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Research Article

EFFECT OF *MUDGADI KASHAYA PEYA* AND SELECTED YOGA TECHNIQUES IN OVERWEIGHT

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ABSTRACT

Overweight is defined as abnormal or excessive fat accumulation that presents a risk to health. Once considered a problem only in high-income countries, overweight and obesity are now dramatically on the rise in low and middle-income countries, particularly in urban settings. Overweight and obesity are the fifth greatest risk factors for death worldwide. Due to secondary consequences including obesity, type-2 diabetes mellitus, coronary heart disease, dyslipidemia, etc., the morbidity and mortality of overweight people are rising. Obesity and overweight are primarily caused by an imbalance in energy between calories consumed and calories burned. To maintain balance between the two, the management approach attempts to reduce energy intake while boosting energy expenditure. In Ayurveda, overweight can be correlated to *Sthoulya*. In this study an intervention along with addition of one dietary intervention was made into the daily routine of subjects. Here yoga is most suitable adaptation of physical activity and *Mudgadi kashaya peya* is a dietary preparation having *Kapha medohara* property which can reduce the over gaining weight and presence health.

INTRODUCTION

Comforts of modern world have a commendable role in maintaining peak standards of today's lifestyle. Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. Each year, 17 million people die from a NCD before age 70; 86% of these premature deaths occur in low- and middle-income countries[1]. Lifestyle changes associated with urbanization and epidemiological and nutritional transition that accompanied economic development have a remarkable impact on current health status of world population. Sedentary lifestyles and unhealthy food habits have been cited as the culprits behind some of the major health issues of present era.

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. It is a condition where the person weighs more than what is considered normal for their height, age, and sex.

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Over the recent decades, overweight and obesity have evolved as one among the prominent health hazards in modern urbanized societies both in developed as well as in developing countries like India. Overweight is a major risk factor for non-communicable diseases such as obesity, cardiovascular diseases, type-2 diabetes, musculoskeletal disorders, dyslipidemia, hypertension, and cancers such as endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon[2].

The state of Kerala is unambiguously placed at the highest epidemiologic transitions zone which had exerted drastic effects on the morbidity and mortality tables of the state. The rampant urbanization and modernization which had infiltrated even to the grass root levels of the state, irrespective of the region and economic strata, influenced lifestyle of the population making the state fertile for non-communicable diseases to flourish. The mortality and morbidity due to lifestyle diseases soon began to surpass those due to communicable diseases. The available studies on prevalence of these diseases indicate high trends of non-communicable diseases placing the state in the top spot of prevalence chart. Poor control rates and high out of pocket expenditure for the management of these diseases made Kerala the hub of non-communicable diseases in the country. The unhealthy dietary

practices and lack of physical exercise in all sections of the population irrespective of the age and economic status has contributed to the rise in lifestyle diseases with the statistics pointing that 52% of the total death in the productive age group between 30 and 70 being due to one or other cause of non-communicable diseases[3].

In Ayurveda, over weight and obesity can be correlated with *Stoulya* and *Medovridhi*. Charaka Samhita Sootra Stana "*Ashtouninditeeya adhyaya*" contains a detailed explanation of the *Samprapti* of the *Stoulya*. Here *Atistoola* is said as one among the eight *Nindita purushas*. The disease progress is explained based on *Avarana* due to *Medas* which affects *Vayu* and *Agni* in *Koshta*[4]. The main therapeutic principle of Ayurveda is *Langana*. *Langana* can be achieved through dietary changes and physical activity. Dietary changes should be made by adding *Mudgadi kashaya peya*[5] which is a *Kritanna kalpana* having *Kapha medohara* property, which has high protein content, low glycaemic index, and is slowly digestible leads to proper functioning of *Agni* which in turn improves the formation of *Dhatus* and their maintenance.

In addition to diet, lack of physical activity plays a major role in reducing weight gain. So, *Yoga* and *Pranayama* can be practiced as a holistic approach towards the promotive, curative, and rehabilitative aspects of health. Yoga and *Pranayama* greatly affect the functioning of the body. When doing yoga, the energy expenditure is increased and metabolism is improved. Integrated approach of *Yoga* therapy comprises of various *Yoga asanas*, *Pranayama* and relaxation techniques which have a good effect on human body and calming effect to the mind. The major advantage of these exercises is that they stimulate the body organs and maintain mental health.

In the conventional medical system, there are many medicines for managing overweight that reduce appetite and increase energy use. But given over prolonged period they may lead to various side effects. While looking for a cost effective and harmless remedy in Ayurveda, a healthy lifestyle modification with due importance to diet and yoga can help to reduce the burden of overweight and the associated conditions. Thus, a holistic approach combining administration of *Mudgadi Kashaya peya* and selected yoga techniques would be effective as a primary prevention in overweight population among the age group of 20-40 years.

METHODOLOGY

In this study 30 Subjects with overweight between the age group of 20 to 45 years were selected, from OPD of Govt. Ayurveda College Hospital, Tripunithura, as per the inclusion and exclusion criteria. The study subjects were advised to perform selected yoga techniques daily morning for 45 minutes and take 200ml of *Mudgadi kashaya peya* as dinner daily at 7:30pm for a period of 2 months. Assessment of body weight, BMI, waist hip ratio was done on 0th day, 31st day and 61st day of intervention. Along with this, lipid profile was assessed on 0th and 31st day of the study period. Yogic protocol included Loosening exercises, *Asanas*, *Pranayama* and deep relaxation technique. *Asanas* done in standing position were *Ardhakati charasanam, Ardha Chakrasanam*, in sitting position: *Janushirsasanam, Ardha Matsyendrasana*, in prone position: *Bhujangasanam, Shalabhasanam* and in supine position: *Pavanamukthasana*, *Sethubandh-asanam*. *Pranayamas* done was Nadisudhi *pranayama, Brahmari pranayama* and *Surya Anuloma pranayama*. The diet was prepared by making *Peya* of *Mudga* and *Laja* in *Khadira Kashaya*.

OBSERVATIONS AND RESULT

Table 1: Difference in Weight with time

Weight	Mean	Std. Deviation	Std. Error	F value	P value
0th day (BT)	77.213	9.257	1.690	389.0	<0.001
31st day (AT-1)	73.000	9.243	1.687		
61st day (AT-2)	70.083	9.654	1.762		

There was significant reduction the body weight of the subjects with an average of 7.13kg loss during study period of 2 months period.

Table 2: Difference in BMI with time

BMI	Mean	Std. Deviation	Std. Error	F value	P value
0th day (BT)	27.637	1.439	0.262	382.4	<0.001
31st day (AT-1)	26.124	1.478	0.269		
61st day (AT-2)	25.043	1.694	0.309		

An average of 2.63kg/m^2 reduction in BMI was observed, which was statistically significant.

Table 3: Difference in waist hip ratio with time

WHR	Mean	Std. Deviation	Median	Chi Square	P value
0th day (BT)	0.91	0.060	0.950	55.216	<0.05
31st day (AT-1)	0.887	0.063	0.925		
61st day (AT-2)	0.864	0.066	0.900		

Waist hip ratio also showed a significant reduction of 0.046 between the treatment stages

Lipid Profile

Table 4: Difference in Total cholesterol with time

Total cholesterol	Mean	Standard deviation	Standard error	Paired Mean Difference	t value	P value
0th day	201.166	36.750	6.710	32.133	9.413	<0.001
61st day	169.033	21.772	3.975			

Total cholesterol level showed a significant reduction with an average of 32.13mg/dl reduced during 2 months of intervention. Serum triglyceride, LDL and VLDL levels also showed significant reduction. HDL level showed slight improvement.

DISCUSSION

Probable mode of action of *Mudgadi Kashaya Peya*

Sthoulya is a *Santharpanotha vikara* and the *Nidana* is intake of *Ahara dravyas* having *Madhura, Snigdha, Guru gunas* and are which are *Kaphamedo vardhaka*. *Medo dhatwagni mandhya*, which led to defective *Dhatuparinama* at the level of *Medodhatu* and *Srothorodha* due to formation of *Ama* is the most probable cause of *Sthoulya*. So, for the management of *Sthoulya*, the diet which can be prescribed should have drugs with *Laghu rooksha guna*, which are *Agni deepana* in nature and should be *Kaphamedohara* and *Ama pachana.* The diet given in the study, *Mudgadi Kashaya peya* has *Sthoulya* and *Pramehahara* property[6]. The ingredients of *Mudgadi Kashya Peya* include *Mudga, Laja* and *Khadira,* which had *Laghu, Rooksha guna* in common, which was effective in increasing the *Dhatwagni* and was *Kaphahara* and *Agni Deepana* in nature. *Peya* is a type of *Pathya ahara* which *Laghu, Deepana* and *Pachana* property and is ideal to be given in case of *Agni mandhya*[7]. *Mudga* is a *Nitya sevaniya dravya* which is a good source of protein, carbohydrate, and energy and hence it is *Pathya* and slightly increases *Vata*[8]. *Laja* has *Medohara* and *Kapha chida* property and which was effective in reducing the *Meda* and *Kleda*[9]. *Khadira* has *Teekshna, Visada guna*, which was effective in clearing the obstruction of *Srotas* and along with *Medo hara* property was able to do *Dhatu Rukshana* and *Shoshana*, it also has antioxidant effect. The subjects felt satiated after eating *Mudgadi Kashaya Peya* as dinner, because it has more portion of water and less portion of solid and is *Chirapaki*. The appropriate digestion of food is facilitated by normal operation of *Agni*. Thus, *Dhatwagni* was corrected which led to proper formation of *Dhatus*. There was no buildup of extra *Medas* in the various parts of the body, such as the *Sphik, Udara,* and *Sthana,* because the obstructions were cleared. It also helped to increase *Agni*, *Vayu* and *Akasa mahabhutas* thereby reducing *Prithvi* and *Jala mahabhutas* which were increased in *Medoroga*. This reduced body weight gradually and alleviated *Sthoulya*.

General mode of action of *Yoga*

These *Asanas* have a positive action over abdominal muscles, waist and hip muscles and body posture. *Pranayamas* helps to improve metabolism, emotional responses, fatigue, stress, and reduced anxiety and creates a sense of relaxation and well-being in the subject and helps to stabilize the mind[10]. The slightly compressed condition while performing *Asanas* feels like a gentle massage and the alternate positive and negative pressure gradient will increase the blood circulation and abdominal organs are stimulated which aids digestion. *Asanas* increases the blood circulation around the joints and improves muscle tone. The increased circulation around the joints leads to effective removal of the toxic waste products. The proprioceptors are stimulated by the mild movements of the joints and muscles, which bring about mild stretch reflex. This prevents the stiffening of the joints and increases their mobility. The deposition of excess fat around the area of the waist, abdomen, thighs, and other part of the body is reduced. If the normal breathing is continued while maintaining the *Asanas* there is an alternative positive and negative pressure on these visceral organs. If the breath is retained during the maintenance of asana either after inhalation or exhalation, the positive or negative pressures are also maintained for that much duration, this stimulates the viscera receptors due to stretching of the walls of these organs, and hence stimulates its functions. Regular *Pranayama* helps to slow down the rate and regulate the pattern of breathing. Due to consequent reduction in the metabolic rate body requires only a small amount of oxygen and food. Reduced lung function gives more relaxation to the brain activities. Mind becomes quiet and calm[11].

CONCLUSION

Mudga, Laja and *Khadira* are the ingredients of the *Peya* which are *Kapha medohara* in nature. *Peya* is a *Pathyahara* which is *Laghu* and *Deepana* in nature and hence was effective in improving digestion. *Yoga* techniques and *Pranayama* helped to gain control over body and mind and increase the physical activity which improved the metabolism. Thus, *Mudgadi kashaya peya* and selected yoga techniques was significant in reducing BMI, Body weight and Waist-Hip ratio of the subjects and was significant in reducing total cholesterol, Serum Triglyceride, LDL and VLDL and had a slight improvement in HDL level but was not significant on statistical analysis.

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