

CAUSES OF FEMALE INFERTILITY: A CROSS-SECTIONAL STUDY

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Abstract- Infertility is a multidimensional problem with social, economic and cultural implications affecting approximately 8-10% of couples. In the present study a total of 635 infertile females from three infertile centers who are taking medical counseling were screened. A validated questionnaire has been administered to collect the data pertaining to the causes of infertility, period of infertility, education, occupation and life styles besides anthropometric measurements. Clinical investigations were also carried out to the sample. The reproductive disorders were divided into five groups i.e. 1-2 years, 3-4 years, 5-9 years, 10-14 years and >15 years. In 1-2 years of infertile group, tubal blocks were around 36.95% followed by 3% of hormonal deficiency. In >15 years period of infertile group ovulation defect (56%) and small size uterus (16%) were predominant. Both overweight (41.3%) and obesity (36%) has shown positive association with infertility in 5-9 yrs and >15yrs groups. Our results show a strong association of infertility with body mass index. A majority of educated and higher income groups sought medical counseling to resolve the infertility related problems. Because of high medical expense, the lower income group people are unable to afford the opportunity of resolving the problems through medical counseling. When the infertility cases were rated based on the issues around 30% females needed medical aid, 65% were normal and only 5% are refractory in nature. In conclusion it is stated that female infertility can be treated and managed with medication, minor surgical operations, laparoscopic procedures, hormonal therapy and prevention of preconception failure and maintenance of healthy life style.

Key Words:- Infertility. Body mass index. Hormonal deficiency

I. INTRODUCTION

Infertility is the inability of a couple to achieve pregnancy within 12 months of unprotected intercourse (Devroey et al., 2009). Infertility is worldwide problem affecting people of all communities, though the cause and magnitude may vary with geographical location and socioeconomic status. It is estimated that globally 60-80 million couples suffer from infertility every year, of which between 15-20 millions are in India alone (Pasi et al., 2011). Considering the current population statistics of India this would extrapolate to a humongous burden to the society.

Infertility is not merely a health problem; it is also a matter of social injustice and inequality (Kumar, 2007). Infertility is the medical problem, but childlessness is the couple's problem. Approximately one-third of the cases of infertility affecting couples are primarily attributable to the woman, one-third to the man, one third to an interaction between the two and 20% of those remaining unexplained (Peterson et al., 2007). However, it appears that the woman is consistently held responsible for a couple's infertility, and she is often punished psychologically and socially as a consequence (Dyer et al., 2005). In any society where child bearing defines a woman's identity and motherhood of great social significance, infertility leaves unhealed scars traumatizing the women socially and emotionally.

Numerous medical conditions can contribute to infertility. In fact, most cases of infertility are due to other medical conditions. These disorders can damage the fallopian tubes, interfere with ovulation, or cause hormonal

complications. Some of the main medical conditions associated with infertility are Polycystic ovaries syndrome (PCOS) is usually a hereditary problem and accounts for up to 90% of cases of an ovulation (Barbier, 2001). PCOS is associated with insulin resistance and it has directly correlated with obesity (Dahlgren et al., 1992). Hormonal anomalies that affect ovulation include hyperthyroidism, hypothyroidism, and hyperprolactinemia (Legro, 2007). Endometriosis is a very common debilitating disease that occurs in 6 to 10% of the general female population; in women with pain, infertility, or both, the frequency is 35–50% (Giudice, 2004). Fertility declines with age. Female fertility is at its peak between the ages of 18 and 24 years (Agboola, 2004), while, it begins to decline after age 27 and drops at a somewhat greater rate after age 35. Ovarian dysfunction could be caused by weight loss and excessive weight gain with body mass index (BMI) greater than 27 kg/m² (Imami et al., 1998)). Excess weight has also been found to have effect on treatment efficacy and outcomes of assisted reproductive technique (Freundl et al., 2003).

Although there are no dietary or nutritional cures for infertility, a healthy lifestyle is important for avoid infertility. Some ovulatory problems may be reversible by changing behavioral patterns. Maintain a healthy weight is important because who are either over or underweight are at risk for fertility failure, including a lower chance for achieving success with fertility procedures. Moderate and regular exercise is essential for good health.

It is with this background, the present study is designed to cover all aspects of female infertility by considering samples in infertility centers to examine the extent of infertility in Tirupati, Andhra Pradesh.

II. MATERIAL AND METHODS

This is a cross-sectional descriptive study in which 635 infertile women are selected by convenience sampling and are evaluated. The study materials belong to infertile women from all communities of different socio-economic milieu who sought medical assistance in three private infertility Centers available in Tirupati town for treatment. These centers have adequate infrastructural facilities for all kinds of clinical investigations of infertility either of male or female.

A validated questionnaire has been administered to collect the data pertaining to the causes of infertility, period of infertility, education, occupation and life styles besides anthropometric measurements. Clinical investigations were also carried out to the sample.

The purpose and overview of the study was explained at the time of the interview, and interviewees were informed that their participation was entirely voluntary, their anonymity would be assured, they could withdraw from the study at any time and the information that they will be providing would be used solely for the purposes of the study. They were also told that the researcher would assume responsibility for the safe-keeping of the data, and that they could request deletion of their data at any point. The exclusion criteria are any physical illness which prevents them from conceiving and suffering from any neurological or psychiatric illness. The results thus achieved have been critically analysed and presented.

RESULTS

A total of 1147 infertile females were studied and the sample is arranged according to period of infertility. Table 1 shows the number of dropouts, lost of follow up and the treatment seeking infertile females. Out of 1147 females only 635 are seeking infertility treatment and 310 females were dropout of the study because of their socio economic conditions. 202 females were lost of their follow-ups the answer for this is the reluctance or uncooperativeness of the male spouses. It is evident from the table that percentage of infertile females who visited infertile clinics in the initial period of infertility (1-2 years) was more 54.49%. Whereas, the percentage of infertile females visited the clinics decreased (4.35%) as the period of infertility increases (15+ years). The same trend was observed in case of number of dropouts, lost of follow-ups and treatment seeking females.

Distribution of the sample according to the nature of disorders and period of infertility was shown in table 2. In a total of 635 infertile females chiefly, ovulation defects (50.07%) dominate over other disorders like tubal blocks (32.91%), small size uterus (13.70%) and hormonal deficiencies (3.31%). Percentage of all disorders was more in the initial period of infertility. Table 3 shows the relationship between the period of infertility with weight, height and the BMI. It is evident from the table that when the period of infertility increases, the mean weight increases, whereas the mean height decreases. It is clear from the table that when the

infertility period increases, BMI also increases. Higher percentage of females (52.445%) with BMI 26.45 ± 2.6 is present in 1-2 years of infertility period. In 15+ years of infertility period low percentage of females (3.94%) with BMI 35.40 ± 4.0 are present. Table 4 shows the distribution of the sample by period of infertility and educational levels in clinical population. From the table it is evident that as the period of infertility increases there is decreased levels in all the educational status is observed. Higher the educations better the completion of the investigation more than the rest. In the initial stages of infertility i.e. (1-2 years) more percentage (30.46%) of the participants was graduates.

The distribution of female infertility cases by rating (fig: 1) shows that are majority of female cases are normal, (65%) while 30% female cases need medical aid. The usual problems in female infertility are ovulation defect (10%) tubal blocks (10%), small size uterus (5%) and unexplained infertility (5%). Thus the remaining 5% cases are refractory in nature.

DISCUSSION

Infertility seems to be a multidimensional health issue which occurs not only due to health problems, but it may also be a result ovulation problems, tubal blockage, age-related factors, uterine problems, hormone imbalance and the choices imposed by the modern lifestyle, like the higher average age of people who get married, stress, non-conductive legal framework for assisted reproduction, etc. (Roupa et al., 2009). In this study we examined the female infertility in clinical population shows the treatment seeking, dropouts and lost of follow up patterns in relation with period of infertility. From this it is evident that the proportions of infertility affected females show decreasing (4.35%) trends as the female period of infertility increases (15+ years). The findings from other countries may suggest different etiological factors that the high dropout during the infertility management was common in other places also. Even when the expenses are covered by insurance companies (Jolande et al, 1997).

Ovarian dysfunction could be caused by weight loss and excessive weight gain with body mass index (BMI) greater than 27 kg/m^2 (Imani et al, 1998). Excess weight has also been found to have effect on treatment efficacy and outcomes of assisted reproductive technique. Estrogen is produced by the fat cells and primary sex organs and thus, state of high body fat or obesity causes increase in estrogen production which the body interprets as birth control, limiting the chances of getting pregnant (Wasiu Eniola et al., 2012). The present analyses indicate that the infertility has stronger association with body size especially with the period of infertility. Age factor plays an important role in female infertility, the longer the period of infertility the more the number of obese individuals. The results show that BMI greater than 29.5 is equally associated with an increased risk of infertility. These findings are in good agreement with other studies that high body fat or obesity causes menstrual dysfunction and subsequent infertility, increased risk of miscarriage and decreased effectiveness of ART, limiting the chances of getting pregnant (Pasquali, 2007; ASRM, 2009).

In the present study 53.45% ovulation defects and 58.85% tubal block cases are seen more in 1-2 year period of

infertility. Endometriosis is a non cancerous condition and may cause adhesions between, fallopian tubes thereby preventing the transfer of the egg to the tube thus causing infertility. The above evidence presented support with other findings that tubal and peritoneal factors of importance in infertility include endometriosis (Tomassetti et al, 2006).

Hormonal imbalance is an important cause of anovulation. Women with hormonal imbalance will not produce enough follicles to ensure the development of an ovule. In our study, 47.61% of hormonal deficiency cases in 1-2 year period of infertility were observed. A similar pattern has been reported in other studies that hormonal imbalance is an important cause of anovulation. Women with hormonal imbalance will not produce enough follicles to ensure the development of an ovule (Gohill et al., 2001). Besides this small size uterus with 41.37% in 3-4 years of infertility is noticed in our study. The same was reported by other studies that congenital abnormalities, such as septate uterus may lead to recurrent miscarriages or the inability to conceive (Rao, 1977). In the present study the investigation completion rate is shown to increase with the level of education, as the period of infertility increases there is decreased levels in all the educational status.

The same trend was observed in other studies that higher the educations better the completion of the investigation more than the rest (Tadesse Kitilla, 2000)

CONCLUSION

Maintaining a healthy lifestyle, getting regular checkups with the doctor and maintenance of normal body weight can avoid fertility problems. Identifying and controlling chronic diseases such as diabetes, hyperthyroidism and hypothyroidism increases fertility prospects. The need for health care should relate to the cultural realities of specific locations; where infertility is a pervasive and serious concern it should be addressed through health care programs. The medical and socio-economic support of infertile women is important requirements for resolving the problem. Female infertility can surely be treated with medicines, minor surgical operations, laparoscopic procedures, hormonal therapy and prevention of preconception failure. The review is helpful to all the scientific, medical researchers who can put efforts to put end to female infertility.

Table-1: Percentage distribution of the Female infertility sample in clinical population

Period of infertility (in Years)	Total No. of females in clinical population		No. of female dropouts		No. of females lost of follow-ups		No. of females seeking treatment	
	No	%	No	%	No	%	No	%
1-2	625	54.49	30	9.67	23	11.38	333	52.44
3-4	274	23.88	48	15.48	37	18.31	178	28.03
5-9	106	9.24	67	21.61	44	21.78	46	7.24
10-14	92	8.02	74	23.87	42	20.79	53	8.34
15+	50	4.35	91	29.35	56	27.72	25	3.93
Total	1147	99.99	310	99.98	202	99.98	635	99.98

Table-2: Distribution of the sample according to period of Infertility and nature of disorders

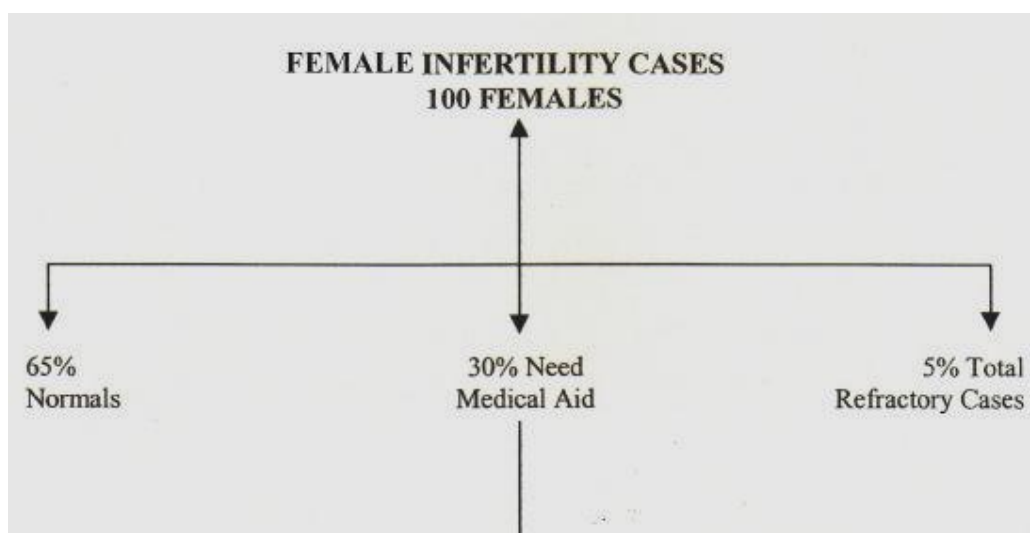
Period of Infertility (in Years)	Nature of Disorders							
	Ovulation Defect		Tubal Blocks		Small size Uterus		Hormonal deficiency & Others	
	No	%	No	%	No	%	No	%
1-2	170	53.45	123	58.85	30	34.48	10	47.61
3-4	90	28.30	50	23.92	36	41.37	2	9.52
5-9	19	5.97	16	7.65	9	10.34	2	9.52
10-14	25	7.86	15	7.17	8	9.19	5	23.81
15+	14	4.40	5	2.39	4	4.59	2	9.52
Total (635)	318	50.07	209	32.91	87	13.70	21	3.31

Table-3: Distribution of the sample by Mean weight, height and BMI of infertile females

Period of infertility (in years)	No of females		Mean Weight±S.D	Mean Height±S.D	BMI±S.D
	No	%			
1-2	333	52.44	62.5±6.1	153.7±9.4	26.45±2.6
3-4	178	28.03	68.0±7.3	153.3±10.0	28.93±3.1
5-9	46	7.24	73.5±5.7	152.5±8.7	31.60±2.4
10-14	53	8.35	79.5±5.9	151.9±9.1	34.46±3.7
15+	25	3.94	80.5±5.0	150.8±8.8	35.40±4.0

Table-4: Distribution of the sample by period of infertility and educational levels in clinical population

Period of infertility (in Years)	No .of females		Primary		Secondary		Graduates	
	No	%	No	%	No	%	No	%
1-2	309	48.66	9	13.84	261	59.05	39	30.46
3-4	171	26.92	21	32.30	90	20.36	60	46.87
5-9	63	9.92	11	16.92	39	8.82	13	10.15
10-14	60	9.44	14	21.53	36	8.14	10	7.81
15+	32	5.03	10	15.38	16	3.62	6	4.68
Total	635	99.97	65	99.97	442	99.99	128	99.97



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