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Research Article

A CLINICAL STUDY TO EVALUATE THE EFFECTIVENESS OF *DASHANGA GUGGUL* WITH AND WITHOUT *SARVANGA SWEDA* (WITH *LEKHANIYA MAHAKASHAYA*) IN CASES OF *STHAULYA* (W.S.R. OBESITY)

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ABSTRACT

Obesity is one among the major diseases of modern era, increasing in prevalence. The World Health report of W.H.O. listed Obesity under 10 top selected risks to the health. *Sthaulya* (Obesity) is well known from the *Samhita* period and is considered to be one of the eight undesirable conditions (*Ashtau Nindita*). It can be caused due to *Mandagnias Agni* is considered to be responsible for metabolism. Thus, *Ama* formed moves within body, further causing *Medovruddhi*, which produces excessive stoutness. According to modern science, one of the causes for obesity is sedentary lifestyle, where there is more intake of junk food and less physical activity. This also signifies in increased BMI, further leading to obesity.

Keywords: Dashanga Guggul, Sarvanga Sweda, Sthaulya, Obesity, Parameters.

INTRODUCTION

The current research work entitled as “A clinical study to evaluate the effectiveness of *Dashanga Guggul* with and without *Sarvanga Sweda* (with *Lekhaniya Mahakashaya*) in cases of *Sthaulya* (w.s.r. obesity)”, presents the salient features about the observations made in this thesis. Whole work has been done under following two headings :

I. Literary Section

II. Clinical Section

LITERARY SECTION:

In this section concept of health in reference to ‘*Ashtaninditiya*’ and ‘*Atisthaulya*’ has been emphasized.

Historical chronological evolution has been made from *Vedic Period* to present era. *Sthaulya* has been identified in *Vedic Period* as *Atisthaulya* under the heading of ‘*Ashtavirupa*’. In *Brihatrayi*, *Bhela* and *Kashyap Samhita* the term *Atisthaulya* and *Sthaulya* have been used. For the first time in *Madhava Nidana* and later on his successors too, used the term *Medoroga* for *Atisthaulya* and *Sthaulya* and also described in details.

Paribhasha of *Sthoola* is:

मेदोमांसातिवृद्धत्वाच्चलस्फिगुदरस्तनः ।

अयथोपचयोत्साहो नरोऽतिस्थूल उच्यते ॥ (Ch.Su.21/9)

According to *Acharya Charaka*, due to excessive increase of *Meda Dhatu* along with *Mamsa Dhatu*, person becomes disfigured and having lack of enthusiasm in comparison of the body size with pendulous *Sphika*, *Udara* and *Stana* is called “*Atisthula*”.

Nidanas of *Sthaulya* have been classified under four groups ; in the form of *Aharatmaka Hetu*, *Viharatmaka Hetu*, *Manas Hetu* and *Anya Hetu* (*Bija Dosha Swabhava* etc.). *Acharya Sushruta* considered the *Rasa* as the major pathological factor involved in both obesity and emaciation (*Sthaulya* and *Karshya*).

रस निमित्तमेव स्थौल्यं कार्यं च । (Su.Su.15/37)

Acharya Charaka has specially mentioned *Beejadasha* as the *nidana* for *Sthaulya*. In *Bhavaprakasha* it has been mentioned that increased proportion of ‘*Shonita*’ and decreased proportion of ‘*Shukra*’ predisposes towards the development of stout but weak body.

The disease *Sthaulya* is mainly characterized as *Chal Sphik Udar Stana* (Pendulous buttocks, belly and breasts), *Javoparodha* (Sluggishness in movement), *Kichha Vyavayata* (Difficulty in Intercourse), *Swedabadha* (Excessive Sweating), *Ksudhatimatram* (Excessive Appetite), *Pipasatiyogam* (Excessive Thirst), *Daurbalyam* (Weakness), and *Daugandhyam* (Foul Smell). *Agni* plays important role in

pathogenesis of *Sthaulya*. If the use of etiological factors are not restricted then the impairment of *Jathragni* may occur and produces *Aama* which results in *Medodhatvagni Mandya* which ultimately produces *Sthaulya* and its *Upadravas* like *Prameha*, *Jwara*, *Bhagandar*, etc.

Ayurvedic Principle for management of *Sthaulya* is:

गुरु चातर्पणं चेष्टं स्थूलानां कर्शनं प्रति ।(Ch. Su. 21/20)

Chikitsa of *Sthaulya* can be performed by *Ahara*, *Vihara* and *Aushadhi*. *Pathya- Apathya Ahara* and *Vihara* have been mentioned under these headings. Regarding *Aushadhi Chikitsa*, single and compound drug therapy such as *Amalaki*, *Guduchi* with *Honey*, *Amritadi Guggul*, *Triushnadi Gugguletc* have been mentioned.

Obesity is defined as a condition in which there is an excessive accumulation of adipose tissue in the body beyond the physiological limits, which results from relative excess of calorie intake over calorie expenditure (Metabolic control and Dis; page 497), that may impair the physical and the mental health.

Overweight and Obesity are the fifth leading risk for global deaths and are linked to more deaths worldwide than underweight. For example, 65% of the world's population lives in countries where overweight and Obesity kill more people than underweight. At least 2.8 million adults die each year because of being overweight or obese. Another study has revealed that "by 2030, non communicable disease will account for nearly 70% of all global deaths and 80% of these deaths will occur in developing countries like India".

The etiological factors responsible for *Obesity* are *Age*, *Sex*, *Sedentary life style*, *Eating habits*, *Genetic factors* *Endocrinal factors* etc. According to Modern Science complications of *Obesity* ; *Cardiovascular diseases*, *Diabetes mellitus*, *Gastrointestinal* and *Respiratory diseases* etc have been mentioned. Regarding the management of *Obesity* – *Diet*, *Exercise*, *Behavioral manifestations*, *Pharmacotherapy* etc. have been mentioned.

Drug Review:

The selected drugs for the clinical trial *Dashanga Guggul* and *Lekhaniya Mahakashaya* for *Sarvanga Sweda* are herbal drugs prepared in the form of *Vati* and *Churna* which have been advocated by *Bhava Prakash* (Bh.Pr. Chi. 8/30) and *Acharya Charak* (Ch.Su. 4/3) respectively. In *Dashanga Guggul* the constituents are *Shuddha Guggulu*, *Shunthi*, *Maricha*, *Pippali*, *Chitraka*, *Haritaki*, *Vibhitaki*, *Amalaki*, *Musta*, *Vidanga* and *Lekhaniya Mahakashaya* contents are *Ativisha*, *Vacha*, *Daruharidra*, *Haridra*, *Nagarmotha*, *Balvacha*, *Kutaki*, *Chitraka*, *Karanja* and *Kooth*.

CLINICAL SECTION:

This section comprises *Materials and Methods*, *Observations*, *Results*, *Discussion* and *Conclusion* made during the clinical studies.

Aims & Objectives:

1. To evaluate the effectiveness of *Dashanga Guggul* and *Sarvanga Sweda* with *Lekhaniya Mahakashaya* in cases of *Sthaulya* (w.s.r. obesity).
2. To provide a safe and effective drug in cases of *Sthaulya* (w.s.r. obesity).

The study was conducted on 54 clinically diagnosed patients of *Sthaulya* from OPD/IPD of *State Ayurvedic College and Hospital, Lucknow*. The study was carried out on patients having more than 50% of the classical signs and symptoms selected for the trial, BMI in between 25 to 40 and W.H.R. i.e., >1.0 in men and >0.85 in women. Patients suffering from any serious diseases or having obesity due to secondary reasons were excluded from the study. 54 clinically diagnosed patients randomly divided into 2 Groups (A & B) having 35 and 25 patients respectively. 32 patients were administered *Dashanga Guggul* in dose of 2 vati (500 mg each) thrice in a day with *lukewarm water* for 90 days. 22 patients were administered *Dashanga Guggul* in a dose of 2 vati (500mg each) thrice a day with *lukewarm water* and *Sarvanga Sweda* with *Lekhaniya Mahakashaya* for 90 days. *Sarvanga Sweda* will be given for 2 weeks with a 1 week gap repeatedly for 3 months.

Clinical & physiological assessments were done on 0th day, 15th, 30th, 45th, 60th, 75th and 90th day.

a) Demographic Observations:

The maximum incidences of *Sthaulya* was found in third and fourth decades of life i.e.; 54.3% of Group A and 52% of Group B. According to **Sex incidence**, Females (77.1%) of Group A and (72%) of Group B are more prone. Considering the relationship of the disease with **Religion**, Hindu are more prone i.e.; (60%) of Group A and (60%) of Group B.

Regarding the incidences of **Marital Status** 30 cases (85.7%) Group A & 20 cases (80%) of Groups B were married, so married are more prone for the disease than unmarried.

Occupation shows the life style, Physical activity and mental stress of a patient. Therefore, it can be counted as an important factor for causing *Sthaulya*. In this study, more than one third of both Group A (45.8%) and Group B (56.0%) were housewives. According to **Dietary Habits**, *Sthaulya* is more common in Mixed Group. Mixed Group comprises 20 cases (57.1%) of Group A and 19 case (76.0%) of Group B. This study shows that the **Occupation Incidence** was maximum seen in middle class income group. Half of the patients of Group A (51.4%) & Group B (52.0%) belonged to lower middle class followed by 8 cases (22.9%) of Group A and 5 cases (20.0%) of Group B belonged to upper middle class. According to **Education Incidence**, about one third of the patients of Group A (40%) and (44.0%) of Group B were educated upto P.G.

According to **Habitat Incidence**, Majority of the patients were from urban area i.e. 27 cases (77.14%) of Group A and 17 Cases (68.0%) of Group-B were from Urban area. Considering the **Addiction Incidence**, percentage of non addicted is more than addicted. Considering the incidence of **Associated diseases**, The menstrual disorder was observed among 25.7% of the patients of Group A and 24% of Group B. However, hyperacidity was found among 17.1% of Group A patients and 20% of Group B, Hypertension was only in Group B (8.0%) patients, Osteoarthritis was seen in 11.42% of Group A and 12.0% in Group B. Considering the incidence of **Deha Prakriti**, *Kalpa-Pitta* was found in most of the patients in both Group A (54.3%) and Group B (48%). Considering the incidence of **Family history**, the disease incidence was noted in (62.85%) of Group A and (68%) of Group B patients have

hereditary tendency. On the other hand subjects having negative family history are (37.14%) in Group A and (32%) in Group B. According to *Agni incidence*, Agnimandya was observed in (71.4%) of Group A and in (64.0%) of Group B.

b) Clinical Observations & Results:

Further similar studies and research works may be conducted on latest scientific parameters to confirm the same and over a large population.

RESULTS

In the present clinical study, trial drug *Dashanga Guggul* was given in 32 patients of Group A and *Dashanga Guggul* and *Sarvanga Sweda* with *Lekhaniya Mahakashaya* was administered in Group B for a period of 90 days and results of Group A and B are as follows :-

EFFECT ON CHALA SPHIK, UDARA, STANA (PENDULOUS BUTTOCKS, BELLY AND BREASTS):

Table 1: Comparison of change in *Chala Sphik, Udara, Stana* before to after treatment

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.55±0.93	1.39±0.96	0.15±0.36	2.39	0.02*
Group B	1.18±0.73	2.05±0.65	0.13±0.35	2.24	0.01*
Z-value	1.13	2.18	0.56		
p-value ²	0.11	0.005*	0.77		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant

EFFECT ON JAVOPARODHA (SLUGGISHNESS IN MOVEMENTS):

Table 2: Comparison of change in *Javoparodha* before to after treatment

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.42±0.79	0.42±0.50	0.96±0.82	6.66	0.001*
Group B	1.82±0.85	0.68±0.47	1.13±0.56	9.51	0.0001*
Z-value	1.03	1.28	2.24		
p-value ²	0.08	0.06	0.02*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant

EFFECT ON KRICHHAVYAVAYATA (DIFFICULTY IN INTERCOURSE):

Table 3: Comparison of change in *Krichhavyavayata* before to after treatment

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.94±0.70	1.06±0.70	0.87±0.33	9.51	0.0001*
Group B	1.86±0.94	0.73±0.63	1.13±0.56	14.73	0.0001*
Z-value	0.78	1.29	2.26		
p-value ²	0.73	0.07	0.02*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant

EFFECT ON SWEDABADHA (EXCESSIVE SWEATING):

Table 4: Comparison of change in *Swedabadha* before to after treatment

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.97±0.95	2.09±0.75	0.84±0.36	11.23	0.0001*
Group B	1.12±0.74	1.14±0.77	0.95±0.37	12.34	0.0001*
Z-value	0.56	0.02	2.24		
p-value ²	0.61	0.94	0.02*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant

There was highly significant (p=0.0001) mean change in the *Swedabadha* from before to after treatment in both the groups. The difference in the mean change in *Swedabadha* between

the groups was found to be significant (p=0.02). The decrease was found to be higher in Group B (mean change=0.95±0.37) than Group A (mean change=0.84±0.36).

EFFECT ON KSHUDATIMATRAM (EXCESSIVE APPETITE):

Table 5: Comparison of change in *Kshudatimatrama* before to after treatment

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	2.15±0.75	1.42±0.61	0.71±0.52	7.77	0.0001*
Group B	1.95±0.65	1.00±0.69	0.95±0.37	11.93	0.0001*
Z-value	0.69	2.56	1.13		
p-value ²	0.32	0.02*	0.09		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant

EFFECT ON DAURBALYAM (WEAKNESS):**Table 6: Comparison of change in *Daurbalyam* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	2.03±0.84	0.55±0.56	1.46±0.62	13.37	0.0001*
Group B	1.68±0.64	0.73±0.63	0.95±0.37	11.94	0.0001*
Z-value	0.78	1.07	2.01		
p-value ²	0.10	0.26	0.03*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON PIPASATIYOGAM (EXCESSIVE THIRST):****Table 7: Comparison of change in *Pipasatiyogam* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.79±0.85	0.85±0.66	0.93±0.50	10.09	0.0001*
Group B	1.73±0.82	0.68±0.56	1.04±0.48	10.52	0.0001*
Z-value	0.68	0.99	2.13		
p-value ²	0.79	0.34	0.02*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON DAURGANDHYAM (FOUL SMELL):****Table 8: Comparison of change in *Daurgandhyam* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	1.85±0.79	0.94±0.70	0.90±0.29	9.51	0.0001*
Group B	1.91±0.68	0.91±0.68	1.01±0.38	11.08	0.0001*
C	0.65	0.48	2.11		
p-value ²	0.77	0.87	0.02*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON WEIGHT:****Table 9: Comparison of change in *Weight* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	75.16±14.39	70.28±13.55	4.87±2.40	11.46	0.0001*
Group B	80.32±12.60	71.36±11.73	8.95±2.36	17.79	0.0001*
Z-value	1.43	1.03	2.34		
p-value ²	0.17	0.76	0.03*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON BODY MASS INDEX:****Table 10: Comparison of change in *BMI* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	31.20±4.41	29.18±4.36	2.01±0.80	3.16	0.04*
Group B	32.94±4.38	29.24±3.95	3.70±1.00	3.19	0.04*
Z-value	1.42	1.02	2.34		
p-value ²	0.17	0.76	0.03*		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON WAIST HIP RATIO:****Table 11: Comparison of change in *WHR* before to after treatment**

Groups	Before treatment	After treatment	Mean change	z-value	p-value ¹
Group A	0.94±.13	0.90±0.08	0.04±0.06	1.14	0.11
Group B	0.96±0.05	0.94±0.05	0.02±0.01	1.15	0.15
Z-value	1.12	1.01	0.89		
p-value ²	0.17	0.76	0.58		

¹Wilcoxon rank sum test, ²Mann-Whitney U test, *Significant**EFFECT ON HAEMATOLOGICAL PARAMETERS**

Routine blood examinations were performed in all the 54 patients before and after trial. *Thyroid Function Test, LFT,*

KFT and Blood Sugar Fasting and PP was done for exclusion of *Diabetes mellitus, Hypothyroidism, any Renal or Liver dysfunctions.*

Table 12: Comparison of biochemical parameters from before to after treatment between the groups

Time interval	Group A	Group B	p-value ¹
Hb			
Before	11.44±1.48	10.81±1.55	0.14
After	11.82±1.27	11.33±1.06	0.14
Mean change, p-value ²	0.39±0.58, 0.001*	0.52±0.61, 0.001*	0.34
TLC			
Before	7503.12±1753.05	7390.91±1865.96	0.82
After	6475.00±921.77	6636.36±1296.71	0.59
Mean change, p-value ²	-1028.12±1323.05, 0.0001*	-754.54±1219.19, 0.009*	
Neutrophil			
Before	62.25±7.69	63.95±7.94	0.43
After	61.84±7.60	63.27±7.31	0.49
Mean change, p-value ²	-0.40±0.75, 0.005*	-0.68±1.39, 0.03*	0.15
Eisnophil			
Before	1.91±2.08	1.14±1.80	0.16
After	1.09±1.38	0.41±0.73	0.05
Mean change, p-value ²	-0.81±0.17, 0.0001*	-0.72±1.35, 0.02*	0.67
Basophil			
Before	0.19±0.39	0.23±0.52	0.75
After	0.12±0.33	0.18±0.39	0.57
Mean change, p-value ²	-0.06±0.35, 0.32	-0.04±0.21, 0.32	0.55
Monocytes			
Before	0.81±1.67	1.00±1.66	0.68
After	0.59±1.18	0.50±0.85	0.75
Mean change, p-value ²	-0.21±0.65, 0.07	-0.50±0.91, 0.01*	0.11
Lymphocytes			
Before	31.75±8.72	30.59±9.69	0.64
After	33.03±9.47	31.41±11.12	0.56
Mean change, p-value ²	1.28±2.07, 0.002*	0.81±2.15, 0.08	0.06
ESR			
Before	22.12±8.33	24.27±7.84	0.45
After	17.97±4.22	15.55±5.18	0.54
Mean change, p-value ²	-4.15±5.34, 0.0001*	-8.72±5.01, 0.001*	0.03*

¹Unpaired t-test, ²Paired t-test, *Significant, NA-Not applicable**Table 13: Comparison of Lipid Profile from before to after treatment between the groups**

Time interval	Group A	Group B	p-value ¹
TC			
Before	203.50±22.50	227.95±21.51	0.0001*
After	189.88±21.88	210.00±23.05	0.002*
Mean change, p-value ²	13.62±7.57, 0.0001*	17.95±16.9, 0.0001*	0.04*
TG			
Before	117.53±29.72	204.77±65.85	0.0001*
After	106.97±29.19	191.45±63.85	0.0001*
Mean change, p-value ²	10.56±4.80, 0.0001*	13.31±7.53, 0.0001*	0.04*
HDL			
Before	41.06±4.74	44.18±5.51	0.03*
After	39.19±5.33	41.32±5.91	0.17
Mean change, p-value ²	1.87±3.75, 0.008*	2.86±2.73, 0.0001*	0.11
LDL			
Before	130.28±13.78	128.91±14.88	0.72
After	117.22±14.45	115.86±14.15	0.73
Mean change, p-value ²	13.06±7.68, 0.0001*	13.04±7.48, 0.0001*	0.99
VLDL			
Before	47.72±11.36	33.18±8.09	0.0001*
After	40.38±10.31	29.91±7.07	0.0001*
Mean change, p-value ²	7.37±4.54, 0.0001*	3.27±2.43, 0.0001*	0.02*

¹Unpaired t-test, ²Paired t-test, *Significant, NA-Not applicable

Table 14: Comparison of Blood Sugar level from before to after treatment between the groups

Time interval	Group A	Group B	p-value ¹
Fasting			
Before	84.18±9.86	87.62±11.54	0.24
After	83.03±9.30	86.78±11.45	0.19
Mean change, p-value ²	-1.15±1.94, 0.002*	-0.84±0.68, 0.0001*	0.02*
PP			
Before	124.05±17.93	137.34±16.85	0.008*
After	121.47±17.07	135.05±16.51	0.005*
Mean change, p-value ²	-2.57±2.05, 0.0001*	-2.29±1.87, 0.0001*	0.47

¹Unpaired t-test, ²Paired t-test, *Significant**Table 15: Comparison of Liver Function Tests from before to after treatment between the groups**

Time interval	Group A	Group B	p-value ¹
Serum bilirubin			
Before	0.39±0.20	0.40±0.18	0.84
After	0.37±0.13	0.39±0.14	0.54
Mean change, p-value ²	-0.02±0.15, 0.33	-0.01±0.06, 0.39	0.23
Alkaline phosphatase			
Before	156.66±27.05	141.45±33.72	0.07
After	153.28±27.30	138.50±3.81	0.08
Mean change, p-value ²	-3.37±8.01, 0.02*	-2.95±2.69, 0.001*	0.06
SGOT			
Before	28.97±8.23	29.41±7.92	0.84
After	26.50±7.21	26.00±6.78	0.79
Mean change, p-value ²	-2.46±3.22, 0.001*	-3.40±4.11, 0.001*	0.07
SGPT			
Before	25.84±9.11	24.23±7.54	0.49
After	23.59±7.39	21.86±5.74	0.36
Mean change, p-value ²	-2.25±2.60, 0.001*	-2.26±2.32, 0.001*	0.26

¹Unpaired t-test, ²Paired t-test, NA-Not applicable**Table 16: Comparison of Blood Urea from before to after treatment between the groups**

Time interval	Group A	Group B	p-value ¹
Urea			
Before	23.36±21.84	24.27±5.25	0.54
After	21.84±5.31	22.59±4.77	0.59
Mean change, p-value ²	-1.51±1.21, 0.001*	-1.68±1.17, 0.001*	

Table 17: Comparison of Thyroid function tests from before to after treatment between the groups

Time interval	Group A	Group B	p-value ¹
T3			
Before	1.20±0.36	1.17±0.29	0.73
After	1.20±0.36	1.17±0.29	0.73
Mean change, p-value ²	0.00±0.00	0.00±0.00	NA
T4			
Before	9.80±9.18	7.77±1.82	0.31
After	8.14±1.97	7.77±1.82	0.48
Mean change, p-value ²	-1.65±9.38, 0.32	0.00±0.00	NA
TSH			
Before	2.95±1.17	3.09±1.32	0.67
After	2.95±1.17	3.09±1.32	0.67
Mean change, p-value ²	0.00±0.00	0.00±0.00	NA

¹Unpaired t-test, ²Paired t-test, *Significant, NA-Not applicable**FINAL RESULT:**

Average %age decrease in severity of symptoms from Day 0 to Day 90, >75%: Relieved

Average %age decrease in severity of symptoms from Day 0 to Day 90, 45-75%: Improved

Average %age decrease in severity of symptoms from Day 0 to Day 90, <45%: Not improved.

Results were classified under the category of **Relieved**, **Improved** and **Not Improved**. The comparative study of the Subjective, Objective parameters as well as Pathological investigations were performed before and after treatment provided following results.

Table 18: Overall improvement in the severity of symptoms

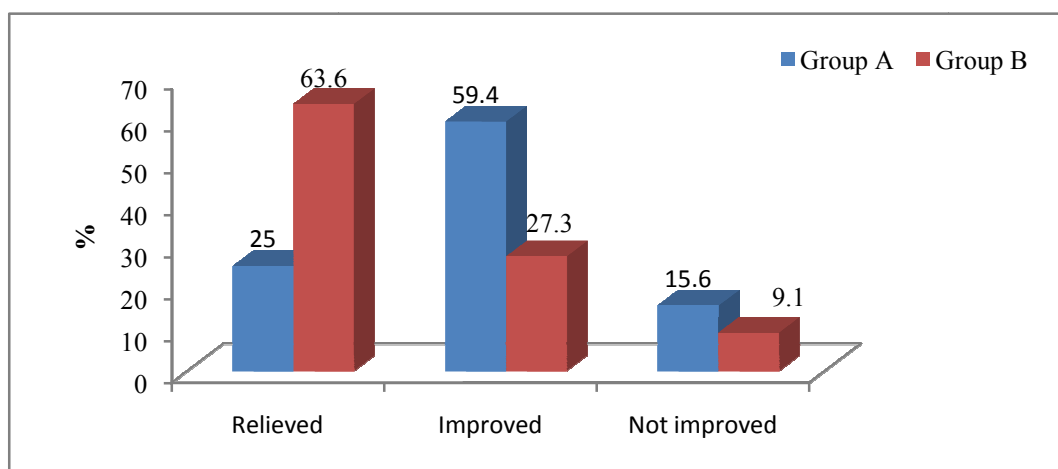
	Group A		Group B	
	No.	%	No.	%
Relieved	8	25.0	14	63.6
Improved	19	59.4	6	27.3
Not improved	5	15.6	2	9.1

p=0.01 (Chi-square test)

In Group A, 8 patients (25%) were relieved, 19 patients (59.4%) were improved and 5 patients (15.6%) were not improved by administration of the trial drugs.

In Group B, 14 patients (63.6%) were relieved, 6 patients (27.3%) were improved and 2 patients (9.1%) were not improved by the administration of the trial drugs.

The comparison between Group A and B reveals that the percentage of relieved patients is higher in Group B than in Group A. This difference is statistically significant as (p=0.01).



Graph 1: Overall improvement in the severity of symptoms

DISCUSSION

The disease *Sthaulya* is a well recognized disease from the *Samhita* period. *Acharya Charaka* has mentioned *Atisthaulya* under *Ashtauninditiya purusa and santarpan janya vikara*. *Charak Samhita* has considered *Sthaulya* as a complicated health condition, duly recognizing it as a condition of *Nindita* means undesirable. It is not only one among the eight undesirable physical status, but also the most severe and untreatable form of them. *Sushruta Samhita* has considered it as *Rasa Nimittaja Vyadhi*. However the subject of *Sthaulya* finds lucid description in the classical text books of *Ayurveda*. *Madhava Nidana* is the first text book which has dedicated a separate chapter for the discussion of obesity under the label *Medoroga* and used *Medasvi*, *Atisthula* and *Sthula* words as synonym. *Bhavaprakasha* and other later text books of *Ayurveda* have also discussed this subject in detail.

Probable mode of action of *Dashanga Guggul* and *Sarvanga Sweda* with *Lekhaniya Mahakashaya*:

In *Ayurveda*, the action of drugs is determined on Pharmacodynamic factors as *Rasa*, *Guna*, *Veerya* and *Vipaka* along with certain specific properties called *Prabhava (Karma)*, which cannot be explained on these principles inherited by the drugs. These drugs in combination act as antagonist to the main morbid factors i.e. *Dosha* and *Dushya* to cause *Samprapti Vighatana* to all of the symptoms of the disease.

Dashanga Guggul:

In *Dashanga Guggul* the only constituents are *Shuddha Guggulu*, *Shunthi*, *Maricha*, *Pippali*, *Chitraka*, *Haritaki*, *Vibhitaki*, *Amalaki*, *Musta*, *Vidanga*. *Guggul* has *Tikshana*, *Ushna* and *Laghu*, *Ruksha Guna*, while *Haritiki* and *Vidanga* has *laghu* and *Ruksha Guna*. *Amalaki* has *Guru*, *Ruksha* and *Sheeta*. *Vibhitaki* has *Laghu Guna*. *Maricha* has *Laghu* and *Tikshna Guna*. *Shunthi* has *Laghu* and *Snigdha Guna*. *Pippali* has *Laghu*, *Snigdha* and *Tikshna*. The constituents have predominance of *Vayu* and *Agni Mahabhuta*. So by means of such properties all the drugs have a negative impact on *Kaphavrudhi* and *Medovrudhi*. The drugs have *Deepana*, *pachana* properties which stimulate *Jathargani* along with *Dhatvagni* as well as it digest *Ama*, clears *Srotorodha*. Hence *Amasanchya* and *Srotorodha* are the fundamental cause of *Sthaulya*, So having such property of clearing *Amasanchaya* and *Srotorodha* in *Dashanga Guggul* will lead to breakdown of pathology of *Sthaulya (Samprapti vighatana)*.

Mode of Action of *Swedana Karma*:

The purification techniques known as *Swedana Karma* (fomentation therapy) possess *antivata* and *antikapha* actions. *Sweda* has a close association with *Meda* (Fat). *Sweda* (sweat) is a *Mala* (metabolic waste) of *Meda*. Thus, fomentation therapy that includes sweating, may help in the expulsion of the metabolic waste of *Meda*.

The qualities of *Swedana* drugs are *Ushna*, *Tikshna*, *Sara*, *Snigdha*, *Ruksha*, *Sukshma*, *Drava*, *Sthira* and *Guru* (Ch.su. 22/16).

The action of *Swedana* is performed by *ushna guna* and *tikshna guna* does *shodhan* of doshas. *Sara guna* does *Shamana*, *Ruksha guna* does *Shoshan*, *Vivarana* by *Sukshma guna*, *Stambha* is relieved by *Ushna guna*, *Vilodana* by *Dravya guna*. *Dharana karma* by *Sthira guna* (A.H.Su.1/18 - Hemadri). Addition of liquifaction of doshas occurs due to *Swedana*, by the virtue of its *Dravya guna* and *Shodhana* by *Tikshna guna*. Due to *Snehana*, *kledana* of doshas takes place & *Swedana* does liquifaction thereby they are brought to *kostha*. The function of *Sweda* is to produce *kleda* in the body. *Kleda* is the product of *jala* in the body & it should be removed out. The final product of *jala dhatu* is *ap dhatu* & *kitta* is *kleda*. The mula of *Swedavaha* srotas is *Medas* & *Romakupya*. *Sthoola Medas* produces the function of *Snehana* & its *Mala* causes *Swedana*. *Swedana* pacifies *Vata* & enhances *Agni*.

By first pass (Pre-systemic) metabolism the *Lekhaniya Mahakashaya* drugs having *lekhana* property (Previous researcher Arvind Kumar -2012) are metabolized during its passage from the site of absorption (skin) into the systemic circulation. That is why we are using *Lekhaniya Mahakashaya* for *Sarvanga Vashpasweda*.

Heat has thermal effect on blood vessels, nerves. There will be increased metabolism acting on the walls of the capillaries & arterioles causing dilatation of these vessels. Due to vasodilatation there is an increased flow of blood through the area, so that the necessary oxygen & nutritive materials are supplied & waste products are removed.

Heat reaches to subcutaneous region & through the blood conveys the heat to the entire body. The capillaries will be dilated, the sweat glands will be stimulated & local temperature rises. The resultant action is appearance of perspiration. The sweat produced from the skin (through *roma kupas*), will enhance the colouration of skin & softness. Sweat regulates heat & water balance of the body. The muscles are supplied with parasympathetic nerves. Since the centre is situated in anterior hypothalamus, by its stimulation sweat is formed.

CONCLUSION

In *Ayurvedic* treatise, the pathology of *Sthaulya* goes in a way that it is caused due to the manifestation of *Ama* and *Ama* is caused because of *Jatharagni Daubalya*, hence here we can conclude that *Sthaulya* is the outcome of *Ama* which is caused due to *Mandagni*, so hence it is a *vatakaphaja* type of *santarpanjanyavyadhi*. The drugs having *Deepana*, *pachana* properties which stimulate *Jatharagni* along with *Dhatvagni* as well as it digest *Ama*, clears *Srotorodha*. Hence *Amasanchya* and *Srotorodha* are the fundamental cause of *Sthaulya*. So having such property of clearing *Amasanchya* and *Srotorodha* in *Dashanga Guggul* will lead to breakdown of pathology of *Sthaulya* (*Samprapti vighatana*). The purification techniques known as *Swedana Karma* (fomentation therapy) possess *antivata* and *antikapha* actions. *Sweda* has a close association with *Meda* (Fat). *Sweda* (sweat) is a *Mala* (metabolic waste) of *Meda*. Thus, fomentation

therapy that includes sweating, may help in the expulsion of the metabolic waste of *Meda*.

- Therapeutic efficacy of Group B was significantly higher than Group A.
- Both the Groups showed significant improvement in all the subjective parameters.
- Both the Groups showed significant improvement on Body Weight (p=0.03), BMI (p=0.03), except WHR (p>0.05).
- Regarding laboratory parameters like CBC, RFT, LFT and Lipid profile no adverse effects were seen in any of the group, which proves the safety of the trial drugs for internal as well as external use.
- Both the trial drugs were found effective as Lipid Lowering agent so can be used in dyslipidemia.

On the basis of above observations it is concluded that *Dashanga Guggul* and *Lekhaniya Mahakashaya* (for *Sarvanga Sweda*) are effective in the treatment of *Sthaulya*.

The data generated facts and figures require further study and clinical trial in greater number of patients to confirm the conclusion with higher confidence and evaluation of the authentic approval.

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