

Effectiveness of infertile women's commitment to implement in vitro fertilization (long/short) protocols

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Background Infertility is the inability of a person to reproduce by natural means. Infertility may describe a woman who is unable to get conceived as well as being unable to carry a pregnancy to full term. There are many biological and other causes of infertility, including some of the medical interventions can treat. Infertility rates have increased by 4% since the 1980s, mostly from problems with fecundity due to an increase in age. About 40% of the issues involved with infertility are due to the man, another 40% due to the woman, and 20% results from complications with both the partners. In vitro fertilisation and embryo transfer (IVF-ET) was first successfully used in humans over 25 years ago; since then, more than one million children have been conceived using this technology. IVF is a procedure designed to enhance the likelihood of conception in couples for whom other fertility therapies have been unsuccessful or are not possible. It is a complex process and involves multiple steps resulting in the insemination and fertilisation of oocytes (eggs) in a laboratory. The embryos created in this process are then placed into the uterus for potential implantation. Each stage of the procedure is associated with specific risks; IVF may provide a couple who has been otherwise unable to conceive with a chance to establish a pregnancy².

Objective

1. To assess women's commitment to implementation of IVF
2. To identify short protocol implementation
3. To identify long protocol implementation

Methodology Non-probability (purposive sample), the study sample consists of (60) infertile women who were selected from Kamal Al-Samarrae Hospital. The study group consist of (30) infertile women was exposed to follow-up and (30) women is control group the criteria of this sample was infertile women in reproductive age, with different educational levels in the public department were involved in IVF program.

Results In the study group, 20 women were using short protocol and 10 were using long protocol. The total number of study group was 30, 9 of them become pregnant, 5 of them were using short protocol and 4 of them were using long protocol. In the control group, there were 20 women using short protocol and 10 using long protocol. The total number of study group was 30; 2 of them become pregnant and were using short protocol.

Conclusions Results shows that with respect to study sample, observed significant relationships should be informative and significant level was not achieved. Long protocol are much better than short protocol. In addition to that, results shows that with respect to control sample, no significant relationships are accounted, as well as two types of protocol either long or short gives the same responding. Results shows that significant relationships are accounted and that the study sample recorded six times better than control.

Recommendations The study recommended that all the infertile women should be exposed to the implementation of the follow-up and call the patients by phone and through the interview with patients and instruct them about their protocols.

Keywords infertility, infertile women, IVF, short protocol, long protocol

Introduction

Infertility, defined as the inability to become pregnant after 1 year of unprotected sex, is a problem faced by nearly 6.1 million Americans that is nearly 10% of men and women of reproductive age. Because, this problem is so prevalent, fertility treatments abound. Assisted reproductive technology (ART) is a group of fertility treatments that involve both the sperm and the egg. In vitro fertilisation (IVF) is the most common type of ART. In IVF, the sperm fertilises the egg outside the body, and doctors implant it into the woman's uterus with hopes of a successful pregnancy. Other forms of ART include intracytoplasmic sperm injection (ICSI), gamete intrafallopian transfer (GIFT) and zygote intrafallopian transfer (ZIFT). The history of IVF is relatively short. Louise Brown of England was the first baby born via IVF, in 1978. The next IVF baby was born later that same year in India. Soon, people started calling these infants as 'test-tube babies' which means

fertilisation outside of the body. In 1981, the first American test-tube baby was born, and the number has continued to increase each year³. IVF is the most effective ART. It is often used when a woman's fallopian tubes are blocked or when a man produces very few sperm. Doctors treat the woman with a drug that causes the ovaries to produce multiple eggs. Once matured, the eggs are removed from the woman. They are put in a dish in the lab along with the man's sperm for fertilisation. After 3–5 days, healthy embryos are implanted into the woman's uterus (American College of Obstetricians and Gynecologists⁴). The best known of these methods is IVF, which was responsible for the birth of many 'test-tube babies'. The eggs obtained through the vaginal canal using ultrasound guidance are fertilised with the partner's sperm outside the woman's body, not in a test tube, but in a culture dish. A few days later, the eggs, now called zygotes, are placed in the woman's uterus.

If one or more of the zygotes implants successfully, pregnancy results. One study reported that 17% of women who undergone this procedure once, go on to deliver a baby⁵, in order to maximise success rates with IVF. There are several ovarian stimulation medication protocols that are used to stimulate the ovaries to make enough follicles and eggs. Without stimulating medications, the ovaries make and release only one matured egg per menstrual cycle in a month⁶. IVF is a complex series of procedures used to treat fertility⁷. IVF is a procedure, used to overcome a range of fertility issues, by which an egg and sperm are joined together outside the body⁸. In a natural menstrual cycle, the pituitary gland's luteinising hormone (LH) and follicle-stimulating hormone (FSH) causes the growth of an egg in a fluid-filled follicle within the ovary⁹. The drugs used for ovarian stimulation have mild side effects in some women, including mild bruising and soreness at the injection site, headaches, an upset stomach and mood swings¹⁰. IVF increases the risk of multiple births if more than one embryo is implanted in the uterus¹¹. A pap smear for every 2 years, as well as regular gynaecological and breast examinations are currently the best methods to prevent or detect women's cancers. Use of injectable fertility drugs, such as human chorionic gonadotropin (HCG), to induce ovulation can cause ovarian hyperstimulation syndrome¹². The age of the woman has a significant effect on her fertility and the live birth rate decreases significantly from the age 35 years when the woman is using her own eggs¹³.

Female body mass index should ideally be in the range of 19–30 before commencing IVF treatment. Female body mass index outside this range is likely to reduce the success of assisted reproduction procedures¹⁴. Approximately 15 years ago, a different type of GnRH analog was developed, called GnRH 'antagonists', these medications work differently than the GnRH 'agonists' like Lupron¹⁵.

Methodology

The follow-up is made through the phone and interview with patients when they come to hospital. The instructions given to the women during the follow-up includes: information about IVF procedure, teaching the women about the importance of the commitment in the time of taking their medications such as injections, some of the injection are taken in the morning and the other in the evening, in certain time according to the doctor's instruction, teaching the women about the side effects of medications, teaching the women about the correct site of injection, because some of the injection should be injected in intramuscular and other is injected subcutaneously. The best way to save the drugs without causing damage during transport from the hospital, because these medications consist of hormone that gets damaged in the hot and in the cold. The woman should keep it in the door of a refrigerator (information about the importance of commitment in a time of injection).

Information about the complications of IVF may occur. Rather than slowly suppress the pituitary over 4–5 days like Lupron does, these newer medications, Cetrotide and Ganirelix Acetate—rapidly suppress the pituitary in a matter of hours. GnRH antagonist protocols have several advantages over GnRH agonists protocols. The number of daily injections is fewer (4–5 days) of antagonists versus (3–4 weeks) of agonists and the length of time to stimulate the follicles to maturity is 1 or 2 days

shorter, so you may need less total gonadotropins. In addition, your chance of developing ovarian hyperstimulation syndrome is less with GnRH antagonist protocols. Multiple research studies have compared IVF agonist and antagonist protocols which mostly showing similar pregnancy rates.

Results and Findings

Part 1: Distribution of Socio-Demographical Characteristics Variables

Table 1 shows distribution of studied groups (with and without) follow-up of IVF (long/short) protocol, in light of 'socio-demographical characteristics' variables (SDCv.), as well as comparisons significant are obtained to be sure that two independent groups are thrown from the same population concerning of that variables.

Results shows that no significant differences at $P > 0.05$ are accounted between studied groups, which indicating that two independent groups are thrown from the same population in light of SDCv. and that are more reliable for this study, since any meaningful differences may be registered among the studied outcomes, should be interpreted by effectiveness of applying (long/short) IVF protocols in light of follow-up or not.

Part 2: Distributions of Reproductive Status

Table 2 shows distribution of observed frequencies and percentages of reproductive status, as well as relationships among studied groups with comparisons significant, which shows that two independent groups are thrown from the same population in light of (reproductive status), and that are more reliable for this study, since any meaningful differences may be registered among final outcomes, should be interpreted by effectiveness of applying (long/short) IVF protocols in light of follow-up or not.

Part 3: Distributions of Effectiveness (Long/Short) IVF Protocols in Light of Follow-up or Not:

Relationship among studied groups (with and without follow-up) protocol and final results of program either success or failure program and contingency coefficients are constructed in Table 3 within comparisons significant, as well as an odds ratio and cohort of failure results among (long /short) protocol.

Results shows that concerning with follow-up group, observed significant relationships should be informative rather than simply stating that statistical significant level was not achieved. In addition to that, long protocol with follow-up stating had four times of success outcomes better than short protocol, as well as cohort to failure outcomes are accounted half effectiveness concerning with follow-up protocol, compared without follow-up group. In addition to that, results shows that concerning without follow-up group, no significant relationships are accounted at $P > 0.05$, as well as two types of protocol either long or short gives the same responding statistically.

Figure 1 represents graphically the distribution of studied groups (with and without) IVF protocol.

Discussion of the Results

Table 1 shows observed frequencies and percentages of the studied SDCv. which are distributed according to studied

Table 1. Distribution studied groups according to socio-demographical characteristics variables (SDCv.)

SDCv.	Classes	(With follow-up)		(Without follow-up)		C.S. (*) [P-value]
		No.	%	No.	%	
Age of wife (years)	<20	1	3.3	0	0	C.C. = 0.294 P = 0.339 (NS)
	20–	5	16.7	7	23.3	
	25–	7	23.3	9	30.0	
	30–	8	26.7	8	26.7	
	35–	5	16.7	6	20.0	
	40–50	4	13.3	0	0.0	
	Mean ± SD		30.5 ± 6.61		28.83 ± 5.82	
Age of husband (years)	20–	0	0	2	6.7	C.C. = 0.261 P = 0.497 (NS)
	25–	5	16.7	5	16.7	
	30–	6	20	8	26.7	
	35–	6	20	8	26.7	
	40–	11	36.7	6	20	
	45–50	2	6.7	1	3.3	
	Mean ± SD		36.33 ± 6.37		34.2 ± 6.35	
Rh : wife	Pos.	28	93.3	29	96.7	C.C. = 0.076 P = 0.554 (NS)
	Neg.	2	6.7	1	3.3	
Rh : husband	Pos.	30	100	29	96.7	C.C. = 0.129 P = 0.313 (NS)
	Pos.	0	0	1	3.3	
Consanguinity	Relative	16	53.3	19	63.3	C.C. = 0.101 P = 0.432 (NS)
	Not relative	14	46.7	11	36.7	
Education: wife	Illiterate	1	3.3	3	10.0	C.C. = 0.179 P = 0.575 (NS)
	Graduate of primary	11	36.7	11	36.7	
	Graduate of secondary	12	40.0	9	30.0	
	Higher education	6	20.0	7	23.3	
Education: husband	Illiterate	1	3.3	1	3.3	C.C. = 0.156 P = 0.681 (NS)
	Graduate of primary	8	26.7	11	36.7	
	Graduate of secondary	9	30	11	36.7	
Occup. wife	Higher education	12	40	7	23.3	C.C. = 0.089 P = 0.488 (NS)
	Employer	24	80	26	87.7	
	House wife	6	20	4	12.3	
Occup. husband	Employer	15	50	18	60	C.C. = 0.100 P = 0.436 (NS)
	Free job	15	50	12	40	
Marriage-wife	Married before	2	6.7	1	3.3	C.C. = 0.201 P = 0.284 (NS)
	First wife	26	86.7	23	76.7	
	Second wife	2	6.7	6	20.0	
Marriage-husband	Married before	2	6.7	3	10	C.C. = 0.193 P = 0.313 (NS)
	Not married before	27	90	23	76.7	
	Polygamous	1	3.3	4	13.3	

(*)NS: non sig. at $P \geq 0.05$; C.C.: contingency coefficient.

samples (with and without follow-up), as well as comparisons significant for relationships. Results shows that no significant differences at $P > 0.05$ are accounted between the two samples, and that are more reliable for this study, since any meaningful deviation may registered between the studied samples should be interpreted for effectiveness of applying studied follow-up relative to subject's 'age groups'; majority of the studied

samples are reported at the age ranged (25–29) years for wife, and (40–44) years for husband, then followed with subject's 'Rh', results indicated that most of the studied individuals had a positive results, and they are accounted in light of with and without follow-up 18 (93.3%) and 29 (96.7%) for wife, as well as 30 (100%) and 29 (96.7%) for husband, then followed with subjects of 'consanguinity status', results indicated that sample

Table 2. Distributions of reproductive status at the studied samples with comparisons significant

	Reproductive status	Resp.	(With follow-up)		(Without follow-up)		C.S. (*) [P-value]
			No.	%	No.	%	
Did you have or suffering from:	Previous pregnancy	Yes	12	40	8	26.7	C.C. = 0.140 P = 0.273 (NS)
		No	18	60	22	73.3	
	Previous ectopic pregnancy	Yes	2	6.7	2	6.7	C.C. = 0.000 P = 1.000 (NS)
		No	28	93.3	28	93.3	
	Previous abortion	Yes	5	16.7	6	20	C.C. = 0.043 P = 0.739 (NS)
		No	25	83.3	24	80	
	Previous birth of deformed baby	Yes	0	0	0	0	C.C. = 0.000 P = 1.000 (NS)
		No	30	100	30	100	
	Previous delivery	Yes	8	26.7	4	13.3	C.C. = 0.164 P = 0.197 (NS)
		No	22	73.3	26	86.7	
	Puerperal fever (in a secondary infertility)	Yes	0	0	0	0	C.C. = 0.000 P = 1.000 (NS)
		No	30	100	30	100	
	Fallopian tube obstruction	One tub	2	6.7	2	6.7	C.C. = 0.133 P = 0.584 (NS)
		Both of them	1	3.3	3	10	
		Opened tubes	27	90	25	83.3	
	Pituitary gland disorders	Yes	5	16.7	3	10	C.C. = 0.098 P = 0.448 (NS)
		No	25	83.3	27	90	
	Elevated of prolactine hormone	Yes	11	36.7	13	43.3	C.C. = 0.068 P = 0.598 (NS)
		No	10	63.3	17	56.7	
	Duration of infertility (years)	<5 years	5	16.7	5	16.7	C.C. = 0.181 P = 0.566 (NS)
5–9		15	50	13	43.3		
10–14		7	23.3	11	36.7		
15–19		3	10	1	3.3		
Type of infertility	Primary	23	76.7	27	90	C.C. = 0.176 P = 0.166 (NS)	
	Secondary	7	23.3	3	10		
The causes of infertility related to your husband	Yes	21	70	23	76.7	C.C. = 0.075 P = 0.559 (NS)	
	No	9	30	7	23.3		

(*)NS: non sig. at $P > 0.05$; C.C.: contingency coefficient.

of with follow-up are accounted 16 (53.3%), while without follow-up sample are accounted 19 (63.3%), then followed with subject's 'level of education', results shows that more of 50% of studied sample of 'wife' had graduated secondary school and higher educated and they are accounted for 18 (60.0%) and 17 (53.3%), as well as sample of 'husband' are accounted 21 (70.0%) and 18 (60.0%), then followed with subject's 'occupation', results shows that most of the studied samples in light of 'wife' had recorded employed, and they are accounted 24 (80%) and 26 (87.7%), as well as sample of 'husband' had recorded employed, and accounted in light of with and without follow-up 15 (50.0%) and 18 (60.0%) respectively, and the left-over had free job. Marriage status for wife had recorded mostly first wife, and accounted in light of with and without follow-up 26 (86.7%) and 23 (76.7%) respectively, then finally followed with subject's 'marriage status' for husband had recorded mostly not married before, and accounted in light of with and without follow-up 27 (90%) and 23 (76.7%) respectively.

Table 2 shows distribution of the observed frequencies and percentages of reproductive status as well as relationships

among studied samples with comparisons significant, and as follows:

- Regarding to subjects 'previous pregnancy', results indicated that there has been no significant different at $P > 0.05$ between studied samples, with 8 (26.7%) at the control sample, while 12 (40%) individuals are accounted at the study sample.
- Regarding to subjects 'previous ectopic pregnancy', results indicated that there has been no significant different at $P > 0.05$ accounted between studied samples, with 2 (6.7%) individuals are accounted at the control and study samples.
- Regarding to subjects 'previous abortion', results indicated that there has been no significant different at $P > 0.05$ accounted between studied samples, with 6 (20%) at the control sample, while 5 (16.7%) individuals are accounted at the study sample.
- Regarding to subjects 'previous birth of deformed baby', results indicated that there has been no individuals are accounted at the study and control samples.

Table 3. **Distribution of final outcomes results of program and protocol types among (with and without follow-up) of IVF protocol groups with comparisons significant**

Groups	Protocol types	No. and percent	The final results of program		Total	C.S. (*) [P-value]
			Success	Failure		
(with follow-up)	Long protocol	No.	6	5	11	C.C. = 0.295 P = 0.091 (NS) Odds ratio (1 : 4.0) cohort: (failure) (1 : 0.54)
		% Type of protocol	54.5%	45.5%	100%	
		% Type of result	66.7%	23.8%	36.7%	
	Short protocol	No.	3	16	19	
		% Type of protocol	15.8%	84.2%	100%	
		% Type of result	33.3%	76.2%	63.3%	
	Total	No.	9	21	30	
% Type of protocol		30.0%	70.0%	100%		
(without follow-up)	Long protocol	No.	0	10	10	C.C. = 0.186 P = 0.301 (NS) cohort: (failure) (1 : 1.11)
		% Type of protocol	0.0%	100%	100%	
		% Type of result	0.0%	35.7%	33.3%	
	Short protocol	No.	2	18	20	
		% Type of protocol	10%	90%	100%	
		% Type of result	100%	64.3%	66.7%	
	Total	No.	2	28	30	
		% Type of protocol	6.7%	93.3%	100%	
			% Type of result	100%	100%	

(*)NS: non sig. at P > 0.05; C.C.: contingency coefficient.

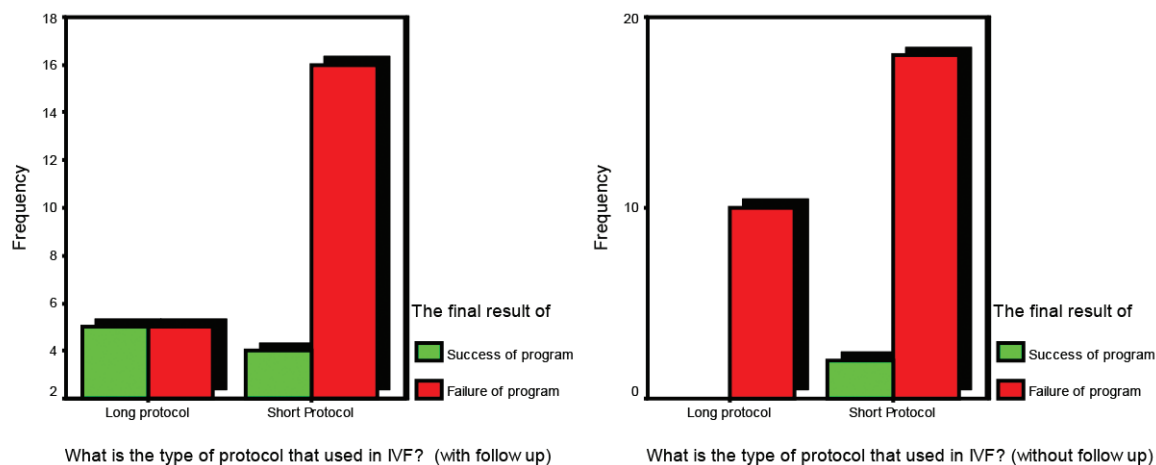


Fig. 1 **Cluster bar charts of final results of program and protocol types at each sample (with and without follow-up) of IVF protocol groups**

e. Regarding to subjects 'previous delivery', results indicated that there has been no significant different at $P > 0.05$ accounted between studied samples, with 4 (13.3%) at the control sample, while 8 (26.7%) individuals are accounted at the study sample. Relationship among studied samples (with and without follow-up) and final results of program either success of program (pregnancy occur) or failure, contingency coefficients are constructed in Table 3 within comparisons significant, as well as an odds ratio. Results shows that concerning with study sample observed, significant relationships

should be informative rather than simply significant level, was not achieved as well as long protocol four times concerning study sample are better than short protocol. In addition to that, results shows that concerning with control sample, no significant relationships are accounted at $P > 0.05$, as well as two types of protocol either long or short gives the same responding. How P-value to be reported:
'If P-value is found as 0.07, it is more informative for that result to be reported, rather than simply stating that statistical significant was not achieved.'

Recommendations

1. The follow-up is very important to implement the commitment of IVF protocols through phone and interview with the patient when they come to hospital.
2. The follow-up is to be very effective and guide some of wrong practices of the patients to save the medications by keeping it in the freezer rather than keeping outside the refrigerator which makes the medications exposure to the heat and causes damages.
3. The nurse should instruct the patients about protocols that are used for her.

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