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A Study on Demographic Status of *Ksheena Shukra* (Oligozoospermia) in Male Patients.

Devesh Jaiman,[1] HML Meena,[2] Bharat Kumar Padhar,[3] Rashmi Mutha,[4] Sunita Rawat,[5] Ranweer Singh Rajpurohit,[6] Parveen Sharma[7]

1. Assistant Professor, Baba Hira Das Ji Ayurvedic Medical College, Badal, Punjab.
2. Associate Professor, P. G. Dept. of Kayachikitsa, National Institute of Ayurveda, Deemed to be university, Jaipur.

3,4. Assistant Professor, P. G. Dept. of Kayachikitsa, National Institute of Ayurveda, Deemed to be university, Jaipur.

5. Medical Officer, Govt. Ayurvedic College, Pratap Nagar, Jaipur, Rajasthan

6,7 PG Scholar, P. G. Dept. of Kayachikitsa, National Institute of Ayurveda, Deemed to be university, Jaipur

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Corresponding author-
Devesh Jaiman, Assistant Professor, Baba Hira Das Ji Ayurvedic Medical College, Badal, Punjab. Email - djaiman764@gmail.com.

ABSTRACT:

Oligozoospermia contributes as the major factor of male infertility. Day by day drastic changes in activities like life style, sexual life, food habits, industrial and occupational hazards, environmental pollution have contributed to the increased incidence of Oligozoospermia. According to Ayurvedic classics, Oligozoospermia can be correlated with *Ksheena Shukra*. It was reported that 40 % of infertility cases related to men, 40 % related to women and 20 % related to both of sex. A male factor is present in the one half of infertile couples. The study was conducted on 60 diagnosed & confirmed patients of Oligozoospermia from OPD & IPD of NIA, Hospital, Jaipur. Maximum 56.67 % patients belonged to the age group of 21-35 years, 88.33 % patients were Hindu. 80 % of patients were married. 100 % of the patients had masturbation habit. 76.67% of the patients had masturbation habit before marriage. Maximum 40 % of the patient were having psychological factor like stress. 65 % of the patients reported to have moderate oligozoospermia i.e 6-10 million/ml. 85 % of the patients had primary infertility and 85 % of the patients had *Shrama Maithuna* (Exertion during intercourse).

Keywords– *Ksheena Shukra*, Oligozoospermia, Male infertility, *Shrama Maithuna*

INTRODUCTION

Oligozoospermia contributes as one of the major factors of male infertility. The drastic changes in day- to- day activities including lifestyle, food habits, sexual life, increase in environmental pollution, industrial and occupational hazards have contributed to the increased incidence of Oligozoospermia. Any abnormal changes in *Shukra dhatu*, provides results in failure of conception. According to modern science, the most common abnormality of sperm is Oligozoospermia (low count of sperm), Asthenozoospermia (reduced motility of sperm) & Teratozoospermia (an abnormal form of sperm).

Vajeekarana is a special branch of Ayurveda deals with the treatment of sexual dysfunction and infertility and to improve sexual performance and quality & quantity of *Retas* or semen. Various seminal abnormalities are responsible for male infertility like a reduced number of sperms, the reduced sperm motility and abnormal form of sperm etc. which are described in Ayurveda under eight types of *Retodushti*. Oligozoospermia one of the seminal abnormalities in which sperm count is reduced can be correlated with *Ksheena Shukra*, being the more prevalence in *Madhyama Vaya*, a disease from *Apana Vata* province, which incapacitates man from conceiving his life partner, ending in Infertility. It was reported that 40% of infertility cases were related to men, 40% to women, and 20% to both sexes.[1] Keeping this point in mind a case study was done on Oligozoospermia (*Ksheena Shukra*) discussed here.

AIMS AND OBJECTIVES

To study the demographic status of '*Ksheena Shukra'* (Oligozoospermia) in male patient

MATERIALS AND METHODS

The study was conducted on 60 clinically diagnosed & confirmed patients of Oligozoospermia from OPD & IPD of National Institute of Ayurveda, Hospital, Jaipur.

A. Study design:

The present study was;

Level of study **:** OPD/IPD

Interventional, Single Centre, Randomized comparative clinical

Method of Randomization **:** Computer generated randomization

Purpose **:** Treatment

Masking **:** Open-label

Timing **:** Prospective

Endpoint **:** Efficacy

Number of groups **:** 2

Number of patients **:** 60 (30 in each group)

Duration of study **:** 60 days

B. Randomization: It was done by computer generated randomization method. It was generated from www.randomization.com.

C. Ethical clearance:

This study was approved by the Institutional Ethical Committee (IEC) of the National Institute of Ayurveda, Jaipur vide letter no. IEC/ACA/2018/2/29; dated 12-11-2018, before starting the clinical trial on patients of *Ksheena Shukra* (Oligozoospermia).

D. CTRI registration:

The study has also been registered in CTRI (Clinical Trials Registry- India) (CTRI; www.ctri.nic.in) vide CTRI/2019/05/019101 on 14/05/2019.

E. Statistical analysis:

The **"Wilcoxon Signed Rank Test"** was used for all non-parametric data while **"Paired 't' test"** was used for parametric data to analyse the effect of individual therapy in both groups. For non-parametric data, **"Mann-Whitney Rank Sum Test"** was used while **"Unpaired 't' Test"** was used for parametric data to compare the effect of therapies in both groups.

RESULT

In this clinical study 60 patients were divided into two randomized groups and were treated with *Apatyakara Ghrita* and *Vrishya Shatavari Ghrita* followed by *Koshtha Shuddhi* with *Haritakyadi Churna* for duration of two months.

Status of registered patients: Total 60 male patients were registered for the study, 30 patients in Group A and 30 patients in Group B completed the treatment.

OBSERVATIONS- Table 1 Shows Observations of demographic study

DISCUSSION

Maximum of the 56.67% patients reported for the present clinical study belonged to the age group of 21-30 years who were married; which is decade for the beginning of marriage life and active reproductive life. This is because, most men faces vulnerable crisis of physical, mental as well as sexual at their midlife. Hence individuals unable to conceive report to the hospital for its proper diagnosis and management. Majority of the patients were reported from Hindu community (88.33%). From this data it cannot be inferred that the problem is more predominant among the Hindus as this was due to the geographical predominance of Hindu community in the area. Majority of the patients

50% had secondary education. Low educational standards lead to a number of myths and misconceptions regarding progeny which contributes to the problem. Majority of the patients 41.67% were factory labor. It is believed that the workers who are working in hot temperature zone are more prone to testicular hyperthermic changes. Further a decrease in sperm output in testicular hyperthermia has also been reported**.**[2] Majority of 80 % of patients were Married. So married person are more prone to this disease because mostly infertility is usually diagnosed after married life. Maximum 38.33% of patients were from lower middle class. The cause may be that, due to poverty patients cannot afford the cost of laboratory investigations and medicines in private hospitals so they select government institution for treatment. In lower middle class and middle class, malnutrition is there due to financial crises and illiteracy. *Alpaashan*a is believed to be responsible for *Ksheena Shukra*.[3] It is also noted that malnutrition causes hypogonadism and decreased function of Leydig cells due to reduced response of the male accessory organs to testosterone stimulation.[4] Maximum numbers of patients 50% were doing heavy physical exertion like a daily lifting of heavy weight or working under direct strong sun heat or furnace (50%). Classical references suggest that overworking is one of the factors of *Shukradushti*, which is supported by a study which reveals that prolonged strenuous physical exercise lowers the semen testosterone levels.[5] Maximum 65% of the patients were from urban life style, includes irregular eating and sleeping habit, lack of exercise, consumption of fast food, cold drinks etc. Urban Life is also associated with lots of mental stress, psychological insecurities; and exposure to many type of pollutions like air pollution, noise pollutions. All these are known to cause *Vataprakopa*,[6] which may lead to impairment of *Shukra*. Maximum 56.67% of the patients were having *Vishamagni*, probably because of comparative hyperactivity of *Vata* on *Agni*. It may leads to *Vata Prakopa* and vitiated *Agni* causing *Amotpatti*, ultimately improper formation of *Dhatu* causing *Shukra Kshaya*, which can also be correlated with vitiation of *Apana Vata*. Maximum 63.33 % of the patients had *Madhyama Koshtha* followed by 25% of patients had *Kroora Koshtha* and remaining 11.67 % of patients had *Mridu Koshtha.* Maximum 71.67 % of the patients were having *Vishamashana* food habits in leading improper formation of '*Rasa'* and subsequently irregular *Dhatu* metamorphosis. The data is also suggestive of the current trend of life style and food habits in present day life style. Maximum 70 % of the patients were vegetarians. All these factors may result into *Vata* and *Pitta Prakopa* which may directly or indirectly produce *Shukra Kshaya*. Maximum 51.67% and 15% patients had *Lavana* and *Katu Rasa* prominence diet respectively. In *Ayurvedic* classics, excessive intake of *Lavana, Amla* and *Kshara* are *Nidana* of *Shukravaha Srotasa*.[7] The study reports low sperm count in the low salt diet, increased abnormal sperm cells in low salt and high salt diet as well as oxidative stress in the epididymis of both low salt and high salt diet. These suggest that both high salt and low salt diet might play a negative role in the fertility of male rats.[8] Maximum 50 % of the patients were addicted to chewing tobacco followed by 20% having addiction of smoking tobacco. Excessive use of tobacco hampers the normal digestive pattern resulting into malnourish state ultimately resulting into oligozoospermia. A study of infertility evaluation of Indian man who was addicted to tobacco chewing has reported its use with decrease in sperm quality. The Study showed that nicotine caused degenerative changes in the seminiferous tubules, which was revealed by altered general tubular architecture, decreased thickness of the spermatogenic cell masses, Sertoli cell vacuolation and thickened basal lamina. Cigarette smoke has also effects on spermatogenesis which may be due to toxic substances in the cigarette or the histologic reactions due to hypoxemia induced by smoke.[9] This may be due to the properties of *Vyavayi* and *Vikasee Guna* of addicted drug, which causes the *Ojokshaya*.[10] Maximum 65 % of the patients had habit of hot water bath and habit of wearing tight undergarment pattern observed 68.33 %, Study have reported that regular use of hot bath or sauna bath as a cause of temporary infertility as it impairs spermatogenesis. All the factor like hot bath, exposure to excessive heat, use of synthetic and tight fitting garment which are associated with higher scrotal and testicular temperature hamper spermatogenesis ultimately causing oligozoospermia.[11] Maximum 55 % of the patients were having reduced and disturbed sleeping pattern. This may be due to the worry about the problem and is an indicator of vitiation of *Vata* and hampered function of *Shukra Dhatu*. Sleep curtailment has been shown to lead to reduced levels of circulating androgens in healthy men and male rodents, and this highlights the biological significance of sleep homeostasis for endocrine regulation.[12] Maximum 100 % of the patients had masturbation habit. 76.67% of the patients had masturbation habit before marriage where as 23.33 % were continuing it after marriage also. Maximum 40 % of the patient were having psychological factor like stress and 16.67% of patients were worried which factor have been

listed as cause of *Ajirna* and hampers metabolism, ultimately causing Oligozoospermia. Experimental studies show that there is suppression of hypothalamic testicular suppression due to stress which results in deranged spermatogenesis leading to oligozoospermia.[13] According to classics, *Chinta* (Stress/Anxiety neurosis), *Shoka* (depression), *Bhaya* (fear), *Avishwasha, Krodha* (jealous) and *Abhichara*[14] are mentioned as causative factors of *Shukra dosha* and *Shukravaha Srotodushti*. It is claimed that the mental stress constitutes the major part of unknown reasons leading to problems of infertility. Scientists suggest that, stress boost the level of stress hormones-glucocorticoids such as cortisol - that inhibits main sex hormone, gonadotropin releasing hormone (GnRH), and subsequently suppresses sperm count, ovulation and sexual activity. Maximum 55 % of the patients belonged to *Vata-Pittaja Prakriti*, followed by *Vata-Kaphaja Prakriti* (28.33%) and *Pitta-Kaphaja Prakriti* (16.67%). *Vata Prakriti purusha* will have *Alpa Santana*.[15] *Pitta Prakriti Purusha* will have *Alpa Shukra, Alpa Vyavaya Shakti* & will have *Alpa Santana* by virtue of *Katu-Amla Rasa* of *Pitta Dosha*.[16] Hence it may be inferred that either *Vata* or *Pitta* association in *Shareera Prakriti* may make more susceptible the person for *Ksheena Shukra*. *Ksheena Shukra* is also *Vata* and *Pitta Janya Vyadhi*. So on consumption of *Apathya*, it will easily lead to formation of pathology in that person. The selected individuals were predominantly belonging to *Madhyama Pramana* 68.33%, *Madhyama Samhanana* 71.67%, *Madhyama Satmya* 76.67% and *Madhyama Vyayama Shakti* 73.33 %. The *Abhyavaharana Shakti* of the patients was *Madhyama* in majority 70% and *Jarana Shakti* was also *Madhyama* 81.67%. Maximum 93.33 % of the patients had involvement of *Shukravaha Srotas*. This supports the classical statement that this condition arises by effect on bother all the *Dhatus* along with *Shukra Dhatu* resulting due to *Dhatwagni Mandya* occurring due to the *Uttarottara Dhatu Poshana* leading to *Ksheena Shukra.*[17] Maximum 65 % of the patients reported to have moderate oligozoospermia i.e 6-10 million/ml. 21.67 % of the patients revealed to hence severe oligozoospermia i.e 0-5 million/ml and remaining 13.33 % of the patients reported mild oligozoospermia i.e 11-15 million/ml. These details suggest that the level of semenogram in registered patients was towards mild oligozoospermia.[18] Maximum 85 % of the patients had primary infertility while 15 % of the patients had secondary infertility. Primary infertility was reported from 1-3 years duration in 33.33 % patients, 4-6 years in 30 % patients, 7-10 years duration in 15 % patients and more than 10 years in 6.67 % patients. Whereas secondary infertility was reported between 1-3 years duration in 10 % patients, 4-6 years in 2 % patients. After unsuccessful attempts, most secondary infertile patients drop the intention to have next child due to expenses and availability of time. Primary infertile patients repeatedly visit different hospitals in the hope of child. In a study conducted in India revealed that 75 % of couples had duration of infertility of more than two years prior to embarking on investigations. Maximum 85 % of the patients had *Shrama Maithuna* (Exertion during intercourse) followed by 80 % of patients had *Alpa Cheshtata* (Less motivation), 78.33 % of patients had *Alpa Shukra Pravriti* (Low semen volume), 76.67 % of patients had premature ejaculation, 71.67 % of patients had loss of sexual desire, 55 % of patients had *Sandhi Shula* (Joint pain), 18.33 % of patients had *Sadana* (Lethargy), 11.67 % of patients had *Pandu* (Anaemia) and remaining 8.33 % of patients had *Bhrama* (Giddiness) symptom. These all symptoms have been mentioned by *Charaka* as *Shukra Dushti Lakshana*. Hence it is very clear that *Ksheena Shukra* (oligozoospermia) is a disease resulting out of *Shukravaha Srotodushti*, but due to selective defect in the number of sperm, a component of *Shukra dhatu* results predominantly in the form of infertility.

CONCLUSION

Findings of present clinical study reveal that, *Vishamashana*, *Vishamagni*, Excessive intake of *Lavana*, *Amla*, *Kshara*, chewing tobacco, Sleep curtailment, masturbation habit hot water bath, use of synthetic and tight fitting garment, exposure to excessive heat and psychological disturbances are the prime causative factors of *Ksheena Shukra*. Hence an attempt has been made in this demographic study to look for the status of *Ksheena Shukra* (oligozoospermia) in male patients in OPD & IPD of PG Department of Kayachikitsa, NIA, Jaipur.

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ORCID
Devesh Jaiman, https://orcid.org/0000-0002-9185-9683

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Table 1 Shows Observations of demographic study

S. No.	Features	Classification	No. of Subjects in Group-A (N=30)		No. ofY Subjects in Group-B (N=30)		Total No. of Subjects (N=60)	
			No.	%	No.	%	No.	%
1.	Age (Years)	21-30	18	60	16	53.33	34	56.67
		31-40	11	36.67	12	40	23	38.33
		41-50	01	3.33	02	6.67	03	5
2.	Religion	Hindu	26	86.67	27	90	53	88.33
		Muslim	04	13.33	03	10	07	11.67
3.	Education	Illiterate	00	00	00	00	00	00
		Primary	04	13.33	05	16.67	09	15
		Secondary	16	53.33	14	46.67	30	50
		Higher Secondary	08	26.67	06	20	14	23.33
		Graduate	02	6.67	05	16.67	07	11.67
4.	Occupation	Serviceman	09	30	08	26.67	17	28.33
		Factory Labor	14	46.67	11	36.67	25	41.67
		Businessman	05	16.67	06	20	11	18.33
		Farmer	02	6.67	05	16.67	07	11.67
5.	Marital Status	Married	25	83.33	23	76.67	48	80
		Unmarried	05	16.67	07	23.33	12	20
6.	Socio-Economic Status	Poor	04	13.33	07	23.33	11	18.33
		Lower Middle	11	36.67	12	40	23	38.33
		Middle	13	43.33	08	26.67	21	35
		Upper Middle	02	6.67	03	10	05	8.33
7.	Habitat	Rural	09	30	12	40	21	35
		Urban	21	70	18	60	39	65
8.	*Desha*	*Jangala*	14	46.67	13	43.33	27	45
		Anoopa	00	00	00	00	00	00
		Sadharana	16	53.33	17	56.67	33	55
9.	Type of Infertility	Primary	27	90	24	80	51	85
		Secondary	06	20	03	10	09	15
10.	Hygiene of Partner	Healthy	26	86.67	28	93.33	54	90
		Poor	04	13.33	02	6.67	06	10

11.	*Agni*	*Sama*	00	00	00	00	00	00
		Vishama	18	60	16	53.33	34	56.67
		Teekshna	09	30	07	23.33	16	26.67
		Manda	03	10	07	23.33	10	16.67
12.	*Koshtha*	*Mridu*	04	13.33	03	10	07	11.67
		Madhyama	17	56.67	21	70	38	63.33
		Kroora	09	30	06	20	15	25
13.	Diet	Vegetarian	22	73.33	20	66.67	42	70
		Mixed	08	26.67	10	33.33	18	30
14.	Food habit	*Samashana*	03	10	01	3.33	04	6.67
		Vishamashana	22	73.33	21	70	43	71.67
		Adhyashana	03	10	02	6.67	05	8.33
		Viruddhashana	02	6.67	06	20	08	13.33
15.	Predominance of *Rasa*	*Madhura*	05	16.67	03	10	08	13.33
		Amla	02	6.67	03	10	05	8.33
		Lavana	17	56.67	14	46.67	31	51.67
		Katu	04	13.33	05	16.67	09	15
		Tikta	02	6.67	02	6.67	04	6.67
		Kashaya	01	3.33	02	6.67	03	5
16.	Exercise	No	07	23.33	03	10	10	16.67
		Heavy	14	46.67	09	30	23	38.33
		Light	05	16.67	13	43.33	18	30
		Regular	02	6.67	01	3.33	03	5
		Irregular	02	6.67	04	13.33	06	10
17.	Addiction	Chewing tobacco	16	53.33	14	46.67	30	50
		Smoking tobacco	05	16.67	07	23.33	12	20
		Alcohol	03	10	05	16.67	08	13.33
		No addiction	06	20	04	13.33	10	16.67
18.	Bath habit	By cold water	11	36.67	10	33.33	21	35
		By hot water	19	63.33	20	66.67	39	65
19.	Nature of underwear worn	Tight	19	63.33	22	73.33	41	68.33
		Loose	11	36.67	08	26.67	19	31.67
20.	Type of undergarments worn	Cotton	25	83.33	23	76.67	48	80
		Synthetic	05	16.67	07	23.33	12	20
21.	Sleep habit	Sound	10	33.33	08	26.67	18	30
		Disturbed	17	56.67	16	53.33	33	55

		Delayed	03	10	06	20	09	15
22.	Duration of Night Sleep	Less than 6 Hrs	08	26.67	09	30	17	28.33
		6-8 Hrs	17	56.67	18	60	35	58.33
		More than 8 Hrs	05	16.67	03	10	08	13.33
23.	Defecation habit	Regular	09	30	07	23.33	16	26.67
		Irregular	15	50	18	60	33	55
		Loose motion	00	00	00	00	00	
		Constipation	06	20	05	16.67	11	18.33
24.	Masturbation Habit	Yes	30	100	30	100	60	100
		No	00	00	00	00	00	00
		Before marriage	22	73.33	24	80	46	76.67
		Continuing	08	26.67	06	20	14	23.33
25.	Secondary sexual character	Well Developed	30	100	30	100	60	100
		Moderately Developed	00	00	00	00	00	00
26.	Foreplay habit	Yes	25	83.33	27	90	52	86.67
		No	05	16.67	03	10	08	13.33
27.	Duration of foreplay	No	06	20	08	26.67	14	23.33
		< 5 minutes	08	26.67	10	33.33	18	30
		5-10 minutes	14	46.67	11	36.67	25	41.67
		10-30 minutes	02	6.67	01	3.33	03	5
		> 30 minutes	00	00	00	00	00	
28.	Psychological status	Stress	14	46.67	10	33.33	24	40
		Fear	02	6.67	01	3.33	03	5
		Anger	10	33.33	13	43.33	23	38.33
		Worry	04	13.33	06	20	10	16.67
29.	Exertion	Mild	10	33.33	12	40	22	36.67
		Moderate	19	63.33	16	53.33	35	58.33
		Severe	01	3.33	02	6.67	03	5
30.	Nature of Work	Mental exertion	09	30	12	40	21	35
		Physical exertion	16	53.33	14	46.67	30	50
		Both Mental-Physical	05	16.67	04	13.33	09	15
31.	Working condition	Normal	08	26.67	05	16.67	13	21.67
		Air conditioner	04	13.33	04	13.33	08	13.33
		Under Sunlight	14	46.67	16	53.33	30	50
		Near furnace	04	13.33	05	16.67	09	15
32.	Age of marriage	16-20 Years	01	3.33	03	10	04	6.67

		21-25 Years	18	60	15	50	33	55
		26- 30 Years	05	16.67	03	10	08	13.33
		>30 Years	01	3.33	02	6.67	03	5
		Unmarried	05	16.67	07	23.33	12	20
33.	*Dehaprakriti*	*Vatapittaja*	18	60	15	50	33	55
		Vatakaphaja	08	26.67	09	30	17	28.33
		Pittakaphaja	04	13.33	06	20	10	16.67
34.	*Saara*	*Pravara*	04	13.33	03	10	07	11.67
		Madhyama	23	76.67	22	73.33	45	75
		Avara	03	10	05	16.67	08	13.33
35.	*Samhanana*	*Pravara*	02	6.67	05	16.67	07	11.67
		Madhyama	22	73.33	21	70	43	71.67
		Avara	06	20	04	13.33	10	16.67
36.	*Pramana*	*Pramana*	03	10	05	16.67	08	13.33
		Pramana	22	73.33	19	63.33	41	68.33
		Pramana	05	16.67	06	20	11	18.33
37.	*Satmya*	*Pravara*	03	10	02	6.67	05	8.33
		Madhyama	21	70	25	83.33	46	76.67
		Avara	06	20	03	10	09	15
38.	*Satva*	*Pravara*	02	6.67	03	10	05	8.33
		Madhyama	20	66.67	18	60	38	63.33
		Avara	08	26.67	09	30	17	28.33
39.	*Ahara Shakti*	*Pravara*	03	10	05	16.67	08	13.33
		Madhyama	23	76.67	19	63.33	42	70
		Avara	04	13.33	06	20	10	16.67
40.	*Jarana Shakti*	*Pravara*	02	6.67	04	13.33	06	10
		Madhyama	26	86.67	23	76.67	49	81.67
		Avara	02	6.67	03	10	05	8.33
41.	*Vyayama Shakti*	*Pravara*	05	16.67	05	16.67	10	16.67
		Madhyama	23	76.67	21	70	44	73.33
		Avara	02	6.67	04	13.33	06	10
42.	*Srotodushti*	*Rasavaha*	27	90	24	80	51	85
		Purishvaha	10	33.33	13	43.33	23	38.33
		Mutravaha	07	23.33	05	16.67	12	20
		Shukrava	28	93.33	28	93.33	56	93.33
43.	Sperm Count	0-5 Million	07	23.33	06	20	13	21.67

		6-10 Million	20	66.67	19	63.33	39	65
		11-15 million	03	10	05	16.67	08	13.33
44.	Chronicity	Primary Infertility – 51 Patients						
		1-3 year	11		09		20	33.33
		4-6 year	09		09		18	30
		7-10 year	05		04		09	15
		>10 year	02		02		04	6.67
		Secondary infertility - 9 patient						
		1-3 year	04		02		06	10
		4-6 year	02		01		03	5
45.	Associated symptoms	*Alpa Shukra Pravriti* (Low semen volume)	25		22		47	78.33
		Bhrama (Giddiness)	02		03		05	8.33
		Pandu (Anaemia)	04		03		07	11.67
		Sadana (Lethargy)	07		04		11	18.33
		Sandhi Shula (Joint pain)	18		15		33	55
		Shrama Maithuna (Exertion during intercourse)	28		23		51	85
		Alpa Cheshtata (Less motivation)	25		23		48	80
		Loss of Sexual desire	23		20		43	71.67
		Premature ejaculation	24		22		46	76.67