

Efficacy of *Chimaphila Umbellata* in the Treatment of Urinary Tract Infections in Adolescent Girls - A Single-Blind Randomized Control Study

Kunsoth Jyothi¹, Dr. Siddesha G², Dr. Justina M. Steefan³

¹Intern, ^{2,3} Assistant Professor, Department of Psychiatry, MNR Homoeopathic Medical College and Hospital, Sangareddy, Telangana, India

Corresponding Author: Dr. Siddesha. G

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ABSTRACT

Background: *Chimaphila Umbellata* plays a key role in treating urinary tract infections in adolescent girls. Various factors influence the urinary tract infections like intake of birth control medicines, excessive sexual activity, and lack of personal hygiene. The current single-blinded randomized study was designed to know the effectiveness of *Chimaphila Umbellata* in adolescent girls of the age group 13 to 25 years. It was found that out of 30 cases most of the cases were found among the 14 years of age group. After the intervention with *Chimaphila Umbellata*, the intensity of clinical manifestations like pain, burning, and itching was reduced. The VAS score was statically evaluated and then concluded that *Chimaphila Umbellata* has a tremendous effect in treating urinary tract infections in adolescent girls.

Keywords: Urinary tract infection, *Chimaphila Umbellata*, adolescent girls, VAS scale, Homoeopathy, Single Blind RCT

INTRODUCTION

Urinary tract infection (UTI) is a common, distressing, and sometimes it is life-threatening condition. UTI can be defined as a condition in which bacteria enter, persist, and multiply inside the urinary tract. The clinical features, diagnosis, treatment, issues, and long-term sequelae rely on the site of the contamination and the presence of any structural abnormality. The infection is typically caused by gram-negative

bacteria such as *Escherichia coli*, *Klebsiella*, *Enterobacter*, *Pseudomonas*, and *Proteus*. Fastidious organisms, anaerobic microorganisms and fungi like *Candida* may occasionally be responsible for hospital acquired UTIs. The presence of predisposing factors renders the host prone to cause UTI. In addition, bacterial virulence elements extend the possibilities of establishing infection. ⁽¹⁾

LITERATURE REVIEW

Definition of UTI

UTI was defined as equal or more than 10³ cfu/ml of an uropathogen in midstream urine culture from a woman experiencing symptoms of cystitis UTI. ⁽²⁾

Prevalence rates of UTI varied different factors such as age, gender, race, circumcision status, menopause etc. Uncircumcised male infants less than 3 months of age and females less than 12 months of age had the highest baseline prevalence of UTI among the paediatric group. ⁽³⁾

The incidence of UTI is 0.5 to 0.7 episodes per year in women of whom 25% of them have recurrences. It might also appear as acute or recurrent cystitis, acute pyelonephritis, recurrent, relapsing, or complicated pyelonephritis or asymptomatic bacteriuria. ⁽¹⁾ The causes for UTIs differ in children and adults mainly due to biological variations like bacterial flora or sexual

activity. ⁽³⁾ When compared to males, UTI because of their short urethra. females are having higher chances of getting

HOST FACTORS PREDISPOSING TO URINARY TRACT INFECTION ⁽¹⁾

HOST FACTORS	
Anatomical Factors	Posterior urethral valve, vesico-ureteric reflux, Urethral stricture
Functional Factors	Neurogenic bladder, Diabetes mellitus, Immunosuppression (post-transplant), Calculi, Congenital abnormalities, foreign bodies: catheters, stents, In Females: Post-menopausal state (oestrogen deficiency), Voiding habits, Spermicidal jelly, Vaginal douching
Lifestyle Risk Factors ⁽⁴⁾	Sexual Activity, Birth control medication
Personal Hygiene Causing UTI ⁽⁴⁾	Use of douches and feminine hygiene sprays or powders, wiping from back to front after urinating or having a bowel movement, especially for women, retaining urine for an abnormally prolonged period (i.e., "holding it in"), Extended periods of immobility (such as during recovery from an injury or illness)
Habit Risk Factors ⁽⁵⁾	Not drinking enough water, holding pee, Wearing tight underwear, Incorrect wiping techniques.
Diet Causing UTI ⁽⁶⁾	Artificial sweeteners, spicy foods, alcohol, coffee, acidic fruits, citrus, or caffeinated drinks — can irritate the bladder, and may worsen UTI symptoms.
Environmental Factors Causing UTI ⁽⁷⁾	Warmer weather is strongly associated with an expanded threat of UTIs.

Risk factors associated with recurrent UTIs ⁽⁸⁾

Pre-menopausal	Modifiable	Nonmodifiable
	Contraceptive use- Diaphragm/ Spermicide	Genetic
	Frequent sexual intercourse	Congenital urinary tract anomalies
		Family history of UTI- Especially mothers with UTI
Post-menopausal		
	Atrophic vaginitis	Post-voiding Residual urine
	Incontinence	Catheterization
	Cystocele	History of UTI

CLINICAL FEATURES: ⁽⁹⁾

The most observed clinical presentation would be.

- Increased frequency of micturition (pollakisuria)
- Dysuria
- Suprapubic ache at some stage in and after voiding urine
- Urgency
- Intense desire to pass extra urine after micturition due to spasm of the infected bladder wall (strangury).
- Passing cloudy urine (turbid urine) with an unpleasant odour
- Nocturia
- Present or increased incontinence
- Macrohematuria
- Systemic symptoms such as fever and chills may additionally occur

INVESTIGATIONS:

Urine culture
Full blood count; urea, electrolytes, creatinine
Blood cultures

Renal tract ultrasound or CT

Pelvic examination in women, rectal examination in men

Continuing haematuria or other suspicion of bladder

Cystoscopy

Dipstick estimation of nitrite, leucocyte esterase and glucose

Microscopy/cytometry of urine for white blood cells, organisms. ⁽¹⁰⁾

complete urologic evaluation, including cystoscopy and excretory urography, should be performed in patients who have persistent haematuria after the infection has been eradicated. ⁽¹¹⁾

HOMOEOPATHIC MEDICINE

CHIMAPHILA UMBELLATA

INDICATIONS:

Acute prostatitis with dysuria and retention, sensation in perineum as if sitting on a ball. Constant pain in region of kidney. Urine scanty, dark, foetid, strangury. Constant desire to urinate. Cutting, scalding pain, divided stream, structure. Urethritis with

purulent or profuse mucous discharge. Great quantities of thick mucus in urine. Urine scanty. Frequently voided, pressing pain before, burning prickling, scalding, and smarting during and after and vesical tenesmus. Aggravation by sitting and ameliorated by walking about. Renal dropsy. ⁽¹²⁾

Chimaphila Umbellata also acts as diuretic, increasing the secretion of urine and retaining its action upon the kidneys for some little time. Indicated in great quantities of foetid mucus in the urine. Chronic renal and vesical affections. Nephritic disorders, gravel, with ulceration. ⁽¹³⁾

MATERIALS & METHODS

AIMS AND OBJECTIVE:

To know the efficiency of Chimaphila Umbellata in the treatment of urinary tract infections in adolescent girls.

METHODOLOGY

Type of study: A single blind randomised control study

Study design: Randomised control study

Setting of study: Study was carried out among the undergraduate students of MNR Homoeopathy Medical College, Sangareddy, Telangana.

Population of the study: The population comprised of age group 13 to 25 years.

Sample size: The Sample size was 30.

SAMPLING CRITERIA:

Inclusion criteria:

1. Adolescent girls between age group of 13 to 25 years
2. Suffering from urinary tract infection
3. Willing to give written consent

Exclusion criteria:

1. Chronic illness like renal stones and pyelonephritis.
2. Congenital anomalies
3. Age group of below 13 years and above 25 years

Duration of study: 3-4 months

Data collection procedure: -

It consists of three parts:

1. Socio demographic proforma – it consists of basic information of the participants such as name, age, address, contact number.
2. By applying the VAS scale and identifying the intensity of the complainants.
3. Based on evaluation of symptom and readings from VAS scale (before and after). We evaluated the efficacy of Chimaphila Umbellata in the treatment of urinary tract infection in adolescent girls.

STATISTICAL ANALYSIS

“Paired t-test” was used for analysing the data.

RESULT

30 cases were taken up for study and the statistical data of observations and results are presented in tabular and graphical form.

FIG:01 DISTRIBUTION OF CASES BASED ON AGE GROUP.

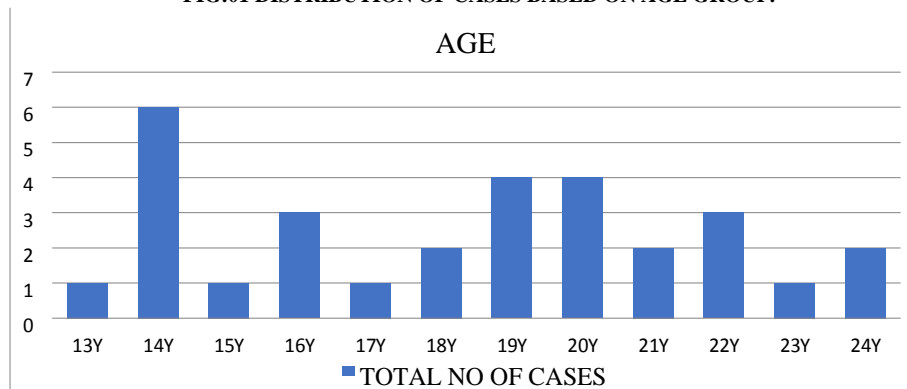


FIG 2 Distribution of cases based on vas scale score

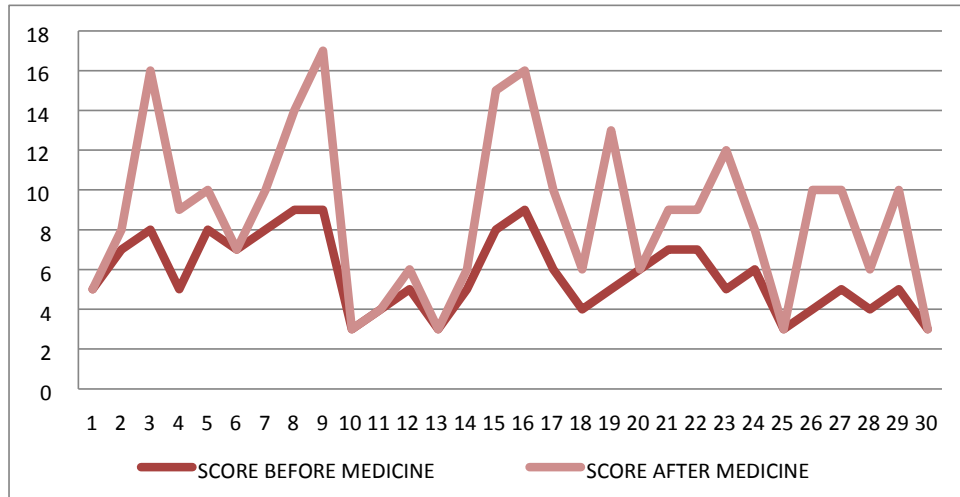


Table:1 Frequency table based on VAS score

S.no	Vas scale score before medicine	Vas scale score after medicine	Total No. of cases before	Total No. of cases after
1	0 to 3	0 to 3	4	18
2	4 to 6	4 to 6	14	6
3	7 to 10	7 to 10	12	6

FIG :03 DISTRIBUTION OF CASES BASED ON CLINICAL MANIFESTATIONS BEFORE MEDICINE

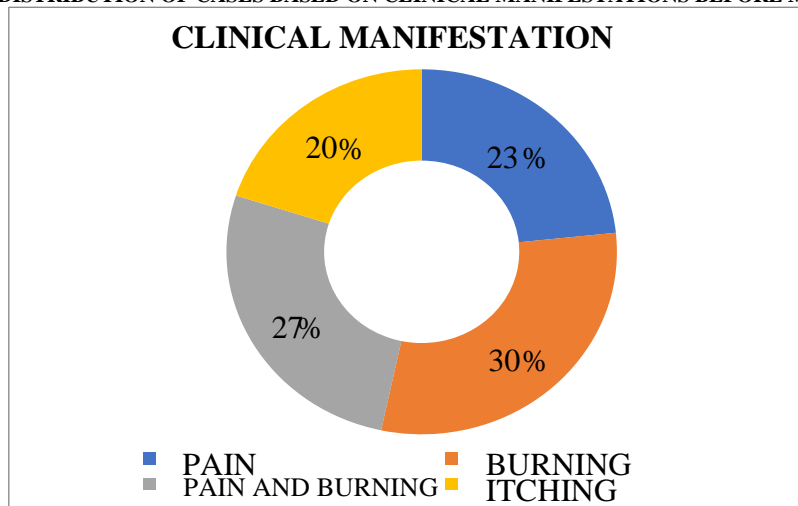


FIG 4 DISTRIBUTION OF CASES BASED ON CLINICAL MANIFESTATIONS AFTER MEDICINE

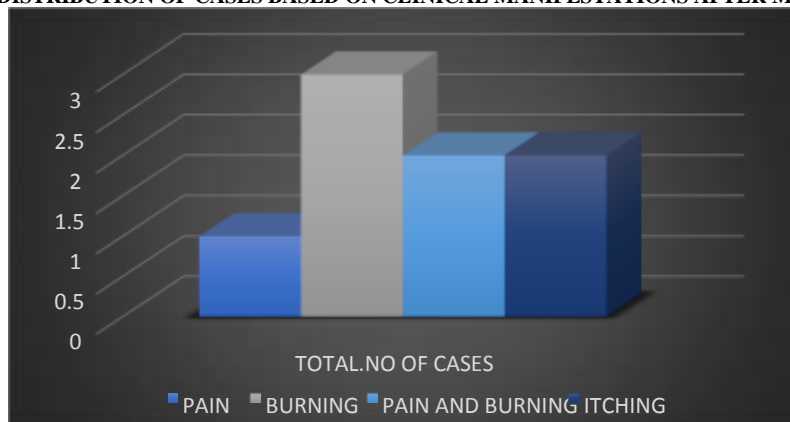
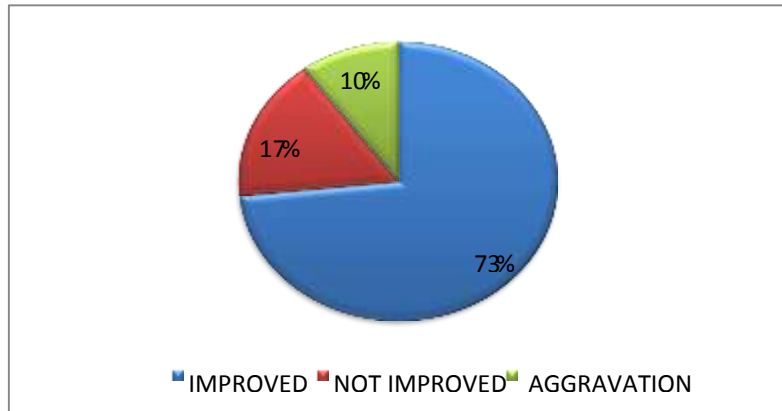


FIGURE: 05 DISTRIBUTION OF CASES BASED ON THE RESULT



STATISTICAL ANALYSIS

As the sample size is not more than 30, the obtained data is subjected to Paired “t-test”.

Table 2

SI NO	SCORE BEFORE MEDICINE	SCORE AFTER MEDICINE	D	d	D-d	(D-d) ²
1	5	0	5	2.73	2.27	5.152
2	7	1	6	2.73	3.27	10.692
3	8	8	0	2.73	-2.73	7.452
4	5	4	1	2.73	-1.73	2.992
5	8	2	6	2.73	3.27	10.692
6	7	0	7	2.73	4.27	18.232
7	8	2	6	2.73	3.27	10.692
8	9	5	4	2.73	1.27	1.612
9	9	8	1	2.73	-1.73	2.992
10	3	0	3	2.73	0.27	0.072
11	4	0	4	2.73	1.27	1.612
12	5	1	4	2.73	1.27	1.612
13	3	0	3	2.73	0.27	0.072
14	5	1	4	2.73	1.27	1.612
15	8	7	1	2.73	-1.73	2.992
16	9	7	2	2.73	-0.73	0.532
17	6	4	2	2.73	-0.73	0.532
18	4	2	2	2.73	-0.73	0.532
19	5	8	-3	2.73	-5.73	32.832
20	6	0	6	2.73	3.27	10.692
21	7	2	5	2.73	2.27	5.152
22	7	2	5	2.73	2.27	5.152
23	5	7	-2	2.73	-4.73	22.372
24	6	2	4	2.73	1.27	1.612
25	3	0	3	2.73	0.27	0.072
26	4	6	-2	2.73	-4.73	22.372
27	5	5	0	2.73	-2.73	7.452
28	4	2	2	2.73	-0.73	0.532
29	5	5	0	2.73	-2.73	7.452
30	3	0	3	2.73	0.27	0.072

Paired t test results:

P value and statistical significance:

Table 3: t-Test: Paired Two Sample for Means

	SCORE BEFORE MEDICINE	SCORE AFTER MEDICINE
Mean	5.766666667	3.033333333
Variance	3.633333333	8.171264368
Observations	30	30
Pearson Correlation	0.463461382	
Hypothesized Mean Difference	0	
df	29	
t Stat	5.76065621	
P(T<=t) one-tail	1.5386E-06	
t Critical one-tail	1.699127027	
P(T<=t) two-tail	3.0772E-06	
t Critical two-tail	2.045229642	

The two-tailed P value is less than 0.0001 by conventional criteria, this difference is extremely statistically significant.

Confidence interval:

The mean of Group One minus Group Two equals 2.73 95% confidence interval of this difference: From 1.76 to 3.70

INFERENCE: Table value at 't' 29 degrees of freedom and 5% significance is 2.045, and the Calculated value is 5.7606 the result obtained is more than the table value and so, the result is highly significant. Therefore, null hypothesis (H0) is rejected and alternate or Research hypothesis (H1) is Accepted i.e., there is real difference between means, before and after treatment. This shows that chimaphila umbellata is effective in treating urinary tract infection.

DISCUSSION

The present study focuses on the adolescent girls of the age group 13-25 years.

Among 30 cases maximum number of cases belong to the age group of 14 years whereas the study by Thomas M et.al found incidence of urinary tract infection is more among the age group of 23 years. ⁽¹⁴⁾

According to the study done by Zeev Arinzon et al it was found that increased frequency and urgency for urination, painful urination, incontinence of urine, nocturnal incontinence, incomplete voiding, supra pubic pain, haematuria, burning sensation while micturition, difficulty in micturating, fever, genital discomfort, lower back pain and lower abdominal pain etc are some of the symptoms of UTI. ⁽²⁾ These symptoms vary between pre menopause and post menopause women. In the present study it was found that out of 30 cases 9 cases manifested with burning, 8 cases manifested with pain and burning, 7 cases manifested with pain and 6 cases manifested with itching.

Chimaphila Umbellata in various potencies (as per the patient need) was administered for the cases, and considerable improvement was seen in 73% of cases were 17% of the

patients did not improve and 10% had an aggravation. Various research on herbal medicine/ botanical medicine has proved that Chimaphila Umbellata can be effective in treating cystitis. ^(15,16) Chimaphiln 1 (2,7-dimethyl-1,4-naphthoquinone) is a constituent of Chimaphila Umbellata which is a small shrub that can act as a tonic and has antiseptic properties in urinary tract infections, and which is prescribed in tincture. The tincture form of Chimaphila Umbellata was acting effectively when compared with the potency form this was stated by K Zelling et.al. in the year 1996. ⁽¹⁷⁾

The clinical features for the prescription of Chimaphila Umbellata include, voiding of small quantity of urine but excessive amount of mucus, muco pus, bloody muco pus in urine. The urine can be of offensive or non-offensive in character. Presence of burning sensation. Chimaphila Umbellata is clinically indicated in chronic gonorrhoea, catarrh of bladder, chronic nephritis, and so on. ⁽¹⁸⁾

In 2018 an article was published regarding the effectiveness of homoeopathic medicine in urinary tract infection which concluded that a comprehensive search for all types of studies on the role of homoeopathy in UTIs, demonstrates the effectiveness of this therapy in vivo & and in vitro models. Studies honestly provided useful qualitative records concerning homoeopathic techniques for the treatment of UTIs. Many well-designed controlled scientific trials and laboratory experimentations with adequate quantity of participants or subjects on strong evidence-based parameters are required to construct a concrete research evidence base of homoeopathy in the cure of UTI with the foremost causative organism *Escherichia coli*. ⁽¹⁹⁾

Jurgen pannek did a work on the homoeopathic prevention in case of urinary tract infection with neurogenic bladder dysfunction. In this study out of 22 patients, 8 cases of UTI were treated by giving the constitutional homoeopathic medicine with the single dose in high potency. If needed

intercurrent homoeopathic medicine is prescribed. And the study concluded that, homoeopathic medicine can be prophylactic in urinary tract infection associated with neurogenic bladder dysfunction. ⁽²⁰⁾ In the year 2022, the study was done on management in urinary tract infection with homoeopathic medicine by Madwal RR concluding that complicated urinary tract infection occurs in those people who have the structural abnormalities and uncomplicated UTI occurs in those with no structural abnormalities. In such cases homoeopathic medicine acts as preventive medicine for recurrence of UTI. ⁽²¹⁾ Related to this, an article in which the evidence showing that UTI is the commonest condition which is affecting children. This infection is caused by the invasion of bacteria, and this can be having the relation with bacteriuria, pyuria, can occur in upper urinary tract and lower urinary tract. This study was concluded by Desarada K et.al by mentioning some homoeopathic medicines such as cantharis, Nux vomica, sarsaparilla, Apis Mellifica, Staphysagria, nitric acid and Terebinthina for treating urinary tract infection. ⁽²²⁾ Likewise, integrated management of antibiotic-resistant Urinary tract infection (2020) by Kusum studies 2 cases of UTI where the Naranjo criteria total score in the study for each case was found like +10/13 and +9/13 respectively which concluded that addition of homoeopathy to the integrated management of antibiotic resistance urinary tract infection is effective approach. ⁽²³⁾

CONCLUSION

Urinary tract infection (UTI) is a very common clinical condition among the women specially in adolescent girls' reason could be many including frequent usage of common washrooms, improper usage of menstrual pads, excessive sexual activity, and lack of personal hygiene. Chimaphila Umbellata a Homoeopathic medicine is very specific remedy for similar presentation like UTI and in this study, it has been used as a specific remedy and found effective. There

are many studies have been done previously by so many authors on Chimaphila Umbellata which is showing its effects on urinary tract infections. But this Chimaphila Umbellata is not prescribed by the physicians even though its action is effective. So, this study may help to reuse the Chimaphila Umbellata in case of urinary tract infections.

Declaration by Authors

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