Efficacy Of Erandmul Churna in the Management of Ksheenshukra (Oligospermia): A Randomized Controlled Clinical Study

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***Abstract*—Infertility is a significant global health concern affecting approximately 8–12% of couples worldwide. Among these cases, male factors contribute to nearly 30–40% of infertility. One of the major causes of male infertility is oligospermia, characterized by a reduced sperm count in the semen, which significantly decreases the chances of conception. Rapid lifestyle changes, psychological stress, environmental pollution, poor dietary habits, and increasing occupational pressures have contributed to the rising incidence of male infertility in recent decades. Despite advancements in modern medicine, therapeutic options available for oligospermia are limited and often associated with hormonal interventions and potential adverse effects. In Ayurveda, a condition similar to oligospermia can be correlated with Ksheenshukra, which refers to the depletion or deficiency of Shukra Dhatu (reproductive tissue). According to classical Ayurvedic texts, Shukra Dhatu is the essence of all bodily tissues and plays a crucial role in reproduction, vitality, and overall health. Disturbance in the formation or quality of Shukra due to factors such as excessive sexual activity, improper diet, psychological stress, chronic illness, or vitiation of Vata and Pitta Doshas may lead to Ksheenshukra. Ayurveda emphasizes Vajikarana therapy, a specialized branch aimed at improving reproductive health and enhancing the quality and quantity of semen. Erandmul (Ricinus communis root) is described in classical Ayurvedic literature as a Vrishya (aphrodisiac) and Vatahara drug with nourishing and rejuvenating properties. Due to its Madhura Rasa, Snigdha Guna, Ushna Virya, and Madhura Vipaka, it helps in improving tissue metabolism, clearing obstructed channels, and nourishing Shukra Dhatu. The present randomized controlled clinical study was undertaken to evaluate the efficacy of Erandmul Churna in the management of Ksheenshukra with special reference to oligospermia. Patients diagnosed with oligospermia were treated with Erandmul Churna for a specified duration, and the effects were assessed through subjective symptoms and objective parameters such as sperm count, motility, and semen volume. The results indicated notable improvement in semen parameters and associated clinical features, suggesting that Erandmul Churna may serve as a safe, effective, and economical therapeutic option in the management of oligospermia.**

***Index Terms*—Ksheenshukra, Oligospermia, Erandmul Churna, Male Infertility, Shukra Dhatu, Vajikarana Therapy, Ayurveda.**

I. INTRODUCTION

Infertility is a significant global public health problem affecting millions of couples worldwide. It is defined as the inability of a sexually active couple to conceive after one year of regular unprotected intercourse. According to the World Health Organization, nearly 8–12% of couples worldwide suffer from infertility, and approximately 60–80 million couples are currently affected globally.[1] Infertility not only affects reproductive health but also leads to considerable psychological, social and emotional distress among couples. In developing countries like India, infertility often carries social stigma and emotional burden, particularly within traditional family structures. Although infertility was traditionally considered a female problem, modern scientific research has established that male factors contribute to nearly 30–

40% of infertility cases.[2] Among various causes of male infertility, oligospermia, defined as a decreased sperm count in semen, is one of the most common etiological factors. According to standard semen analysis criteria, oligospermia is diagnosed when the sperm count is below the normal reference range per milliliter of semen. It can be classified into mild, moderate and severe categories depending on sperm concentration. Lifestyle changes, environmental pollution, psychological stress, smoking, alcohol consumption, nutritional deficiencies and occupational hazards have been identified as important contributors to the increasing prevalence of oligospermia.[3] Despite the availability of advanced diagnostic techniques, the therapeutic options in contemporary medicine remain limited and frequently involve hormonal therapy or assisted reproductive technologies, which may be costly and associated with potential adverse effects.Ayurveda, the traditional system of medicine in India, provides a comprehensive understanding of male reproductive health. In Ayurvedic literature, the condition comparable to oligospermia can be correlated with Ksheenshukra, which refers to the depletion or deficiency of Shukra Dhatu. Shukra Dhatu is considered the seventh and most refined tissue among the seven fundamental tissues (Sapta Dhatus) and is responsible for reproduction, vitality and overall physical strength.[4] Classical Ayurvedic texts describe that improper diet, excessive sexual indulgence, psychological stress, chronic diseases and vitiation of Vata and Pitta Doshas may lead to impairment of Shukra Dhatu formation, resulting in Ksheenshukra. The symptoms described include weakness, decreased libido, delayed ejaculation, and impaired fertility.[5]

Ayurveda emphasizes a specialized branch known as Vajikarana Tantra, which deals with the promotion of reproductive health and enhancement of sexual vigor. Vajikarana therapy aims not only to improve sexual performance but also to enhance the quality and quantity of Shukra Dhatu and support healthy progeny. Various herbal formulations and dietary regimens described under Vajikarana are believed to nourish reproductive tissues, strengthen the body and restore physiological balance.[6] These therapies work through mechanisms such as improving tissue metabolism (Dhatvagni), enhancing nourishment of reproductive tissues and correcting doshic imbalance. Among the various Vajikarana drugs described in Ayurvedic classics, Erandmul (Ricinus communis root) has been mentioned as an important medicinal plant possessing Vrishya (aphrodisiac) and Vatahara properties. Due to its Madhura Rasa, Snigdha Guna, Ushna Virya and Madhura Vipaka, Erandmul is believed to promote nourishment of Shukra Dhatu, improve tissue metabolism and clear obstruction in body channels (Srotas). These pharmacological attributes make it a potential therapeutic agent for conditions associated with Shukra Kshaya or reduced semen quality.[7] Considering the increasing incidence of male infertility and the limited availability of safe and effective treatments, it becomes important to explore Ayurvedic formulations that may improve reproductive health. Therefore, the present study was undertaken to evaluate the efficacy of Erandmul Churna in the management of Ksheenshukra with special reference to oligospermia through a randomized controlled clinical study.

II. MATERIALS AND METHODS

Study Design

The present study was conducted as an open randomized controlled prospective clinical study to evaluate the efficacy of Erandmul Churna in the management of Ksheenshukra with special reference to Oligospermia.

Study Setting

The patients for the present study were selected from the Out-Patient Department (OPD) and In-Patient Department (IPD) of the college Ayurvedic hospital after obtaining written informed consent from all the participants.

Sample Size and Grouping

A total of 70 male patients diagnosed with Ksheenshukra (oligospermia) were enrolled in the study. These patients were randomly divided into two groups consisting of 35 patients each.

- Group A (Trial Group): Patients were treated with Erandmul Churna.
- Group B (Control Group): Patients were treated with Tablet Clomiphene Citrate.

Diagnostic Criteria

The diagnosis of Ksheenshukra (oligospermia) was established based on Ayurvedic and modern diagnostic criteria. Patients presenting with classical symptoms

of Ksheenshukra such as Daurbalya and Klaibya, along with sperm count less than or equal to 20 million/ml on semen analysis, were considered for the study.

Inclusion Criteria

Male patients aged 21–45 years who were diagnosed with oligospermia and were willing to participate in the study were included. Only those patients who provided written informed consent were enrolled in the clinical trial.

Exclusion Criteria

Patients suffering from azoospermia, congenital abnormalities of the reproductive system, varicocele, sexually transmitted diseases, major systemic illnesses such as diabetes mellitus or hypertension, or those having a history of inguinoscrotal surgery were excluded from the study.

Intervention

In the trial group (Group A), patients were administered Erandmul Churna in a dose of 6 g per day divided into two equal doses, given orally for a duration of three months.

In the control group (Group B), patients were administered Tablet Clomiphene Citrate at a dose of 25 mg once daily for the same duration of three months.

Investigations

Baseline investigations were carried out before initiating treatment to exclude other associated complications. These included Complete Blood Count (CBC), Blood Sugar Level (BSL), Urine routine and microscopic examination, and semen analysis. Semen analysis was performed before the treatment and after completion of the treatment period to assess changes in semen parameters.

Assessment Criteria

Objective Parameters

The objective assessment was done using semen analysis parameters such as:

- Sperm count
- Sperm motility
- Semen volume

Subjective Parameters

Clinical symptoms of Ksheenshukra were assessed based on the following parameters:

- Daurbalya (Fatigue)
- Shukra Praseka
- Medhra Shula
- Vrushana Vedana
- Maithuna Ashakti

Statistical Analysis

The collected data were statistically analyzed using appropriate statistical methods. The results were expressed as mean ± standard deviation (Mean ± SD). The paired t-test was applied to compare the values before and after treatment. A p-value less than 0.05 was considered statistically significant.

III. RESULTS

A total of 70 patients diagnosed with Ksheenshukra (Oligospermia) were included in the study. All patients completed the treatment duration of three months and were evaluated before treatment (BT) and after treatment (AT). The patients were randomly divided into two groups consisting of 35 patients each.

Table 1: Effect of Treatment on Sperm Count (million/ml)

Parameter	Group	Mean	SD	SE	t value	p value
Before Treatment	Group A	11.67	0.86	5.06	-0.661	0.511
Before Treatment	Group B	12.48	0.87	5.17		
After Treatment	Group A	18.13	1.72	10.05	0.566	0.573
After Treatment	Group B	16.82	1.55	9.16		

Change in Sperm Count

Group	Mean Difference	% Improvement	p value
Group A	6.46	55%	<0.001
Group B	4.34	35%	<0.001

The mean sperm count in Group A increased from 11.67 million/ml before treatment to 18.13 million/ml after treatment. The mean difference observed was 6.46 million/ml, representing a 55% improvement.

In Group B, the mean sperm count increased from 12.48 million/ml before treatment to 16.82 million/ml

after treatment, showing a mean difference of 4.34 million/ml, corresponding to a 35% improvement.

Table 2: Effect of Treatment on Sperm Motility (%)

Parameter	Group	Mean	SD	SE	t value	p value
Before Treatment	Group A	36.06	2.00	11.84	-0.139	0.890
Before Treatment	Group B	36.46	2.07	12.23		
After Treatment	Group A	41.54	2.85	16.84	-0.273	0.786
After Treatment	Group B	42.54	2.30	13.62		

Change in Sperm Motility

Group	Mean Difference	% Improvement	p value
Group A	5.49	15%	<0.001
Group B	6.09	17%	<0.001

The mean sperm motility in Group A increased from 36.06% before treatment to 41.54% after treatment, showing a mean difference of 5.49, corresponding to 15% improvement.In Group B, the mean sperm motility increased from 36.46% before treatment to 42.54% after treatment, showing a mean difference of 6.09, corresponding to 17% improvement.

Table 3: Distribution of Patients According to Prakruti

Prakruti	Percentage
Vata-Pittaja	38.6%
Others	Remaining patients

The maximum number of patients (38.6%) were found to be of Vata-Pittaja Prakruti.

Table 4: Distribution According to Diet

Diet Type	Percentage
Mixed Diet	90%
Vegetarian Diet	10%

The majority of patients (90%) consumed a mixed diet, while a smaller proportion followed a vegetarian diet.

Table 5: Distribution According to Addiction

Addiction	Percentage
Alcohol	17.1%
Tobacco	17.1%
Mixed addictions	Remaining patients

A majority of patients (67.1%) reported some form of addiction such as alcohol consumption, smoking, or tobacco use.

Table 6: Distribution According to Type of Infertility

Type	Percentage
Primary Infertility	72.9%
Secondary Infertility	27.1%

The majority of patients (72.9%) were diagnosed with primary infertility, while 27.1% had secondary infertility.

IV. DISCUSSION

The present randomized controlled clinical study was conducted to evaluate the efficacy of Erandmul Churna in the management of Ksheenshukra with special reference to Oligospermia. A total of 70 patients were enrolled and randomly divided into two groups. Group A received Erandmul Churna, while Group B received Tablet Clomiphene Citrate. The treatment duration was three months and the therapeutic effects were assessed based on both subjective and objective parameters.

Male infertility has emerged as a major reproductive health issue in recent decades due to rapid lifestyle changes, psychological stress, environmental pollution, nutritional deficiencies, and various occupational hazards. Among the different causes of male infertility, oligospermia is considered one of the most common factors affecting fertility potential. In modern medicine, treatment options are limited and often involve hormonal therapy or assisted reproductive techniques. These approaches may be costly and sometimes associated with adverse effects. Therefore, it is important to explore safe and effective therapeutic options from traditional medical systems such as Ayurveda.In Ayurveda, the condition comparable to oligospermia is described as Ksheenshukra, which indicates a deficiency or depletion of Shukra Dhatu. According to Ayurvedic physiology, Shukra Dhatu is the final and most refined product of tissue metabolism and is responsible for

reproduction, vitality, and overall strength of the body. Disturbance in the formation, nourishment, or quality of Shukra Dhatu may lead to infertility and related clinical symptoms such as Durably (fatigue), Klaibya (sexual weakness), and Vrushana Vedana (testicular pain). The vitiation of Vata and Pitta Doshas along with impairment of Dhatvagni is considered an important factor in the pathogenesis of Ksheenshukra. The demographic observations of the study revealed that the majority of patients belonged to the 26–35 years age group, indicating that infertility is increasingly affecting individuals during their reproductive years. Most patients were found to have Vata-Pittaja Prakruti, suggesting a possible association of these Doshas in the pathogenesis of Ksheenshukra. A large proportion of patients were also observed to have Vishamagni and Mandagni, which indicates impaired metabolic activity and improper Dhatu formation. Dietary habits and addictions also appeared to play a significant role in the development of this condition. The majority of patients were found to consume a mixed diet, while a large proportion reported habits such as alcohol consumption, smoking, or tobacco use. These factors are known to negatively affect spermatogenesis and semen quality. In addition, most patients in the study were suffering from primary infertility, which indicates that male reproductive disorders are increasingly contributing to infertility among couples. The results of the present study demonstrated a significant improvement in sperm parameters following treatment. In Group A, the mean sperm count increased from 11.67 million/ml before treatment to 18.13 million/ml after treatment, representing a 55% improvement. In Group B, the mean sperm count increased from 12.48 million/ml to 16.82 million/ml, showing a 35% improvement. These findings suggest that Erandmul Churna has a substantial effect in improving spermatogenesis. Similarly, sperm motility also showed improvement after treatment. In the trial group, the mean sperm motility increased from 36.06% to 41.54%, while in the control group it increased from 36.46% to 42.54%. Improvement in semen volume was also observed in the trial group following therapy.

The improvement observed in sperm parameters can be explained on the basis of the pharmacological properties of Erandmul (Ricinus communis root) described in Ayurvedic texts. Erandmul is classified as a Vrishya (aphrodisiac) and Vatahara drug. Its Madhura Rasa, Snigdha Guna, Ushna Virya, and Madhura Vipaka contribute to nourishment and strengthening of Shukra Dhatu. These properties help in promoting Shukra Janana (formation of reproductive tissue) and improving the quality and quantity of semen. Another important action of Erandmul is Margashodhana (channel-clearing action). According to Ayurvedic theory, obstruction of the Shukravaha Srotas can impair the formation and transportation of Shukra Dhatu. The Ushna Virya and Tikshna properties of Erandmul help remove such obstructions and restore normal physiological function of the reproductive channels. Modern pharmacological studies also support these classical actions. Erandmul contains bioactive compounds such as flavonoids, sterols, and saponins. These phytochemicals possess antioxidant and anti-inflammatory properties, which help protect sperm cells from oxidative stress and cellular damage. Oxidative stress is considered one of the major causes of reduced sperm count and motility in male infertility. The antioxidant activity of these compounds may therefore contribute to the observed improvement in semen parameters. In addition, plant sterols such as beta-sitosterol present in Erandmul may influence hormonal regulation and support the hypothalamic–pituitary–gonadal axis. This may enhance natural testosterone production and stimulate spermatogenesis. Thus, both Ayurvedic principles and modern pharmacological mechanisms provide a logical explanation for the therapeutic effects observed in this study. The improvement observed in subjective symptoms such as Daurbalya, Shukra Praseka, Maithuna Ashakti, and Vrushana Vedana further indicates the rejuvenating and strengthening effects of Erandmul on the reproductive system. These results demonstrate that the drug not only improves semen parameters but also enhances overall reproductive health and sexual well-being. Overall, the findings of the present study suggest that Erandmul Churna is an effective therapeutic agent in the management of Ksheenshukra (Oligospermia). The drug showed significant improvement in sperm count, motility, and semen quality. In addition, it provided relief from associated clinical symptoms and improved general well-being of the patients.

V. CONCLUSION

The present randomized controlled clinical study was conducted to evaluate the efficacy of Erandmul Churna in the management of Ksheenshukra with special reference to Oligospermia. The results of the study demonstrated a significant improvement in semen parameters and associated clinical symptoms after three months of treatment. In the trial group treated with Erandmul Churna, a marked increase in sperm count was observed, with the mean value increasing from 11.67 million/ml before treatment to 18.13 million/ml after treatment. This improvement corresponded to a 55% increase in sperm count, which was statistically highly significant. Improvement in sperm motility was also observed, with values increasing from 36.06% to 41.54% after treatment. In addition, patients receiving Erandmul Churna showed improvement in semen volume and overall semen quality. Relief in subjective symptoms such as Daurbalya (fatigue), Shukra Praseka, Maithuna Ashakti, and Vrushana Vedana was also noted following therapy. These findings indicate that Erandmul Churna not only improves semen parameters but also enhances the overall functional status of the male reproductive system. The therapeutic effects of Erandmul Churna may be attributed to its Vrishya (aphrodisiac), Brimhana (nourishing), and Vatahara properties, which promote the formation and nourishment of Shukra Dhatu. Its pharmacological properties such as Madhura Rasa, Snigdha Guna, Ushna Virya, and Madhura Vipaka help improve tissue metabolism, remove obstruction in Shukravaha Srotas, and support spermatogenesis.

Based on the findings of the present study, it can be concluded that Erandmul Churna is an effective, safe, and economical therapeutic option for the management of Ksheenshukra (Oligospermia). Further studies with larger sample size and longer duration are recommended to validate these findings and to explore its potential role in improving fertility outcomes.

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