagree	1	1.3			
	Strongly disagree	1	1.3	1	1.4	
What is the first step in evaluation of infertile couple?	Do blood work for female	6	7.6	4	5.6	<0.001*
	Do semen analysis	53	67.1	24	33.8	
	All	20	25.3	43	60.6	
Which of the investigation would you order						
CBC		40	50.6	29	40.8	0.230
HSG		20	25.3	18	25.4	0.996
Semen Analysis		72	91.1	67	94.4	0.449
Prolactin level		63	79.7	66	93.0	0.020*
Day 3 FSH level,LH		63	79.7	65	91.5	0.041*
Luteal phase progesterone level		45	57.0	56	78.9	0.004*
Serum cortisol level		12	15.2	8	11.3	0.480

trans-vaginal ultrasound		23	29.1	42	59.2	<0.001*
Free Testosterone		46	58.2	42	59.2	0.908
Thyroid stimulation hormone		60	75.9	66	93.0	0.005*
Estradiol level		37	46.8	29	40.8	0.461
Growth hormone level		6	7.6	5	7.0	0.897
DHEA level		18	22.8	19	26.8	0.573

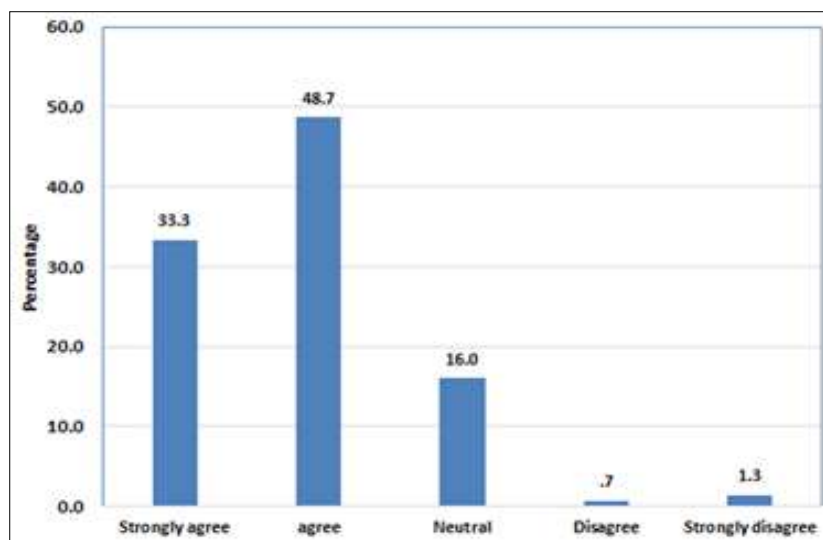
* Significant p value

Table 7: Perception about Practice in the treatment of an infertile couple by gender

		Male		Female		P value
		Number	%	Number	%	
Have you ever performed ovulation induction with clomiphene citrate in your practice?	Yes	8	10.1	10	14.1	0.456
	No	71	89.9	61	85.9	
Do you think that you are privileged to start ovulation induction with clomiphene citrate?	Strongly agree	6	7.6	2	2.8	0.158
	agree	12	15.2	19	26.8	
	Neutral	33	41.8	20	28.2	
	Disagree	21	26.6	21	29.6	
	Strongly disagree	7	8.9	9	12.7	
What is the initial dose of clomiphene citrate usually prescribed for ovulation induction?	50M (5days)	38	48.1	31	43.7	0.292
	100M (5days)	11	13.9	18	25.4	
	150M (5days)	3	3.8	1	1.4	
	Other	27	34.2	21	29.6	
What are the barriers to prescribe clomiphene citrate						
Medication availability		20	25.3	13	18.3	0.302
Lack of knowledge on my part about medication		29	36.7	16	22.5	0.059
Side effects of medication		8	10.1	13	18.3	0.149
Restricted by hospital policy		33	41.8	28	39.4	0.771
All of the above		25	31.6	30	42.3	0.178

Table 8: Perception about Practice in the Diagnosis and Referral of an infertile couple by gender

		Male		Female		P value
		Number	%	Number	%	
Which patient would you routinely refer						
Less than 35 years - more than 1 year		44	55.7	37	52.1	0.660
Less than 35 years - more than 2 years		48	60.8	38	53.5	0.371
35 and older - more than 6 months		15	19.0	27	38.0	0.010*
35 and older - more than 1 year		43	54.4	42	59.2	0.560
Female ≤ 42 years		7	8.9	16	22.5	0.020*
Patients with BMI ≤ 30 kg/m2		6	7.6	10	14.1	0.199
Female with parity ≤ 4		3	3.8	1	1.4	0.365
Where do you refer patients with infertility?	OB/GYN	16	20.3	22	31.0	0.279
	Reproductive endocrinology	1	1.3			
	Infertility specialist	61	77.2	49	69.0	
	Other	1	1.3			
* Significant p value						

**Fig 1:** Percent of providers that are comfortable initiating the diagnostic evaluation of patients that present with infertility.

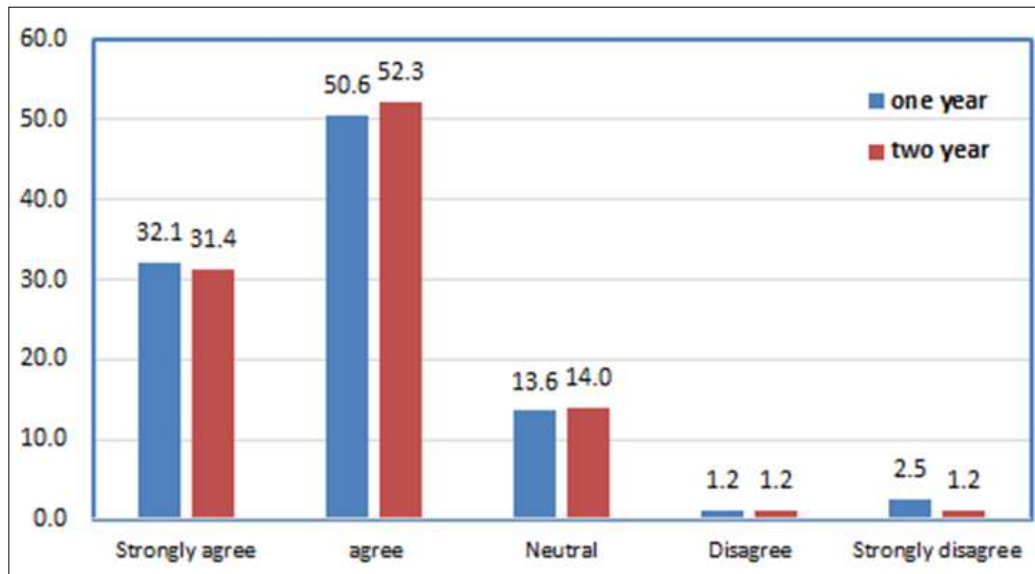


Fig 2: Providers that refer patients less than 35 that present with infertility for more than one or two years.

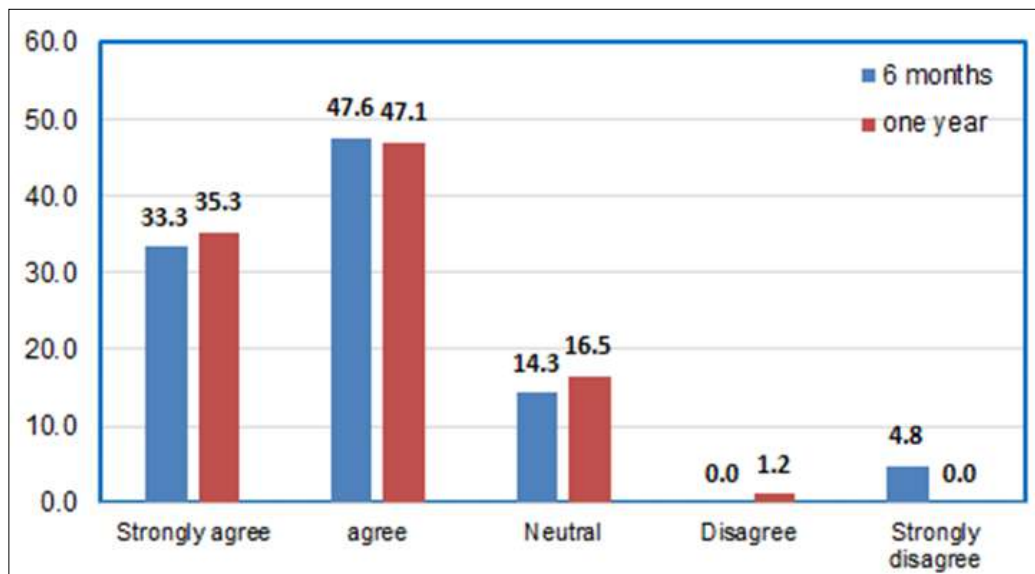


Fig 3: Providers that refer patients 35 and older that present with infertility for more than six months and one year.

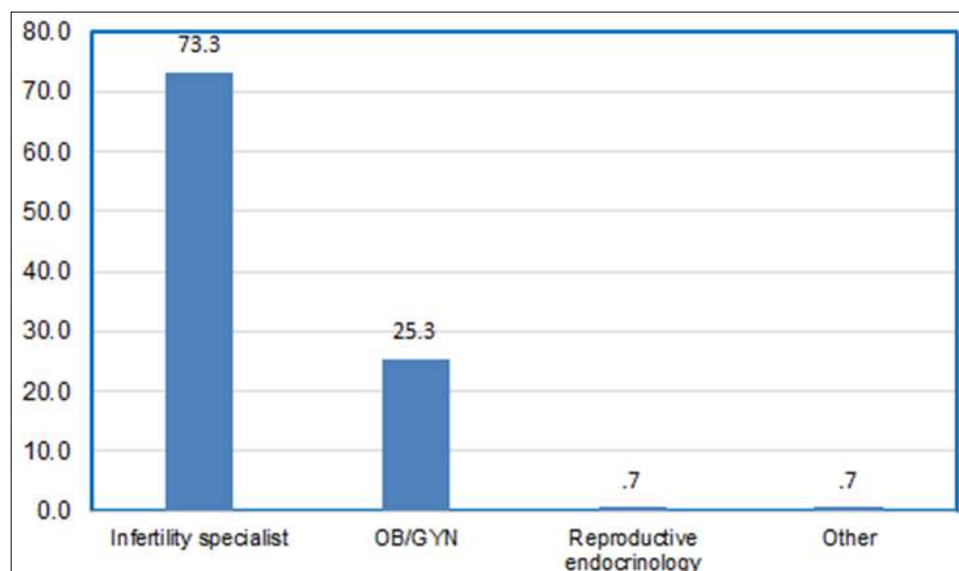


Fig 4: Providers referred to by PCP for further infertility workup.

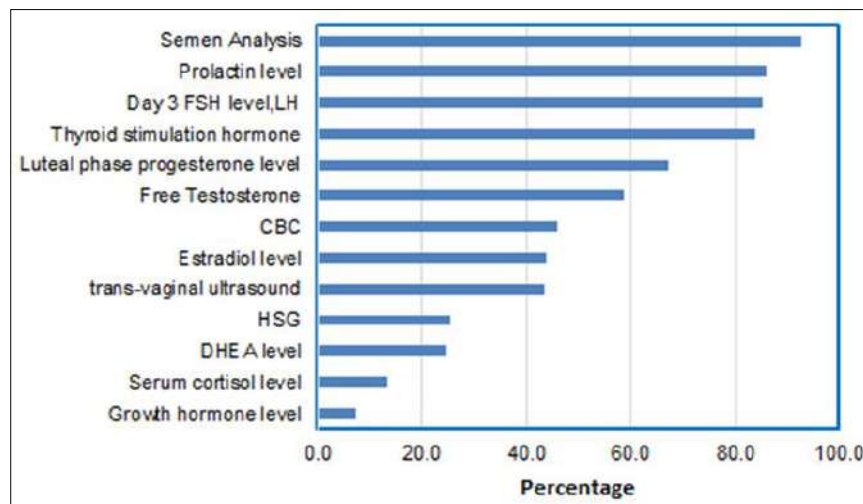


Fig 5: Diagnostic tests that providers would order or recommend.

Discussion

The results of the current study provide important insights into family physicians perception regarding the management of infertility in the primary care setting in Saudi Arabia.

In an agreement with a previously published Egyptian study, the current study showed that more than three-quarters of the participated family physicians have a positive attitude and perception towards evaluating infertile couples [19]. In contrast, Hassa *et al* [20] in Turkey and Itner *et al* [21] in Germany showed that among the participated family physicians, only 38.9% and 27.0% respectively, showed a positive attitude toward the care of infertile couples. The high positive attitude in our study could be explained by the perceived importance of infertility management by the studied sample, being a main topic in the curriculum of family medicine.

Compared to previous similar studies, our study revealed that the vast majority (>94%) of family physicians in Saudi Arabia are dealing with infertile couples. Such a percentage (>94%) is far higher compared to the ones reported from Turkey at 57.6%, and Egypt at 75%. [19,20]

Semen analysis, detection of ovarian function by hormonal assay (early follicular FSH and LH levels, and mid-luteal progesterone), and tubal patency evaluation by hysterosalpingography (HSG) are the preliminary advised investigations for the infertile couple [22]. In this regard, our study highlighted that almost only half (51%) of the participated family physicians will start with semen analysis, and less than (42%) have will request both semen analysis and ovarian function by hormonal assay. A higher percentage of primary care physicians in Turkey reported requesting semen analysis at 88.7%.

Medications for Ovulation induction can be used effectively and initiated by primary care physicians. Clomiphene citrate is a well-known drug used in ovulatory disorders management [23]. However, clomiphene can affect the recruitment of multiple follicles that can increase the risk of a multiple gestation pregnancy, therefore, starting to middle range dosages are recommended in primary care settings [24]. For women with a higher-than-average risk of pregnancy complications, ovulation induction may not be advisable within the primary care setting. This might explain the low prescription rate of clomiphene and restricted hospital rules in this regard in our study. Clomiphene citrate initial dosing is typically 50 mg orally for 5 days starting on day 2–5 of

the menstrual cycle [25]. However, a lower prescription rate of clomiphene citrate was reported in a previous similar study at 8% compared to 12% in our study [26]. More than half of the primary care physicians who participated in the current study were unaware of clomiphene citrate initial dosing. Such findings highlight the need for training in infertility management for family physicians at primary health care centers to enable them to deliver this care more confidently and raise awareness and skills.

Mostly, infertility evaluation should be offered to couples who have not conceived after one year of unprotected vaginal intercourse. Our participants were mostly knowledgeable about these issues. Women older than 35 years or couples with known risk factors for infertility may warrant evaluation at six months [27,28]. In Virginia, found that 70% of healthcare providers at primary care refer patients < 35 years of age when they have a history of one year of infertility, and 78% refer patients < 35 years of age with > two years of infertility, 42% refer patients > 35 that present with infertility for more than six months, and 74% said they would refer patients greater than age 35 that present with infertility for more than a year [26]. In our case, the referral was for either infertility >2 years among subjects aged <35, or those aged >35 years with infertility of >1 year at 57.3%, and 56.7%, respectively. A higher percentage of physicians who participated in the current study reported referral to infertility specialist at 73%, compared to 60% in a previous similar study [26]. It is important that primary care providers that do feel comfortable initiating the basic evaluation know when the appropriate referral time, as depending on a patient's age it can be a time-sensitive manner. Extensiveness of literature reported that there is an age-related decline in fertility starting at age 32 with a dramatic decline by the age of 37, with an increase in adverse pregnancy outcomes [29]. It is indeterminate why not all primary care physicians refer based on the current recommended guidelines, but it might be due to that they are not currently up to date with the current guidelines.

The current study is considered of great importance and adds to the literature in Saudi Arabia, particularly when we know that such local data is scarce. It is essential for family physicians at primary care centers to be aware of the workup and prognosis for infertile couples. Patients valued primary care physicians who are well informed about infertility and the treatment process, as reported from a British study. [30]

The current study was only conducted among a limited number of family physicians in limited primary healthcare centers, and that this is likely a mere snapshot of what is practiced in Saudi Arabia. Therefore, it is recommended to conduct other studies with a larger population and in different parts of the Kingdom.

Also these study findings underline importance of raising the awareness of family medicine physicians for the practice of infertility screening and management.

Conclusion

Positive attitude, perception, and practice in infertility management were found among the family physicians who participated in the current study. However, still there are some areas of falls that need evidence-based training regarding infertility management to improve family physicians' practice and management of infertility.

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