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AN EMPIRICAL STUDY ON THE PATIENTS PROSPECTIVE SEEKING TO INFERTILITY CLINIC

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INTRODUCTION

Infertility, reported commonly in gynecological practice, has many dimensions. There are many factors, visible / invisible and health seeking practices are also varied. Infertility can cause considerable social, emotional and psychological stress. It is estimated that one in Six of Indian couples are considered to be infertile according to the WHO definition of infertility (CAHR, 2005). Infertility treatment can have substantial social and emotional repercussions. The main reasons women postpone starting a family include: extended time spent in education; extended time spend developing career; professional stability; use of contraception; late meeting of partner; falsely reassuring information on the progress in ART; second child desire after late first pregnancy; second marriage and child desire in the redefined couple. The average age of women in Ireland having their first child is 30.6, which is higher than in the UK (28.7) and the EU average (29.6) (McGrath et al., 2005). Postponement of pregnancy has led to an increase in the incidence of 'unexplained infertility' due to agerelated decline in the quality of eggs and the decline in the reserves of eggs in the ovaries (RCOG, 2008).

The level of obesity in young women has been increasing, which leads to increased rates of an ovulation and polycystic ovary syndrome (PCOS), as well as poorer response to fertility treatment (RCOG, 2008). The increasing availability worldwide of assisted reproductive technology has led to an upsurge of published literature on the effectiveness of such treatments.

The large volume of evidence, which is often of poor quality, makes it difficult for the average health-care individual or couple seeking help with their fertility to obtain relevant evidence for treatment decisions (Daya, 2006). It is a major reproductive health problem, at least in part, a cultural problem also. Women in particular, suffer from many social and medical consequences. After getting married some couples wait for years, others seek assistance within months. Many times it is only women, who seek advice, as there is family pressure. There is ignorance about whys and how of infertility. Advice seeking is not limited to regular health systems. Women go through various treatments seeking modes to avoid the adverse consequences of childlessness. They use varied traditional methods and religious practices, including visits to temple, abstaining from visiting a place where a woman has delivered a child, observing tantric rites, wearing charms, participating in rituals and visiting astrologers.

INFERTILITY

The fertilised egg (called a zygote) continuously divides to form a ball of cells as it travels down into the fallopian tube. By the time the fertilised egg has reached the uterus it has developed into a blastocyst. A blastocyte has an inner group of cells that will become the embryo, and an outer group of cells that will attach the blastocyst to the uterus wall to form the placenta. The placenta carries oxygen and nutrients from the mother to the foetus and waste materials from the foetus to the mother. The blastocyst attaches to the lining of the uterus, where is starts to receive nourishment from the mother's bloodstream. The implantation of the blastocyst to the uterus lining usually occurs about 10 days after the sperm first penetrated the egg in the fallopian tube.

Natural conception is a complex process that relies on a number of factors in order to be successful.
These factors include:
• The production of healthy eggs by the woman
• The production of healthy sperm by the man
• Unblocked fallopian tubes to allow the sperm to reach the egg

• The ability of the sperm to fertilise the egg when they meet in the fallopian tube
• The ability of the egg to move into the woman's uterus and become implanted in the uterus wall
• A good quality embryo
• Suitable hormonal environment in the woman.

OBJECTIVES OF THE STUDY

1. To determine the significant difference between male and female factors with respect
2. To Perception towards the infertility treatment.
3. To identify the association with the satisfaction level and treatments given for the patience in surya hospital.
4. To determine the significant difference between the treatment and the age group
5. To examine patient's educational qualification and their perception towards treatment

THE REASON FOR THE INFERTILITY TREATMENT

The main reasons for the increase in couples seeking help for fertility problems is the trend for delaying pregnancy until later in life, the increase in obesity, and the higher rate of sexually transmitted infections. The demand for advice and treatment of fertility problems is likely to increase over the coming years.
Fertility treatments available to couples are often complex. In order to make informed decisions on fertility treatment, couples need to understand the treatment options available to them. The large volume of research on fertility treatments, which is often of poor quality, makes it difficult to access reliable, relevant and readable information. This makes the emotional decision making process even more of a challenge.

This review aims to investigate the effectiveness of the types of fertility treatments in the following categories:
(1) Medicines to improve fertility;
(2) The effectiveness of fertility treatments, and the associated risks and benefits, will be considered.

CAUSES OF FEMALE INFERTILITY

For between 15% and 30% of couples no reason can be found for their fertility problem (The Practice Committee of the American Society for Reproductive Medicine, 2006a). The prevalence of different causes of female infertility is associated with age (Maheshwari et al., 2008a). Women over the age of 35 are almost twice as likely to be diagnosed with unexplained and tubal factor infertility, compared with women aged under 35, however diagnosis of ovulatory dysfunction is reduced by a third in women older than 35 years (Maheshwari et al., 2008).
Causes of infertility and their estimated occurrence are listed in Table 1, with further description provided below.

Infertility cause and occurrence in couples

Table - 1

Cause of infertility	Occurrence
Sperm defects or dysfunction	30%
Ovulation failure (e.g. PCOS)	25%
Unexplained infertility	25%
Tubal infective damage (due to chlamydia infection)	20%
Endometriosis (causing damage)	5%
Cervical mucus defects or dysfunction	3%
Uterine abnormalities	Less than 1%

Ovulation depends on a complex balance and interaction of hormones any disturbance to this can impact ovulation. The most common cause of ovulation failure (the failure of the ovaries to make an egg) is Polycystic ovary syndrome (PCOS) (Balen & Rutherford, 2007). Polycystic literally means "many cysts". Typically, the

polycystic ovary contains many small cysts (fluid filled sacs). Each small cyst represents a follicle, which contains a single egg that is attempting to develop to a stage where it is ready to be released from the ovary (ovulation). Due to a complex biochemical situation in the ovaries with PCOS the development of the follicles is stopped prematurely, resulting in a collection of small follicles and no ovulation occurring (Cedars-Sinai, 2008). The most recent consensus meeting between the American Society for Reproductive Medicine (ASRM) and the European Society of Human Reproduction and Embryology (ESHRE) was held in Rotterdam, the Netherlands in 2003 (The Rotterdam ESHRE/ASRM-Sponsored PCOS consensus workshop group, 2003).

IMPACT OF LIFESTYLE FACTORS ON FERTILITY

Factors impacting on fertility

Table - 2

Convincing evidence of impact	Probable evidence of impact
Age	Psychological stress
Smoking	Caffeine
Drug use	Alcohol
Weight	Environmental pollutants
Diet	
Physical activity	

Female age is the most important determinant of spontaneous conception and treatment related conception (Maheshwari et al., 2008a). Fertility begins to decline in females from the age of 30, although the reduction in fertility is greatest in women in their late 30s and early 40s (Taylor, 2003). The number of competent oocytes in the ovaries declines with increasing age. For women up to 25 years old the cumulative conception rate is 60% at six months and 85% at one year, but conception rates for women aged over 35 are less than half of this (Balen & Rutherford, 2007a). Current recommendations state that women aged over 35 should be classed as having advanced reproductive age and referred more promptly for early investigations and active treatment (NICE, 2004; ASRM, 2006).

There is a significant association between smoking and reduced fertility among female smokers (NCC WCH, 2004). It has been estimated that smokers are 3.4 times more likely to take more than a year to conceive than non-smokers, and in each cycle smokers have two thirds the chance of conceiving compared with non-smokers (Taylor, 2003). A large UK longitudinal study (ALSCPAC) found that both active and passive smoking by women is associated with delayed conception (Hull et al., 2000). Smoking has been found to have an adverse effect on fertility and conception as well as most phases of the development of the child in the womb and on post-natal survival (NCC WCH, 2004; Rogers, 2008). Some of the negative reproductive consequences associated with smoking include: quicker depletion of ovarian follicles, conception delay, increased risk of spontaneous miscarriage in both natural and assisted conception cycles, and increased risk of birth defects (ASRM, 2008a)

There are a number of prescribed, over-the-counter and recreational drugs that are known to impact on fertility. Non-steroidal anti-inflammatory drugs, commonly used to treat pain or inflammation are know to inhibit ovulation (NCC WCH, 2004). Cytotoxic chemotherapy drugs are also known to cause ovarian failure in some women. Recreational drugs such as marijuana can have an adverse effect on ovulation and cocaine appears to adversely affect tubal function (Mueller et al., 1990).

The time to conceive is longer in women who are over- or under weight (BMI5 of over 25 or less than 19). Obesity and overweight is associated with decreased pregnancy rates, increased requirements for gonadotrophins6 and a higher miscarriage rate. These differences are evident at a BMI over 25 (Maheshwari et al., 2007). A high BMI is also associated with adverse pregnancy outcomes such as gestational diabetes and hypertension (Chu et al., 2008). Evidence on the effect of diet composition in fertility is scarce.

Several studies investigating the effect of various dietary factors on fertility have been conducted using data gathered from 17,544 women enrolled in the Nurses' Health Study II. These studies found a reduced risk of infertility due to ovulatory disorder among women whose diet favoured foods with a low glycaemic index7 and a limited intake of nutrients that may increase insulin resistance, such as trans fatty acids (Chavarra et al., 2007). This supports the hypothesis that glucose homeostasis8 and insulin sensitivity are important determinants of ovulatory function and fertility in otherwise healthy women (Chavarra et al., 2007).

Fertility treatments can be grouped into three categories:

1. Medicines to improve fertility
2. Surgical treatments
3. Assisted Reproductive Technology

SUMMARY OF FERTILITY TREATMENT OPTIONS

Table- 3

Medicine to improve fertility	Anti-oestrogens Gonadotrophins Pulsatile gonadotrophin-releasing hormone Gonadotrophin-releasing hormone analogs Dopamine agonists Aromatase inhibitors (experimental)
Surgical treatments	Ovarian drilling Fallopian tube surgery Uterine surgery Surgery for endometriosis
Assisted reproductive technology	IUI (Intrauterine Insemination) IVF (In Vitro Fertilisation) GIFT (Gamete Intrafallopian Transfer) & ZIFT (Zygote Intrafallopian Transfer) ICSI (Intracytoplasmic Sperm Injection) Donor insemination (eggs or sperm donation) PGD (Pre implantation Genetic Diagnosis) IVM (In Vitro Maturation)
Other treatment	NaPro Technology (Natural Procreative Technology)

FACTORS AFFECTING OUTCOME OF ART

Female age : The optimal female age range for successful IVF treatment is 23 to 39 years (NCC WCH, 2004). The chances of a live birth per IVF treatment cycle are:-

Chances of live birth with female age

Table - 4

Women aged	Chances of a live birth per treatment cycle
23-35	20%
36-38	15%
39+	10%
40+	6%

Awareness of risk factors for infertility:

1. Woman's age

2. Emotional stress
3. Long term use of birth control
4. Overweight woman
5. Underweight woman
6. Exposure to cigarette smoke
7. Physical injury
8. Exposure to other environmental pollutants
9. Caffeine consumption
10. Too much exercise

Sample size

Random sampling technique was adapted to select sample patience. Suriya Hospital were selected for the purpose of the study. The total numbers of questionnaire distributed were 110 of which 50 were received and fully filled.

Number of respondents	Received	Fully filled
110	67	50

HYPOTHESES DEVELOPED

A hypothesis is a tentative generalization, the validity of which has got to be tested. After conducting an extensive review of literature, the following hypotheses was predominantly in the null form are developed in the line with the research problem and objectives. Based on the research questions, the following hypotheses were formulated for the present study. To facilitate data analysis the main hypothesis has been split into sub hypotheses wherever required.

H_0 1: There is no significant difference between male and female factors with respect to Perception towards the infertility treatment.

H_0 2: There is no significant association with the satisfaction level and treatments given for the patience in surya hospital.

H_0 3: There is no significant difference between the treatment and the age group.

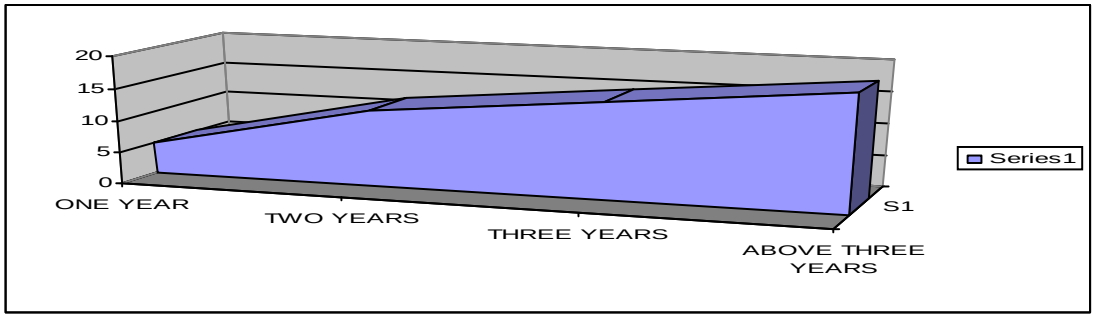
H_0 4: There is association between patient's educational qualification and their perception towards treatment.

No of Years in Treatment

Table -4.a

	Number of respondents	**Percentage**
One Year	5	10
Two Years	12	24
Three Years	15	30
Above Three Years	18	36
Total	**50**	**100**

Figure - 4



There is a need for randomized controlled trails to evaluate empiric therapies because conception may occur even without treatment.

Traditional therapies are

- Expensive
- Invasive
- Have side effects
- Aren't very effective
- Contribute to a sense of loss of control about fertility

Proposed treatment regimens include intrauterine insemination (IUI), ovulation induction with oral or injectable medications, combination of IUI with ovulation induction and assisted reproductive technologies (ART).

t-Test with Gender

H_0 1: There is no significant difference between male and female factors with respect to Perception towards the infertility treatment.

H1: There is no significant difference between male and female factors with respect to Perception towards the infertility treatment.

Table - 5

t-Test variable	Group	Mean	Std.Deviation	t-Value	t-Prob
Perception towards the infertility treatment.	Male	1.912	1.069	11.56	0.000
	Female	4.297	1.431		

Inference

The Data from male and female patients were collected to determine the significant difference between male and female factors with respect to Perception towards the infertility treatment.

Calculation

t Calculated < t tabulated so we accept H1

Interpretation

There exist significant difference between male and female factors with respect to Perception towards the infertility treatment.

CHI SQUARE

Table- 6

Patients satisfaction on treatment in surya hospital	Strongly agree	Neither agree nor disagree	Strongly disagree	Total
Strongly agree	15	12	3	30
Neither agree nor disagree	10	3	2	15
Disagree	3	1	1	5
Total	28	16	6	69

Null hypothesis (Ho): There is no significant association with the satisfaction level and treatments given for the patience in surya hospital.

Alternative hypothesis (H1): There is significant association with the satisfaction level and the treatments given for the patience in surya hospital.

Table - 7

Observed Frequency (O)	Expected Frequency (E)	(O-E)	$(O-E)^2$	$X^2=(O-E)^2\backslash E$
15	28.70	1.3	1.69	0.059
12	10.20	1.8	3.24	0.318
3	5.10	-2.1	4.41	0.865
10	11.74	-0.74	0.55	0.047
3	4.17	-1.17	1.37	0.329
2	2.09	0.09	0.008	0.004
3	4.57	-1.57	2.46	0.538
1	1.62	1.38	1.90	1.173
1	0.81	1.19	1.42	1.753
			TOTAL(X^2) = 5.086	

Chi-Square Formula

$$X^2 = \sum \frac{(\text{Observed Value} - \text{Expected Value})^2}{(\text{Expected Value})}$$

O is the Observed Frequency in each category
E is the Expected Frequency in the corresponding category

df is the "degree of freedom" (n-1)
X2 is Chi Square
Degrees of freedom (df) = n-1 where n is the number of classes

Calculated value (X^2) = 5.086

The table value at 5% level of significance for 4 = 9.49
Accept Ho because 5.08 is lesser than 9.49

Thus, we accept the null hypothesis that there is significant association in the

treatments given for the patience in surya hospital.
Calculated value < Tabulated value
(i.e.) 1.87 < 9.49
HENCE, ACCEPT NULL HYPOTHESIS.
Inference: There is significant association in the treatments given for the patience in surya hospital.

Correlations **Table - 8**

		TREATMENT	GENETIC	AGE	COST
Pearson Correlation	TREATMENT	1.000	0.976	0.955	0.949
	GENETIC	0.976	1.000	0.983	0.975
	AGE	0.955	0.983	1.000	0.960
	COST	0.949	0.975	0.960	1.000
Sig. (1-tailed)	TREATMENT	.	0.000	0.000	.000
	GENETIC	0.000	.	0.000	.000

	AGE	0.000	0.000	.	.000
	COST	0.000	0.000	0.000	.
N	TREATMENT	50	50	50	50
	GENETIC	50	50	50	50
	AGE	50	50	50	50
	COST	50	50	50	50

Inference: The correlation table shows the correlation with the composite score of all independent and dependent variable where correlated. The main focus of correlation analysis was established the kind of relationship existed between the variable for this and shows the positive correlation in the study.

MULTIPLE REGRESSIONS

The impact of treatment and with its determinants

Multiple regression procedure is conducted to understand the relationship between several predictors Stepwise multiple regression analysis is the most sophisticated. Each variable is entered in sequence and its value assessed. The beta value measures how strongly each predictor variable influences the criterion variable. The beta regression coefficient is computed by assessing the strength of the relationship between each predictor variable to the criterion variable. The standardized beta coefficient gives the contribution of ach variable in the model.

H_0 3: There is no significant difference between the treatment and the age group

H3 : There is significant difference between the treatment and the age group

ANOVA **Table -9**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.981	3	26.327	771.625	0.000
	Residual	3.958	116	.034		
	Total	82.939	119			

Source: Primary Data

Coefficients **Table - 10**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.056	0.051		1.099	0.274
	AGE	0.043	0.098	0.040	-.437	0.663
	GENETIC	1.230	0.154	1.124	8.002	0.000
	TREATMENT	-.111	0.111	-.111	-.999	0.320

Source: Primary Data

Since the probability was less than or equal to the level of significance of 0.05, for R the null hypothesis that the b coefficient for confidence in R was equal to zero for this comparison was rejected.

Equation

$Y = ax + b$

$Y = 0.056 (0.043) + 1230$

Model Summary **Table - 11**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.976[a]	0.952	0.951	0.184	0.952	2329.190	1	47	.000	1.307

a. Predictors: (Constant), AGE

b. Predictors: (Constant), TREATMENT, GENETIC, AGE

The presence of a relationship between the dependent variable and combination of independent variables is based on the statistical significance of the final model chi-square in the SPSS table titled "Model Fitting Information". In this analysis, the probability of the model Adjusted R Square (0.951), and R Square Change (0.952) Significant F Change was 0.00, less than or equal to the level of significance of 0.05.
The null hypothesis that there was no difference between the model without independent variables and the model with independent variables was rejected. The existence of a relationship between the independent variables and the dependent variable was supported.

F= 2329.190
Durbin-Watson= 1.307

Hypothesis
Ho: There is no significance difference among factors of predictors in explaining patients seeking infertility treatment.
H1: There is significance difference among factors of predictors in explaining patients seeking infertility treatment.

Multicollinearity in the multinomial logistic regression solution is detected by examining the standard errors for the b coefficients. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity is not among the independent variables,

Excluded Variables **Table 12**

Model	Beta In	T	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
TREATMENT	-.112[b]	-1.015	.312	-.093	.033	29.996	.033
GENETICS	-.042[b]	-.464	.644	-.043	.050	20.155	.050

a. Predictors in the Model: (Constant), AGE
b. Predictors: (Constant), TREATMENT, GENETIC, AGE

Collinearity Diagnostics TABLE 13

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	AGE
1	1	1.000	1.000	0.04	0.04
	2	.070	5.242	0.96	0.96

Normal P –P Plot of regression standardized residual

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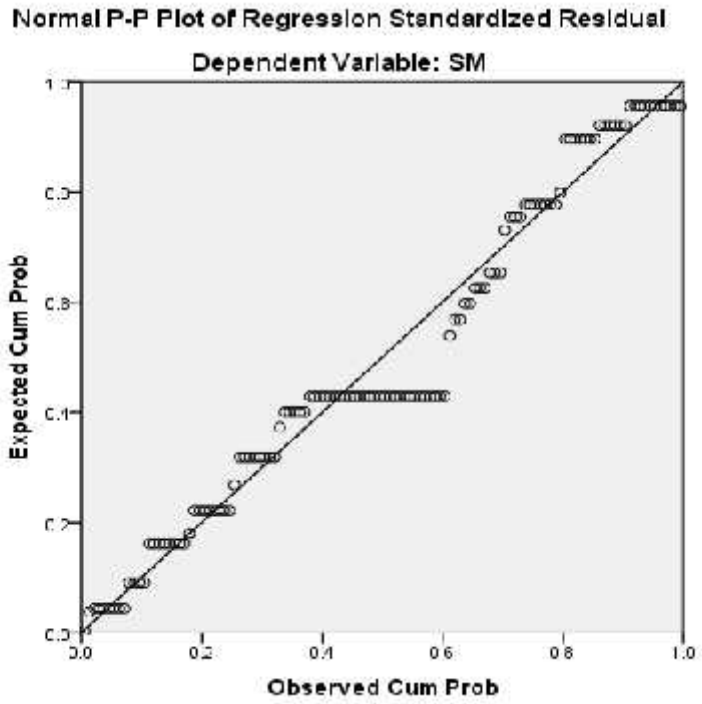
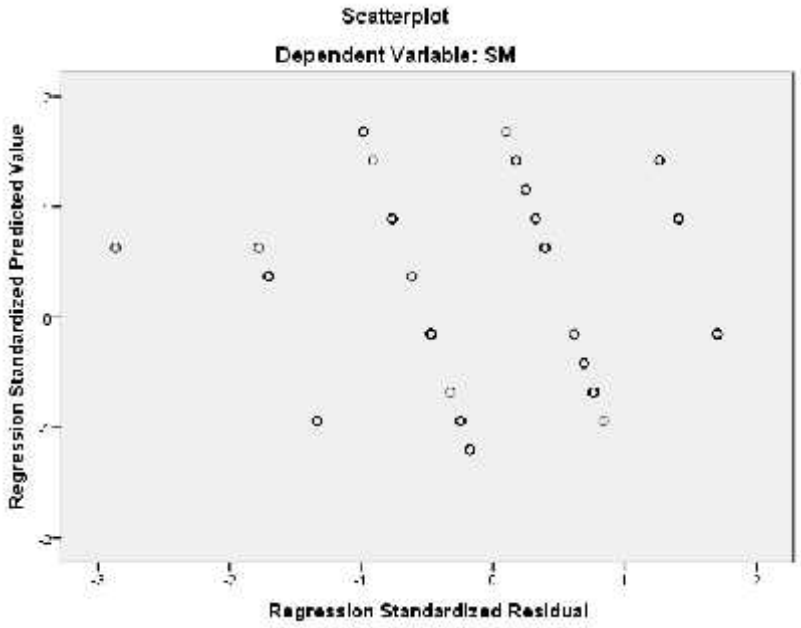


Homoscedasticity is a fourth assumption of regression analysis. Homoscedasticity suggests that the dependent variable has an equal level of variability for each of the values of the independent variables. A chart helps to understand homoscedasticity.



This explains difference between actual score and the regression line (which predictors the regression lines) the best fitting function in the scatter plot is the straight line .

ANOVA

H_0 4: There is association between patient's educational qualification and their perception towards treatment

H 4: There is no association between patient's educational qualification and their perception towards treatment

ANOVA Table - 14					
AGE					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	153.211	3	51.070	142.96	0.000
Within Groups	16.789	47	0.3572		
Total	170.000	50			

Source: Primary Data

Inference

The study shows, there is a significant association between There is association between patient's educational qualification and their perception towards treatment. Therefore, the hypothesis is rejected at 1 percent level of significance.

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FINDINGS

1. The increase in fertility problems may be that women are increasingly delaying childbearing.
2. There is significant difference between male and female perception towards infertility treatment
3. There exist high level of success in satisfaction levels in the treatments given for the patience in Surya hospital
4. Age factor plays a very important role for the success of the treatment in infertility
5. Attitude for treatment and the perception towards treatment differs with respect to the educational qualification.
6. Average age was 36.8 and 35.6 years in men and women, respectively
7. Fertility IQ 2011 Survey revealed that women plan to have children on average 7 years later than their mothers. Despite recognizing that age is an important factor for infertility, 3 out of 4 patients in that survey were not concerned about being able to conceive.
8. Survey revealed that HCPs are not always completely aware of their patients' level of knowledge of fertility issues.
9. More patients were aware of general fertility information, but were less aware of specific details.
10. In 2002, it was estimated that approximately 1 in 13 married women in the US were affected by infertility.
11. With increasing age, the ovary's ability to produce normal healthy eggs declines, thereby increasing the risk of chromosomal abnormalities and Un successful implantation of the fertilized egg into the uterus. 8.85-90% of infertility treated with drug therapy or surgery. Only about 3% of infertility services are Assisted ReproductiveTechnology (ART)
12. In fact, the age of the egg is a major determinant of the chances of achieving pregnancy. While the percentage of ART transfers resulting in live births using a women's own eggs declines as the women gets older, the percentage of ART transfers that resulted in live births using donor eggs, typically from women in their 20s or early 30s, remained consistently high.

CONCLUSION

Infertility is a common condition. Traditional medical treatments for infertility have significant drawbacks. Many women are now waiting until their 30s and 40s before having their first child – the Centers for Disease Control and Prevention (CDC) estimate that about 1 in 5 women in the US now have their first child after the age of 35 Delaying childbearing may increase the number of women who will experience infertility issues once they start trying to conceive. There is therefore an increasing need for HCPs to have an accurate perception of their

patients' knowledge regarding fertility and infertility treatments in order to provide the most relevant and appropriate advice possible for their patients.

Adverse effects of ART and ovarian stimulation include multiple pregnancy and ovarian hyper stimulation. ART therapies are considerably more costly than CC and IUI. When considering treatment options for couples with unexplained infertility, it is prudent to consider simple treatment before complex treatment and to balance what is known about effectiveness against the cost and adverse effects of different treatments. Gross causes of infertility were tubal factors, an ovulation, endocrine disorders and uterine causes. Infertile women from poor resource settings are not aware of possible causes of infertility. Infertility therapy must encompass information, education and counselling also. Many women may need only awareness, counselling and no other medical/surgical interventions. Those undergoing infertility treatment have high levels of psychological distress. Many individuals believe that psychological stress contributes to infertility. Speculation that "unexplained infertility" may affect psychological stress

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