

Role of Nurse in Administrating Induction of Ovulation Medications at Assisted Reproduction Center versus at Home

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Abstract

Background: The response of ovaries during controlled ovarian stimulation is the most important factor for evaluating the pregnancy outcome in assisted reproductive techniques. **Aim:** The study is to assess the role of a nurse in giving induction of ovulation medications at assisted reproduction university center versus home medications by private In Vitro Fertilization and infertility center on clinical outcomes and patient satisfaction. **Subjects and Methods:** Case-control research design, conducted at two centers (Banon private center for IVF and Assisted Reproductive Unit at Women health hospital, Assiut University) during the period from February 2018 to November 2018. The sample size included 150 women undergoing IVF for each group. **Results:** There is no statistically significant difference between women given IVF medications by the nurse at the public IVF center and women take IVF medication in the home at Banon IVF center as regards the outcome of IVF. Majority of infertile patients are satisfied with the care, they received and nearly third of them are satisfied with outcome of IVF in both groups, and there is statistically significant difference between satisfaction in public IVF center and satisfaction in private center in relation to information provided about IVF procedure, staff willingness to listen carefully and help patients; regular progress update on condition is in place with p value (0.000, 0.005, 0.003) respectively. **Conclusion:** IVF outcome isn't significantly related to where induction medication was taken either at IVF center or at the home because infertile couples are keen to comply with all instructions on how to take medications with correct route, correct dose and on time. **Recommendations:** Empower the role of nurse as a health educator for women under-

going IVF about importance of stage of induction and take medications with correct route, correct dose and on time on outcome of IVF; other studies should also be conducted in other centers to further investigate the issue.

Keywords

Induction of Ovulation, IVF, Patient' Satisfaction

1. Introduction

After more than 20 years of research, the first IVF child was conceived in England in 1978 and as a result of using IVF technique; more than 250,000 children were conceived from this point forward [1].

The response of ovaries during controlled ovarian stimulation is the most significant factor in evaluating the pregnancy outcome in assisted reproductive technique [2].

The response of ovaries to stimulation with exogenous gonadotropins during IVF is a critical determining factor of live birth rates and adverse outcomes [3].

Poor response to ovarian stimulation, which resulted in cycle cancelation, was defined as a serum E2 level of ≤ 500 pg/mL and \leq two follicles > 16 mm seen on transvaginal ultrasonography on the day of human chorionic gonadotropin (hCG) administration [4].

Patients' satisfaction with medical care is increasingly acknowledged to be one of the fundamental dimensions of quality of care, and particularly so when it comes to treatment in aid of infertility [5].

Patient satisfaction is an important and commonly used indicator for measuring quality in health care. Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centered delivery of quality health care. Patient satisfaction is thus a proxy but a very effective indicator to measure the success of doctors and hospitals [6].

Although infertile couples are consulting gynecologists for therapy, a nurse-midwife is the first care provider to contact the couples. Nurse-midwives are responsible to provide holistic care to couples with infertility problems [7].

The IVF nurse performs a significant role in the care received by both recipient and donor, as a coordinator for IVF cycles and provides direct care to both patients. According to one study, the nurse is the professional who spends the most time with donors compared with doctors and mental health professionals. They also play a major role in matching donors/recipients. In another study, 73% of nurses practicing in infertility settings described their primary role in direct patient care [1].

Morris studied the role of infertility nurses in ovulation induction programs and found that nurses performed intrauterine inseminations in 39% of units and

23% of units decided to institute hormonal therapy such as the administration of human chorionic gonadotrophin, and nurses performed transvaginal scans in 77% of units.

Significance of the study

Infertility is estimated to be as high as 186 million individuals globally. Recent global demographic surveys reveal that infertility continues to be a reproductive problem, in spite of the massive global increase of ART services over the past decade. It is estimated that infertility affects 8 to 12 percent of reproductive-age couples around the world. However, the infertility rates are much higher in some regions of the world, reaching 30% in some regions [8].

Ovarian stimulation in IVF is considered to be a critical factor for clinical outcomes. Poor ovarian response (POR) to controlled ovarian hyperstimulation is one of the key problems in assisted reproductive technology and has been reported to occur in 9 - 24 percent of women with IVF that can result in cycle canceling [7].

Increasing patient satisfaction with IVF services, treatments and facilities has a positive effect on patients' psychological and mental state and, in turn, has an impact on the outcome of treatments and dropout rates of treatment [5]. So, this study will shed more light on whether outcomes of IVF in women taken IVF medications in IVF center better than women took IVF medications at the home and patient satisfaction with IVF services in two centers.

2. Aim of the Study

The aim of this study was to:

- 1) Assess role of the nurse in giving induction of ovulation medications at assisted reproduction center versus home medications by private IVF center on outcomes of IVF;
- 2) Evaluate patient satisfaction in both centers.

3. Material and Methods

Research design: It was a case-control design study.

The setting of the study: The study was conducted at two centers (Banon private center for IVF and Assisted Reproductive Unit at Women Health Hospital, Assiut University) during the period from February 2018 to November 2018.

3.1. Sample

A systematic random sample was used in this study. Random assignment was done by computer-generated tables. The Sample was calculated by using (Epi-info statistical package, version 7.2 which designed by CDC (center for disease control and prevention) with 80% power, a value of 2.5 is chosen at the acceptable limit of precision (D) at 95% confidence level (C1) with expected prevalence 10%, worst acceptable 25%. accordingly, sample size was estimated to be 150 for each group + 10% of individual to guard against non-response rate.

Inclusion criteria:

- 1) Women undergoing IVF treatment
- 2) Women who agree to participate in the study

Exclusion criteria:

- 1) Women who had any medical problems
- 2) Women who were older than 37 yrs
- 3) Women with signs of reduced ovarian reserve as elevated FSH levels

3.2. Tools

Tools of the study: Tool no. (1) Structured interviewing questionnaire include

Part I: Personal data that was included: Name, age, residence, educational level, occupation, and duration of the marriage.

Part II: clinical data:

1) **Medical history** was included: the history of diabetes, hypertension, renal disease, cardiac disease, hepatic disease, and any other diagnosed medical disease.

2) **Menstrual history** was included: Age of menarche, Duration, Interval, and rhythm

3) **Infertility history** was included: years of infertility, type of infertility, cause of it, previous trial for ART, previous failed IVF.

4) **Past obstetric history** was included: number of gravidities, number of parity, number of abortion, No of living children, time since last delivery or abortion.

Tool no. (2): Assessment questionnaire about IVF medications and outcomes of IVF treatment

Part I Data related to IVF medications

- Name of medication given -Person who gives it (doctor-nurse-others)
- Where IVF medications were taken -Any problems with medications
- Time of giving medications according to the followed protocol.

Part II Outcome of IVF treatment

- Cycle cancellation and why -Clinical pregnancy -Multiple pregnancy
- Do not achieve pregnancy -Early abortion -Ectopic pregnancy

Tool (3) Scale of patient satisfaction about IVF

- Satisfaction about information provided.
- Satisfaction about staff communications & counseling and support.
- Satisfaction about environmental conditions& waiting time.
- Satisfaction with the outcome of IVF.

The patients' evaluation of treatment questions about satisfaction was presented on a 7-point Likert scale.

1 represents "Completely dissatisfied"; 2 represents "Mostly dissatisfied"; 3 represents "Somewhat dissatisfied"; 4 represents "neither satisfied nor dissatisfied", 5 represents "Somewhat satisfied"; 6 represents "Mostly satisfied" and 7 represents "Completely satisfied".

3.3. Methods

Methods of data collection:

- ✦ A review of national and international related literature of the current study using textbooks, articles and scientific journals was done. Then the tool was prepared based on this literature and it was reviewed for validation by supervisors.
- ✦ Before conducting the study official permission was obtained from the manager of Banon center and Assisted Reproductive Unit of Women's Health Hospital after explaining the purpose of the study.
- ✦ The study was carried out during the period from February (2018) to November (2018).
- ✦ The study was conducted at Banon center and Assisted Reproductive Unit of Women health hospital and was included a simple random sample of Women undergoing IVF treatment.
- ✦ Every center follows a different protocol about where IVF medications of induction were taken, Assisted Reproductive Unit of Women health hospital follow the protocol of giving induction medication at the center by nurses to ensure that injections were given with correct route, dose and on time. But in Banon center women taken medications at the home. So the participants were divided into two groups.

Group one (case group) was given IVF medications by a nurse at the public IVF center.

Group two (control group) was given IVF medication at home at Banon IVF center.

❖ Assessment phase

- The researcher interviewed the women face to face; each interview took about 15 - 30 minutes with each woman, the researcher interviewed the woman at the stage of induction of ovulation, and at the beginning of each interview, the researcher greeted, introduced herself to the woman after that the researcher explained the nature and aim of study, and then an oral consent to participate in the study was obtained from each woman.
- Then, the researcher assessed the following data
 - 1) Personal data, menstrual history, infertility history & past obstetric history if present.
 - 2) Data related to IVF medications (Name of medication given, person who gave it (doctor-nurse-others), where IVF medications were taken, time of giving medications according to the followed protocol, any problems with medications).
 - 3) Patient's satisfaction scale
 - Satisfaction about information provided.
 - Satisfaction about staff communication & counseling and support.
 - Satisfaction about environmental conditions & waiting time.
 - Satisfaction with the outcome of IVF.

The patients' evaluation of treatment questions about satisfaction was presented on a 7-point Likert scale.

1 represents "Completely dissatisfied"; 2 represents "Mostly dissatisfied"; 3 represents "Somewhat dissatisfied"; 4 represents "neither satisfied nor dissatisfied", 5 represents "Somewhat satisfied"; 6 represents "Mostly satisfied" and 7 represents "Completely satisfied".

❖ **Follow up phase**

Follow-up of the women after implantation of the embryo was carried out through the phone.

1) **After 14 days from embryo transfer**, follow-up included the confirmation of pregnancy chemically by measuring the β subunit of the HCG in the blood after 14 days from embryo transfer.

2) **With in the first trimester**, follow-up included asking about the occurrence of any complications as ectopic pregnancy & early abortion.

❖ **Evaluation phase**

The researcher evaluated & compared the outcome of IVF in each group to detect the effect of giving IVF medications at public IVF center by nurses versus home medications by private IVF center on outcomes of IVF.

❖ **Pilot study**

A pilot study was carried out on 10% of cases to test the clarity of the questions and to detect any further problems or difficulties that help in making the necessary modification. There wasn't any modification on the tool and the pilot sample was included in the total sample.

❖ **Ethical considerations:**

1) Research proposal was approved from the Ethical Committee in the Faculty of Nursing.

2) There was no risk of study subjects during the application of the research.

3) The study was followed by common ethical principles in clinical research.

4) Written consent was obtained from each patient or guidance that was willing to participate in the study.

5) Confidentiality and anonymity were assured.

6) Patients privacy was considered during the collection of data.

❖ **Statistical design**

Data entry and statistical analysis were done using the statistical package for social science program (SPSS, version 22). Qualitative variables were presented as number and percentage. Quantitative variables were presented as mean \pm SD. A comparison between qualitative variables was done by using chi-square. A comparison between quantitative variables was done by using the student t-test.

4. Results

The socio-demographic (**Table 1**) characteristics of the study sample, nearly half of the women in both groups were 30 - 37 yrs old. As for residence, the vast

Table 1. Distribution of studied women according to their Socio-demographic characteristics of both groups.

Sociodemographic characteristics	Where induction medications were taken				P-value
	At IVF Center N = 150		At home N = 150		
	N	%	N	%	
Age (years)					
<25 yrs	19	12.7%	27	18%	0.440
25 - 30 yrs.	52	34.7%	49	32.7%	
30 - 37 yrs	79	52.7%	74	49.3%	
Mean ± SD	29.7 ± 4.3		28.8±4.5		
Residence:					
Urban	32	21.3%	55	36.7%	*0.009
Rural	118	78.7%	95	63.3%	
Educational level:					
Illiterate & read and write	31	20.7%	16	10.7%	*0.002
Basic education	22	14.7 %	9	6%	
Secondary	72	49 %	99	66%	
High education	25	16.7%	26	17.3%	
Occupation:					
Employee	24	16 %	20	13.3%	0.514
House wife	126	84 %	130	86.7%	
Years of marriage:					
Less than 1yr	1	0.7%	1	0.7%	0.542
1 - 5 yrs	48	32%	59	39.3%	
5 - 10 yrs	65	43.3%	54	36%	
More than 10yrs	36	24%	36	24%	

*means significant P value.

majority of women in assisted reproduction center in women health hospital were from rural areas (78%) versus nearly half of women in Banon center were from rural areas (63.3%). As for level of education, half of the women in the assisted reproduction center in women health hospital had secondary education (49%) while nearly two-thirds of women in Banon center had secondary education (66%) and the vast majority of the women in both groups were housewives (84%, 86.7%) respectively.

There is a significant difference between women in assisted reproduction center in women health hospital and women in Banon center in relation to residence and level of education with p value (0.009, 0.002) respectively. Regarding Menstrual history (**Table 2**), the most of studied women (85.3%, 80%) had a regular menstrual cycle and it was observed that more than one-third of them had dysmenorrhea in both groups (39.4%, 43.2%) respectively. Regarding the

Table 2. Distribution of studied women according to their menstrual history among both groups.

	Where induction medications were taken				P-value
	At IVF center		At home		
	N (150)	%	N (150)	%	
Age of menarche					
10 - 13 yrs	50	33.3%	49	32.7%	0.901
More than 13 yr	12	8%	12	8%	
Don't remember	88	58.7%	89	59.3%	
Duration of menstrual blood flow					
Less than 3 days	1	0.7%	3	2%	0.318
3 - 5 days	117	78%	123	82%	
More than 5 days	32	21.3%	24	16%	
Regularity:					
Regular	128	85.3%	120	80%	0.222
Irregular	22	14.7%	30	20%	
Amount of menstrual blood flow					
Scanty	5	3.3%	7	4.7%	0.607
Moderate	141	94%	141	94%	
Heavy	4	2.7%	2	1.3%	
Presence of menstrual disorders					
Amenorrhea	6	4%	1	0.7%	0.136
menorrhagia	3	2%	1	0.7%	
Oligo & hypomenorrhea	2	1.3%	7	4.7%	
Polymenorrhea	0	0	1	0.7%	
Dysmenorrhea	59	39.4%	65	43.2%	
No disorders	80	53.3%	75	50%	

type of infertility and parity (**Table 3** and **Table 4**), more than two-thirds of studied women in both groups (80%, 71.3%) had primary infertility. Regarding to the causes of infertility it was observed that more than third of studied women (35.3%) in assisted reproduction unit in women health hospital and (32%) in Banon center had a male cause of infertility and the vast majority of studied women in both groups (91.3%, 89.3%) hadn't the previous attempt of IVF.

Regarding outcome of IVF in women in both groups (**Table 5** and **Table 10**), there is no Statistical significant difference between women given IVF medications by nurse at public IVF center and women take IVF medication in the home at Banon IVF center in relation to outcome of IVF and the Multinomial logistic regression (**Table 7**) to identify variables that effect on the outcome of IVF shows that the most variable that effects on pregnancy rate is previous gravidity odds ratio (2.235) followed by occupation and education odds ratio (1.697, 1.244).

Table 3. Distribution of studied women according to their infertility history among both groups.

	Where induction medications were taken				p-value
	At IVF center		At home		
	N (150)	%	N (150)	%	
Types of infertility					
primary	120	80%	107	71.3%	0.080
Secondary	30	20%	43	28.7%	
Years of infertility					
1 - 5 years	58	38.7	73	48.7	0.151
5 - 10 years	62	41.3	47	31.3	
More than 10 years	30	20	30	20	
Causes of infertility					
tubal causes	27	18	22	14.7	0.166
ovarian causes	20	13.3	25	16.6	
Uterine causes	9	6	17	11.3	
male causes	53	35.3	48	32	
Unexplained	40	26.7	38	25.3	
Both partners	10	6.7	22	14.7	
Previously attempt of IVF					
Yes	13	8.7	16	10.7	0.300
No	137	91.3	134	89.3	
Number of failed attempt of IVF	13	8.7	16	10.7	0.300
Previous Number of attempt					
1 time	6	46.1	10	62.5	0.459
2 times	5	38.5	2	12.5	
3 times	1	7.7	2	12.5	
More than 3 times	1	7.7	2	12.5	
Duration since last attempt of IVF					
<1 year	4	30.7	7	43.7	0.421
1 - 5 year	6	46.2	7	43.7	
>5 years	3	23.1	2	12.5	

Table 4. Distribution of studied women according to their Obstetric history among both groups.

	Where induction medications were taken				P-value
	At IVF center		At home		
	N (150)	%	N (150)	%	
Number of gravidity					
No	120	80%	110	73.3%	0.100
One	21	14%	20	13.3%	

Continued

Two	6	4 %	14	9.3%	
Three or more	3	2.1%	6	4%	
Number of parity					
One	7	4.7%	15	10%	0.080
Two	3	2%	7	4.7%	
No history of parity	140	93.3%	128	85.3%	
Number of abortion					
One - Two	20	13.3%	23	15.3%	0.242
Three	1	0.7%	4	2.7%	
More than three	1	0.7%	0	0	
No abortion	128	85.3%	123	82%	
No of living children					
One	8	5.3%	17	11.3%	0.113
Two	2	1.3%	4	2.7%	
No living children	140	93.3%	129	86%	

Table 5. Outcome of IVF in both groups.

Outcome	Where induction medications were taken				P-Value
	At IVF center		At home		
	N = 136 Missed (14)	%	N = 139 Missed (11)	%	
1) Cycle cancellation	7	5.1%	9	6.5%	0.638
2) Do not achieve pregnancy	78	56.6	68	49.3%	0.223
3) Clinical pregnancy	40	29.4%	45	32.4%	0.595
4) Early abortion	9	6.6%	13	9.4%	0.403
5) Multiple pregnancy	2	1.5%	3	2.2%	0.670
6) Ectopic pregnancy	0	0	1	0.7%	0.322

Table 6. Distribution of women's satisfaction about outcome of IVF.

Outcome of IVF	At public IVF center		At private IVF center		p-value
	N = 139 Missed (11)	%	N = 136 Missed (14)	%	
Completely dissatisfied	82	60.7%	73	52.5%	0.149
Mostly dissatisfied	3	2.2%	1	0.7%	
Somewhat dissatisfied	1	0.7%	7	5.0%	
Neither satisfied nor dissatisfied	7	5.2%	9	6.5%	
Completely satisfied	42	31.1%	49	35.3%	

Table 7. Multinomial logistic regression to identify variable that effects on outcome of IVF.

Outcome of IVF	Variables	p-value	ODR
Clinical pregnancy	Age	0.599	0.891
	Education	0.247	1.244
	Occupation	0.260	1.697
	Residence	0.771	0.907
	Yrs. of marriage	0.642	0.906
	Gravidity	0.004	2.235
	parity	0.194	0.567
	cause of infertility	0.091	0.810
Early abortion	Age	0.670	1.177
	Education	0.908	1.035
	Occupation	0.665	1.400
	Residence	0.609	0.758
	Yrs. of marriage	0.754	1.112
	Gravidity	0.777	1.169
	parity	0.580	0.611
	Cause of infertility	0.737	0.933
Multiple pregnancy	Age	0.196	0.390
	Education	0.569	0.666
	Occupation	0.158	0.118
	Residence	0.920	0.898
	Yrs. of marriage	0.633	0.698
	Gravidity	0.996	1.323
	parity	1.000	3.744
	Cause of infertility	0.922	0.959
Ectopic pregnancy	Age	0.490	0.230
	Education	0.457	7.827
	Occupation	0.196	1.272
	Residence	0.569	4.116
	Yrs. of marriage	0.458	5.985
	gravidity	0.998	1.723
	parity	1.000	0.216
	Cause of infertility	0.536	1.827

Regarding patient's satisfaction in both centers (**Table 8**), the majority of infertile patients are satisfied with the care they received and nearly third of them are satisfied with the outcome of IVF in both groups, and there is statistically

Table 8. Distribution of women's satisfaction about information provided among both groups.

	Public IVF center		Private IVF center		p-value
	N (150)	%	N (150)	%	
1) Information on the chances of success					
Somewhat dissatisfied	5	3.3%	8	5.3%	0.000*
Neither satisfied nor dissatisfied	10	6.7%	3	2.0%	
Somewhat satisfied	38	25.3%	7	4.7%	
Mostly satisfied	16	10.7%	20	13.3%	
Completely satisfied	81	54%	112	74.7%	
2) Information on prognosis, different treatment options, clinical aspects, and possible side effects of treatment					
Completely dissatisfied	4	2.7%	0	0.0%	*0.000
Mostly dissatisfied	1	0.7%	0	0.0%	
Somewhat dissatisfied	33	22.0%	16	10.7%	
Neither satisfied nor dissatisfied	13	8.7%	4	2.7%	
Somewhat satisfied	19	12.7%	14	9.3%	
Mostly satisfied	7	4.7%	38	25.3%	
Completely satisfied	73	48.7%	78	52.0%	
3) Information about potential health problems of (defects, prematurity)					
Mostly dissatisfied	6	4 %	0	0%	*0.004
Somewhat dissatisfied	32	21.3%	40	26.7%	
Neither satisfied or dissatisfied	18	12.0%	7	4.7%	
Somewhat satisfied	17	11.3%	11	7.3%	
Mostly satisfied	6	4	15	10%	
Completely satisfied	71	47.3%	77	51.3%	
4) Information about medical issues during pregnancy (multiple pregnancies, ectopic pregnancies, etc.)					
Completely dissatisfied	4	2.7%	0	0	*0.026
Mostly dissatisfied	1	0.7%	0	0	
Somewhat dissatisfied	36	24%	40	26.7%	
Neither satisfied nor dissatisfied	14	9.3%	5	3.3%	
Somewhat satisfied	18	12%	13	8.7%	
Mostly satisfied	6	4%	15	10%	
Completely satisfied	71	47.3%	77	51.3%	
5) Information on treatment costs					
Somewhat dissatisfied	4	2.7%	0	0%	*0.000
Neither satisfied nor dissatisfied	9	6.0%	0	0%	
Somewhat satisfied	32	21.3%	5	3.3%	
Mostly satisfied	14	9.3%	19	12.7%	
Completely satisfied	91	60.7%	126	84%	

significant difference between satisfaction in public IVF center and satisfaction in private center in relation to information provided about IVF procedure, staff willingness to listen carefully and help patients (**Table 9** and **Table 10**) & Regular progress update on condition is in place with p.v (**0.000, 0.005, 0.003**) respectively. There was not any significant difference regarding the patient satisfaction with the IVF outcome in both groups (**Table 6**).

Table 9. Distribution of women's satisfaction about staff communications & counseling and support among both groups.

	Public IVF center		Private IVF center		p-value
	N (150)	%	N (150)	%	
1) Attitude of fertility clinic staff and their relationship with patients					
Somewhat satisfied	2	1.3%	0	0.0%	0.110
Mostly satisfied	10	6.7%	18	12.0%	
Completely satisfied	138	92.0%	132	88.0%	
2) No change in the fertility clinic staff from start of treatment to end					
Mostly satisfied	10	6.7%	18	12.0%	0.112
Completely satisfied	140	93.3%	132	88.0%	
3) Staff are willing to listen carefully and help patients					
Mostly satisfied	37	24.7%	18	12.0%	*0.005
Completely satisfied	113	75.3%	132	88.0%	
4) Regular progress update on condition is in place					
Somewhat satisfied	2	1.3%	0	0.0%	*0.003
Mostly satisfied	39	26.0%	18	12.0%	
Completely satisfied	109	72.7%	132	88.0%	
5) Medication is provided on time					
Mostly satisfied	11	7.3%	18	12.0%	0.171
Completely satisfied	139	92.7%	132	88.0%	

(*) statistically significant difference.

Table 10. Distribution of women's satisfaction about environmental conditions & waiting time among both groups.

	At public IVF center		At private IVF center		p-value
	N (150)	%	N (150)	%	
1) Environmental conditions in the operating room					
Neither satisfied nor dissatisfied	2	1.3%	0	0.0%	0.281
Mostly satisfied	22	14.7%	18	12.0%	
Completely satisfied	126	84.0%	132	88.0%	

Continued

2) Environmental conditions in the recovery room (number of beds, personal bedside cabinet, location of bathroom, privacy)					
Completely dissatisfied	0	0.0%	2	1.3%	0.118
Mostly dissatisfied	2	1.3%	0	0.0%	
Neither satisfied nor dissatisfied	2	1.3%	0	0.0%	
Mostly satisfied	27	18.0%	20	13.3%	
Completely satisfied	119	79.3%	128	85.3%	
3) Waiting time					
Completely dissatisfied	0	0.0%	6	4.0%	0.000*
Mostly dissatisfied	0	0%	21	14.0%	
Somewhat dissatisfied	27	18.0%	26	17.3%	
Neither satisfied nor dissatisfied	3	2.0%	0	0.0%	
Somewhat satisfied	24	16.0%	31	20.7%	
Mostly satisfied	50	33.3%	7	4.7%	
Completely satisfied	46	30.7%	59	39.3%	

(*) statistically significant difference.

5. Discussion

IVF cycle success depends on the ability to obtain a sufficient number of mature eggs. The ovarian response during controlled ovarian hyperstimulation (COH) is, therefore, the most important factor in evaluating the outcome of pregnancy in assisted reproductive technique [2].

The response of ovaries to stimulation with exogenous gonadotropins during IVF is a critical factor in determining of live birth rates and adverse outcomes [3].

The satisfaction of patients with medical care is increasingly recognized as one of the fundamental dimensions of quality of care, especially when it comes to infertility treatment [5].

Thus, the present study aimed to assess the role of the nurse in giving induction of ovulation medications at assisted reproduction center versus home medications by private IVF center on outcomes of IVF and to measure patient satisfaction toward the outcomes of IVF in both centers.

Regarding the type of infertility, the present study explored that more than two-thirds of studied women in both groups had primary infertility.

Regarding the causes of infertility, the study revealed that the malefactor of infertility was the common cause of infertility in both centers respectively.

Regarding the female causes of infertility, it was observed that the common female cause of studied women in both groups was blocked fallopian tubes followed by polycystic ovarian syndrome in both groups.

Regarding the outcome of IVF in women in both groups, this study found that there is no statistically significant difference between women given IVF medications by the nurse at public IVF center and women take IVF medication in the home at Banon IVF center in relation to the outcome of IVF. This research point is the first time to be studied and there are no previous studies have been studying it.

This result may be attributed to strict instructions from doctors about importance of this stage of induction on outcomes of IVF, along with strong compliance of infertile couple with all instructions to conduct the process, to realize their dream of having a child, especially how to take medications with correct route, correct dose, and on time regardless where they are taking it whether in IVF center or at home.

Regarding satisfaction in public IVF center and satisfaction in private IVF center, there is statistical significant difference between satisfaction in public IVF center and satisfaction in private center in relation to information on the chances of success, information on(prognosis, different treatment options, clinical aspects, and possible side effects of treatment), information about potential health problems of “test-tube babies”, information about medical issues during pregnancy, information on treatment costs, staff willingness to listen carefully and help patients, Regular progress update on condition is in place and waiting times with p.v (0.000, 0.000, 0.004, 0.026, 0.000, 0.005, 0.003, 0.000) respectively. Because the public IVF centers are very busy and pressured. Consequently, personal attention and the detailed information relevant to a specific individual cannot always be given as desired.

This is a first study compare satisfaction in public IVF center & satisfaction in private IVF center.

6. Study Strengths & Limitations

Merits

- 1) The prospective way of the study & two centers included.
- 2) The new idea and it doesn't apply in Egypt before.

Limitations

The difficulty of follow up (it was difficult to call some women for follow up and some of them were missed).

7. Conclusions

The present findings can be concluded that there was no statistically significant difference between women given IVF medications by nurse at public IVF center and women taking IVF medication at home at Banon IVF center in relation to outcome of IVF as all study sample are keen to comply with all instructions about how to take medications with correct route, correct dose and on time to realize their dream of having a child even those taking IVF medication at home.

The majority of infertile patients were satisfied with the care they received but

there was a statistically significant difference between satisfaction in public IVF center and satisfaction in the private center as regards information provided, staff willing to listen carefully and help patients, regular progress update on condition in place.

Recommendations

Based on the results of the present study, the researcher suggested the following recommendations:

- 1) Empower the role of the nurse as a health educator for women undergoing IVF about the importance of stage of induction and take medications with the correct route, correct dose and on time on the outcome of IVF.
- 2) More studies should be conducted in other centers to further investigate the issue and re-confirm the reliability and validity of the assessment instrument in evaluating patient's satisfaction, for it to be applied at IVF centers.
- 3) Medical staff should spend more time on consultation and explanation for women undergoing IVF to raise patient satisfaction.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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