



ASSESSING KNOWLEDGE, ATTITUDE, AND PRACTICES (KAP) REGARDING WATER DRINKING PRACTICES BASED ON AYURVEDIC PRINCIPLES AMONG INDIVIDUALS AT AN AYURVEDIC TERTIARY HEALTHCARE INSTITUTE IN DELHI- AN OBSERVATIONAL STUDY

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ABSTRACT:

Background- Water is one of the most vital elements for life on earth. Ayurveda has acknowledged the significance of water to a greater extent. Modern-day lifestyle declines the importance of water with various inappropriate drinking practices foremost among individuals. People are challenged with numerous pieces of advice regarding water drinking practices. Present-day research data representing the effect of water drinking on health is very minimal & basic. The fundamental principles of drinking water are thoroughly addressed in our Ayurvedic Literature to maintain health, prevent illness, and alleviate diseases. Ancient literature has emphasized water drinking based on their Prakriti (individual body constitution). The objective of the present study is to assess Knowledge, Attitude, and Practices (KAP) regarding water drinking among individuals. This research will aid in the development of water drinking habits based on Ayurvedic principles, resulting in improved community health. **Methodology-** A cross-sectional survey study was conducted on 200 respondents including 50 postgraduate scholars, and 150 non-medical staff at an Ayurvedic tertiary healthcare hospital in Delhi from Jan-Feb 2019, and data was collected through direct interview using Likert scale questionnaire comprising 20 questions on Knowledge, Attitude, and Practices (KAP) about water drinking. **Result-** This study revealed that levels of Knowledge, Attitude, and Practices (KAP) of water drinking are very good among Postgraduate Scholars whereas non-medical individuals have below-average levels. **Conclusion-** Poor water-drinking knowledge and faulty practices may contribute to several diseases at both the individual and communal levels. As a result, disseminating accurate information on ayurvedic-based water drinking practices is critical to maintaining health, preventing illness, and alleviating disease.

Key words: Water, Water drinking practices, Ayurveda, Survey

INTRODUCTION

Water is a fundamental substance for the existence of life on earth^[1] and a key component for sustainable development having a direct impact on human survival, the environment, and the global economy^[2]. It exists both externally in the surrounding environment and internally as an inorganic basis of living matter in the body, and it is responsible for a variety of functions such as various enzymatic reactions or ion exchange in/out of cell membranes in metabolism, as well as acting as a vehicle for the transport of raw materials, waste products, and heat liberated by chemical action^[3]. Water makes up about 70% of the body and helps maintain health if consumed at the right time and in the right amount. Ayurvedic literature considers water as '*Jala tattva*', one of the basic elements or *Panchamahabhoota* involved in the process of evolution i.e., *Srishti-uttapatti krama*, and are present in harmony in all living and non-living things^[4]. The significance of water, its *sevana kaala* (time of consumption), *sevana vidhi* (appropriate method of consumption), its effect on body in relation to meals, etc. are vividly

explained in various ayurvedic textbooks.

Acharya *Charaka* had termed water best among all the food articles, citing '*Udakam aashvasanam*'^[5] (water gives reassurance) and '*jalam stambhiyanam karothe*'^[6] (water makes one's stable). Classical textbooks have enumerated various attributes of water like *Anirdeshya/ Gupta/ Avyakta rasa* (tasteless), *amrita* (nectar), *jeevana* (vitalizer), *tarpana* (nourishment), *dharana* (upholds body), *Aashvaasajanana* (assurance/ comfort), *Shrama-klama-pipasa-mada-murcha-tandra-nidra-daha Prashamana* (alleviates exertion, body ache, thirst, stupor, unconsciousness, laziness, somnolence and burning sensation) and *Ekantatah pathya-tama* (solitary wholesome diet)^[7]. On the contrary, *Dushita jala* (incompatible/ polluted water) is Slimy, has insects, *Klinna*, full of leaves, algae, and mud, has abnormal color, taste, viscous and foul smelling^[8] and is a potent source of epidemics as per Acharya *Charaka* ^[9].

Acharyas have also described *Jalapaana Vidhi*^[10] (drinking water method) as drinking water that is pure, pleasant, and perfumed with flowers, and served in

utensils made of *swarna* (gold), *rajata* (silver), *taamra* (copper), *kamsya* (bronze), *mani* (precious stone), or *bhouma* (earth). It should be consumed in sufficient quantities at regular intervals to enable proper digestion, otherwise, it may interfere with digestion if consumed in larger or smaller quantities. In terms of the influence of *Jalapana* in relation to meals, acharyas said that water consumed in the middle of a meal preserves normal tissue state and aids digestion, whereas water consumed after meals increases obesity and when consumed before meals causes indigestion and emaciation^[11]. *Sheetala Jala* (cold water) is *sheeta* (cold) and *rooksha* (dry) in nature and its inatke is indicated in number of diseases like *Pitta vikara*, *visha* (poisoning), *bhrama* (giddiness), *daha* (burning sensation), *ajirna* (indigestion), *shrama* (fatigue), *chardi* (vomiting), *moha* (delirium), *murcha* (fainting), *madatyaya* (hangover), *urdhwaga raktapitta*, *klama* (tiredness), *atisara* (diarrhoea), *margottha vama*, whereas its contraindications are *Parshvashoola*, *pratishyaya* (common cold), *vataroga*, *galagraha*, *adhmana* (abdominal distention), *staimitya*, *sadya shuddha*, *navajvara*, *aruchi* (anorexia),

grahani, *gulma*, *shwasa* (dyspnoea), *kasa* (cough), *vidradhi*, *hikka* (hiccup), *snehapana* (after taking medicated ghee/oils)^[12]. On the other hand, *Ushnodaka* (water boiled till reduced to half) eliminates *kapha*, *meda*, *vata* and *aama* (unmetabolized waste). It is *pathya* (compatible), *deepaniya* (enhances digestive fire), *basti shodhaniya*, alleviates *shwasa*, *kasa* (respiratory ailments) and *jwara* (fever). It is indicated in disorders due to *pitta* or *sannipata*, *daha* (burning sensation), *atisara* (diarrhoea), *raktapitta* (bleeding disorders), *murcha* (unconsciousness), *madya* (alcoholism), *visha* (poisoning), *trishna*, *chardi* (vomiting), and *bhrama* (giddiness)^[13]. Concept of *Paryushita ushnodaka ushapana*^[13] (sipping of overnight kept water in early morning) as per one's *prakriti* (individual body constitution) and *jalapana* (drinking water) according to various *ritu*^[14] (season) are also explained in *dinacharya* (daily regimen) and *ritucharya* (seasonal regimen) to maintain health and preventing diseases.

Despite such vivid explanations about various aspects of drinking water in ayurvedic literature, knowledge of water drinking practices among individuals is still

limited. The concept of drinking water among individuals is either poorly understood or they are frequently perplexed by the multiple pieces of advice offered to them about water drinking habits. Modern-day lifestyle also downplays the significance of water with various inappropriate drinking practices foremost among individuals. Current researches on the effect of water drinking on health is also primal and basic. Apart from this, depleting water resources^[15], poor water storage management, contaminated drinking water^[16], poor hygiene practices^[17], poor water sustainable management^[18] etc. are some of the leading issues faced nationwide. Therefore, individuals must have a basic understanding of optimal water consumption habits based on Ayurvedic principles. Present study was aimed to assess the Knowledge, Attitude, and Practices (KAP) of the community about water drinking practices, highlighting current status of awareness among people and exploring common malpractices of water drinking that may help rectify and develop standard guidelines of water drinking practices based on Ayurveda which when

disseminated, will lead to positive health of the community.

OBJECTIVE:

To assessing Knowledge, Attitude, and Practices (KAP) regarding water drinking practices based on ayurvedic principles among individuals at an ayurvedic tertiary healthcare institute in Delhi- an observational study.

METHODOLOGY

The present study is a hospital-based cross-sectional survey study conducted at All India Institute of Ayurveda, New Delhi from January to February 2019. A non-randomized purposive sampling technique was used to collect data through direct interview with 200 study participants including 50 postgraduate scholars and 150 non-medical staff of AIIA representing each group. A preliminary list of objects with regards to Knowledge, Attitude, and Practices (KAP) was prepared based on classical texts for various aspects viz. importance of water, the relation of water intake to meals, water drinking according to season, therapeutic uses of water, and indications- contraindications of water and a Liker scale questionnaire comprising of 20 questions was framed in both English and Hindi languages. The written

informed consent was obtained before individual participation.

Table No. 1: Questionnaire			
S. No.	Question	YES	NO
	Knowledge regarding water drinking		
	Do you know Ayurveda suggests to drink Stale water (<i>Paryushit jala</i>) on or before sunrise?		
	Are you aware that as per Ayurveda if a man who drinks water while hungry may suffer from Ascites (<i>Jalodara</i>)?		
	Are you aware that as per Ayurveda if a man who drinks water while hungry may suffer from Abdominal lump (<i>Gulma</i>)?		
	Do you know that drinking water should be avoided when under high labor fatigue, experiencing hunger or rage, or when in an uncomfortable position?		
	Do you know one should only drink warm water (<i>ushnodaka</i>), when suffering from ailments like cough, cold, fever, obesity, Vatavyadhi, and anorectal diseases?		
	Do you know that consuming an excessive amount of water might result in Mandagni, or low digestive fire?		
	Do you know it's not advisable to drink warm water with honey?		
	Attitude regarding water drinking		
	Do you think that consuming water incorrectly can have an impact on digestive fire?		
	Do you agree that extremely cold water or hot water is very bad for teeth and digestive fire		
	Do you think that one should avoid drinking water right after eating?		
	Do you believe that drinking cold water would increase the body weight?		
	Do you agree that regular water intake should be as per the need?		

	Practice regarding water drinking		
	Do you use plastic containers to store the drinking water?		
	Do you drink water in a sitting position?		
	Do you drink water on an empty stomach that is stored in a copper vessel?		
	Do you drink a lot of water on an empty stomach?		
	Do you drink water just before food?		
	Do you drink water in between the meal?		
	Do you drink water just after food?		
	Do you drink warm water after having an oily substance?		

RESULTS

200 study subjects were divided into two categories as 50 Ayurveda PG scholars and 150 non-medical people who were interviewed for the assessment of knowledge, attitude, and practice regarding water consumption.

Table No. 2: Level of Knowledge about water drinking practices

Knowledge Regarding water drinking	Postgraduate scholars		Non-medical	
	n=50	%	n=150	%
Ayurveda suggests to drink Stale water (<i>Paryushit jala</i>) on or before sunrise.	37	74	75	50
As per Ayurveda if a man who drinks water while hungry may suffer from Ascites (<i>Jalodara</i>).	32	64	20	13.3
As per Ayurveda if a man who drinks water while hungry may suffer from Abdominal lump (<i>Gulma</i>).	32	64	17	11.3
Drinking water should be avoided when under high labor fatigue, experiencing hunger or rage, or when in an uncomfortable	38	76	35	23.3

position.				
One should only drink warm water (<i>Ushnodaka</i>), when suffering from ailments like cough, cold, fever, obesity, <i>Vatavyadhi</i> , and anorectal diseases.	46	92	40	26.67
Consuming an excessive amount of water might result in <i>Mandagni</i> , or low digestive fire.	48	96	21	14
It's not advisable to drink warm water with honey?	43	86	46	30.6

The majority of the Postgraduate scholars had good knowledge regarding water drinking and non-medical participants had less knowledge about most of the questions except Q no 1 where 50% have good knowledge.

Table No. 3: Level of Attitude towards water drinking practices

Attitude regarding water drinking	Postgraduate scholars		Non-medical staff	
	n=50	%	n=150	%
Consuming water incorrectly can have an impact on digestive fire.	47	94	60	40
Extremely cold water or hot water is very bad for teeth and digestive fire.	38	76	39	26
One should avoid drinking water right after eating.	42	84	83	55.3
Cold water consumption will increase body weight.	37	74	30	20
Regular water intake should be as per the need.	46	92	112	74.6

Level of attitude towards water consumption is good among Postgraduate Scholars where it showed mostly below average in non-medical individuals. Attitude of Non- medical participants are disappointing about all questions except Q no 10 and 12.

Table No. 4: Level of Practices towards water drinking practices

Practices regarding water drinking	Postgraduate scholars		Non-medical individuals	
	n=50	%	n=15	%

			0	
Participants using plastic containers to store drinking water.	43	86	126	84
Participants drinking water in a sitting position.	40	80	114	76
Participants drinking water on an empty stomach that is stored in a copper vessel.	24	48	81	54
Participants drinking a lot of water on an empty stomach.	17	34	57	38
Participants drinking water just before food.	42	84	93	62
Participants drinking water in between the meal.	29	58	69	46
Participants drinking water just after food.	27	54	114	76
Participants drinking warm water after having an oily substance.	38	76	63	42

Practice of water drinking is good among Postgraduate Scholars than non-medical participants, except Q 13 where majority of participants storing drinking water in

plastic container and Q 15 where majority of PG Scholars are not drinking water that is stored in copper vessel.

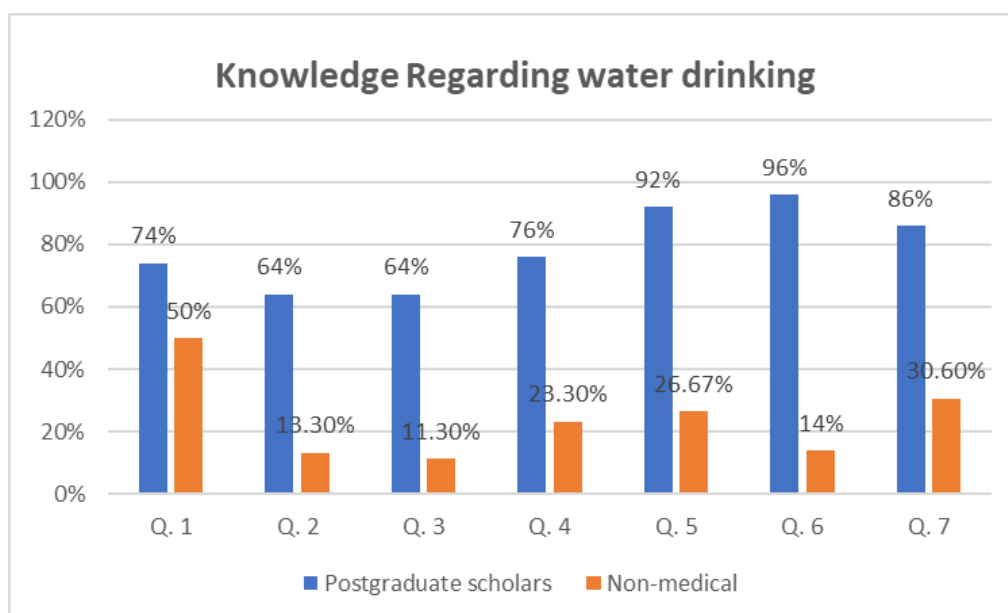


Fig. 1 :Knowledge regarding water drinking

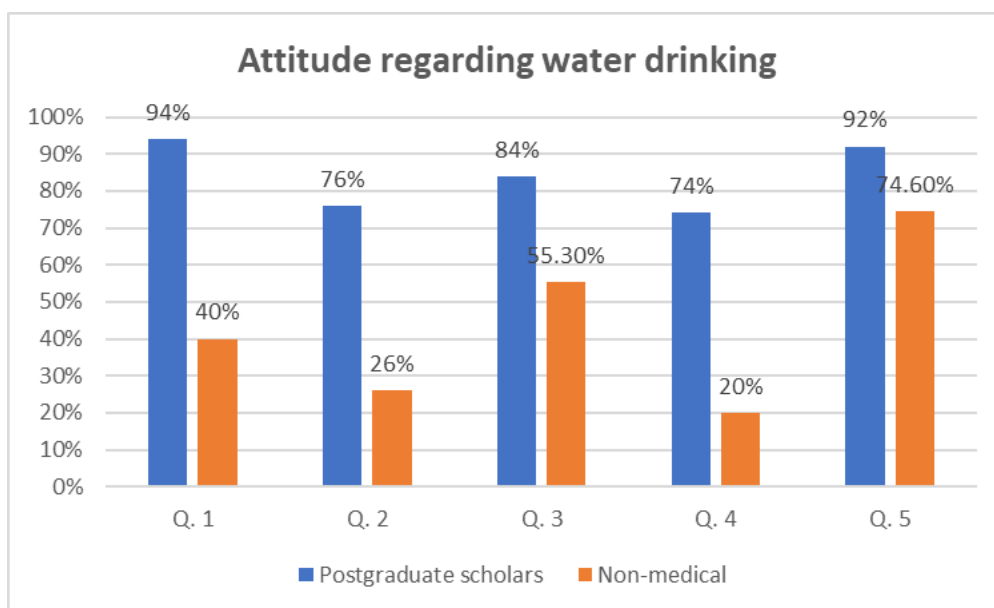


Fig. 2 :Attitude regarding water drinking

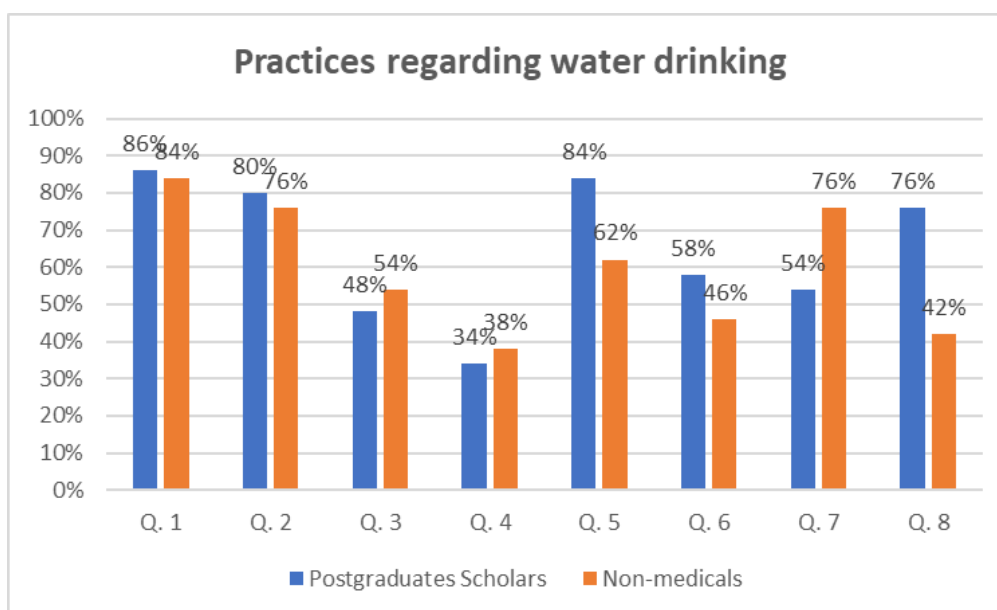


Fig. 3 : Practices regarding water drinking

DISCUSSION

The present study was conducted in a tertiary care Ayurvedic hospital in Delhi to assess Knowledge, Attitude, and Practice (KAP) regarding water drinking. Although various review articles have been published highlighting classical references

of the significance of water, its purification methods, and scientific implications in current scenario^{[19],[20]}, no such similar investigation has been conducted previously to assess its awareness and practices among the general population. Majority of the

Postgraduate scholars had good knowledge (74%) than non-medical participants (50%) regarding about drinking Stale water (*Paryushit jala*) on or before sunrise. Despite of the knowledge most of the people take water excessively after sunrise when they wake up in *Kaphaj kala* or *Ushakala* and it leads to *Mandagni* (Low digestive fire). Furthermore, there is a cultural perception that one should drink excessively in the morning, even if it is late, but Ayurveda recommends drinking *Paryushita Jala* (sipping of overnight kept water in early morning) before or during sunrise.

Majority of the postgraduate scholars (64%) were aware about ill-effects of drinking water in extreme hunger, which is also supported by ayurveda as it may cause Ascites (*Jalodara*) On other hand, eating food in extreme thirst may cause Abdominal lump (*Gulma*)^[21]. Majority of non-medical individuals (13.5%) have very less knowledge about the same.

When it comes to not drinking water when extremely tired, angry, or in an uncomfortable position, which is also advocated by Ayurveda science, the majority of postgraduate scholars (76%), know better than non-medical people

(23.3%). Ayurveda states that when afflicted with cough, cold, fever, obesity, Vatavyadhi, and anorectal illnesses, one should only drink warm water (*Ushnodaka*). *Ushnodaka* has a light character and aids in better digestion by igniting the digestive fire. While just 26.7% of non-medical participants were aware of this, the majority of postgraduate scholars (92%) had good knowledge. The majority of postgraduate scholars (96%) were well informed about that drinking too much water could cause *Mandagni*, or low digestive fire, while just 14% of non-medical participants were aware about this risk. it's important to raise awareness among common people that how even the basic activities like drinking water can affect our body. It's important to be mindful of how much water we drink to maintain a healthy digestive system.

the practice of consuming honey with warm water is widely accepted but an incorrect practice. Ayurveda doesn't advise use of heated honey or mixed with warm substances as it is considered that it can lead to the formation of toxins (*Ama*) in the body, which can be harmful to one's health. In this survey we found that

86% of the population of postgraduate scholars and 30.6% non-medical participants are aware of this fact.

Regarding the attitude towards drinking water, this survey depicts an overwhelming 94% of postgraduate students and 40% of non-medical individuals believe that the way we consume water can have a significant impact on our digestive fire. This highlights the importance of being mindful of our water consumption habits and ensuring that we are drinking water in a way that supports our overall health and well-being.

This survey has revealed that a significant proportion of people, including 26% of non-medical individuals and 76% of postgraduate students, hold the belief that consuming water that is either too hot or too cold can have negative effects on both teeth and digestive processes. This lack of understanding and knowledge about the impact of water on digestive fire can lead to a range of common gut-related ailments. It is therefore important to educate people about the potential consequences of consuming water that is not at an optimal temperature.

Many people believe that drinking water right after eating is not a good idea. This survey study have found that 84% of postgraduate students and 55.3% of non-medical people share this belief. As per ayurveda also water consumed in large quantity after meals will act as a *Visha* (Extinguishes the Agni of Body).

Water does not contain any calories, yet there is a common belief among 20% non-medicals and 74% post graduates that drinking cold water can lead to weight gain. This belief is supported by Ayurvedic texts, which suggest that drinking cold water can decrease digestive fire and cause the stomach and blood vessels to constrict. As a result, the food and fat cannot be adequately broken down by the stomach, which can cause the body to accumulate fat in an unhealthy way.

Ayurveda, suggests that drinking water should only be done when one is thirsty. This means that one should not force themselves to drink water if they do not feel the need to. Interestingly, this survey found that 92% of postgraduates and 74.6% of non-medicals believe that consuming water regularly is important and should be based on one's individual needs. This highlights the importance of

understanding one's own body and its hydration needs.

Regarding practice of water drinking, According to this study, a significant majority of participants, 80% of postgraduates and 76% of non-medicals, have developed good habits of drinking water while being seated. This is in line with Ayurvedic principles, which recommend sitting instead of standing when drinking water. The reason behind this is that drinking water while standing can disrupt the fluid balance in the body, which can lead to an increased risk of fluid accumulation in the joints.

Many people have the practice of storing their drinking water in plastic containers. However, studies have shown that this can be harmful to health. Chemicals present in plastic water bottles can seep into the water and cause negative health impacts. In our survey study also, it has been found that 86% of postgraduates and 84% of non-medicals have this practice of storing water in plastic containers. It is important to be aware of the potential risks associated with plastic leachate and take steps to avoid them.

lesser participants are practicing drinking water in empty stomach that is stored in a

copper vessel. Only 48% postgraduates and 54% non-medicals were practicing it. If awareness will be increased for using overnight copper enriched water at early morning empty stomach, which could be helpful to reduce Iron deficiency anemia as it has been proved when copper level is low, the body may not be able to absorb iron. Copper deficiency leads to anemia.^[22] According to our classical texts water should be kept and served in utensils made of *Swarna* (gold), *Rajata* (silver), *Taamra* (copper), *Kamsya* (bronze), *Mani* (precious stone), or *Bhouma* (earth).

A considerable proportion of individuals in both postgraduates (34%) and non-medicals (38%) tend to consume a substantial quantity of water on an empty stomach. This practice can have adverse effects on their digestive system, as it may lead to the suppression of digestive fire, resulting in various gut-related issues such as indigestion, bloating, and discomfort.

According to this study, 62% of people in non-medicals and 84% of postgraduates drink water right before meals. However, this behavior is not recommended as it may lead to digestive issues. It is often suggested to drink water half an hour

before a meal to aid in digestion. Additionally, Ayurveda warns that drinking water right before eating may cause weakness and emaciation. Drinking water right before meals can also make a person feel full, which may result in them eating less.

A recent study has revealed that a significant proportion of postgraduate students (58%) and non-medicals (46%) prefer to drink water in between meals. This practice of consuming small amounts of water in between meals act as *Amrut* (Elixir of Life) in Ayurveda. It is also believed to boost metabolism and promote weight loss.

54% of participants in postgraduate and the majority of non-medicals (76%) drink water right after eating. This is an unhealthy habit in our society as per Ayurveda, drinking water after eating acts as a *Visha*, which extinguishes the body's *Agni* which further aid in formation of toxins (*Ama*) and gut related diseases.

After consuming oily substances, only 42% of non-medical professionals and 76% of postgraduates drink warm water. This habit is beneficial as warm water helps to activate the digestive system, breaking down the nutrients into smaller and softer

forms. Unfortunately, this habit is not commonly practiced by the general public. This is a small study attempting to reveal the present status of this underrated issue of water consumption. Such studies are to be conducted in all other Ayurvedic Hospitals with many subject participants so that real facts are explored.

Limitation:

It is an observational study of the present literature, but research work related to the large scale is needed to revalidate the principles of Ayurveda about water drinking so it can be beneficial for the community.

CONCLUSION:

According to this study, the general public in our country lacks knowledge, attitudes, and practices regarding water drinking habits. Our ancient Ayurvedic knowledge on water intake can be utilized in modern times by implementing it at the community level as a Public Health Initiative, following suitable and thorough scientific revalidation. The study has demonstrated that there is a significant potential to promote water drinking habits among the general public in both rural and urban areas to maintain good health and eliminate indigestion-related

health issues. Government organizations operating at the primary health care (PHC) and community health center (CHC) levels, in collaboration with civil society, should consider incorporating public education on the importance of water drinking habits among people through available channels. This is particularly important because lack of awareness about the principles of drinking water can lead to a high frequency of both communicable and non-communicable diseases.

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