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Assessment of Lifestyle and Health Status of Buddhist Monks

Chiranthana Prasad M R[1], Asha G[2]

[1]Msc Food and Nutrition, Smt VHD Central Institute of Home Science (Autonomous), Department of Food and Nutrition and Research Centre, Seshadri Road, Bengaluru -560001
[2]Assistant Professor Smt VHD Central Institute of Home Science (Autonomous), Department of Food and Nutrition and Research Centre, Seshadri Road, Bengaluru -560001

Corresponding Author: Chiranthana Prasad M R

ABSTRACT

Culture, communication and cuisine are an interwoven web which connects people and supports in establishing identity. Food forms an integral part of the culture of Buddhism. A survey conducted in 2016 by Chulalongkorn University in Bangkok found nearly half of the country's monks were overweight.

Thus the present study was formulated to assess the lifestyle and health status of Buddhist monks in Bengaluru (12-60 years). The objectives of the study were 1) to investigate the dietary pattern and food choices of Buddhist monks 2) to observe relationship between spirituality and dietary patterns 3) to secure data on the health status of Buddhist monks. Self administered questionnaire to elicit data on demographic profile, anthropometric data, dietary pattern, physical activity pattern, clinical and biochemical parameters of the monks was used. Evidently the monks lead a sedentary lifestyle and more than half of them were either obese (I) or overweight. More than half of the monks preferred packaged fruit juices and carbonated drinks. Even though some occasional instances of gastrointestinal symptoms and psychological symptoms (anxiety/depression) were reported, the biochemical parameters were all in normal range. The psychological effects of the monastic life seem to outweigh the risks of developing any non communicable diseases. Yet the long term risks of sedimentary lifestyle could affect the health status of the monks and cannot be left unacknowledged or uninspected. Therefore 30- 45 minutes moderate physical activities for at least 3- 4 days a week along with well balanced and nourishing diet is recommended.

Keywords: Buddhist monks, lifestyle, health, nutritional status, obesity.

INTRODUCTION

Human health, religion and medicine have a correlation since the beginning of time. Religion plays a very important role in all aspects of the moral code of conduct of human affairs. [1] Culture, communication and cuisine is another interwoven web which connects people and supports in establishing identity. [2] Food forms an integral part of the culture of Buddhism. Buddhism was the result of discriminating social and political culture prevailing during the 6th century BC. Buddhism is a religion which believes in personal spiritual development as its prime essence. [3]

According to the 2011 census data of India, Buddhists make 0.7% of the population. [4] Monks are devoted to spiritual development and maintain strict discipline. They depend on common people for the necessities of life, such as food, clothing, lodging and medicine. In return these monks provide spiritual guidance to the people. The Buddhist Monks lead a different lifestyle compared to the rest of the population. According to the Buddhist discipline, monks can have a normal diet in the morning before 12 noon. It includes the breakfast and a early lunch. After 12 noon

they can consume water and fruit juices for the remaining part of their day. [5]

Sustainable Developmental Goals are a collection of 17 goals which form the bedrock for achieving a better and sustainable future for all. SDG goal 3 calls for good health and wellbeing SDG 11 calls for sustainable cities and communities and SDG 12 calls for responsible production and consumption. Keeping the focus on these Sustainable Developmental Goals Thailand approached innovatively to tackle the growing obesity among Buddhist monks. A survey conducted in 2016 by Chulalongkorn University in Bangkok found nearly half of the country's monks were overweight. About 40% and more of those surveyed had high cholesterol, about one-fourth had high blood pressure and one in 10 was diabetic. The reasons conjured for this alarming cause of obesity was linked Thai culture of Buddhist devotees offering alms and the changing market environment and modern lifestyle. Usually they have no choice but to eat the food that is offered. So devotees amidst they busy life found it easy to conveniently purchase food rather than cooking it themselves. It was no surprise as these market products offered to the monks having high carbohydrates, fat, sugar and sodium in them . [6]

Non communicable diseases deaths have been on the rise in India. It forms the leading cause of death and disability in India. In 2016, 62% of all deaths and 55% of all disability-adjusted life years (DALYs) were a result of Non communicable diseases. With rise in diseases like diabetes, hypertension, obesity and climate change the rise in non communicable disease are going increases in number. [7]

According to the International Diabetic Federation around 20% of urban population and 8.8% of the total population having age 18 years or above were Diabetic in India in 2017. Over nutrition is a predisposed causative factor which is associated with high risk of mortality and emergence of co- morbidities. While lifestyle change can be another causative factor to increase the susceptibility of diabetes in the population, eating habits also contributive equally. Food habits, like daily or weekly consumption of aerated drinks, fried foods, fast foods etc increase the risk of both insulin resistance and obesity. [8]

Scope of the Study

- Changes in the lifestyle and food habits has affected the health and well being of monks
- This study is will help us understand the severity of the current health status of Buddhist monks

Aim: To understand and assess the impact of lifestyle modifications on the nutritional status of Buddhist monks and also securing data on their health status.

Objectives:

Hence taking the above points into consideration the following objectives were formulated

1. To investigate the dietary pattern and food choices of Buddhist monks
2. To secure data on the health status of Buddhist monks.

MATERIALS AND METHODS

Health and nutrition become two important aspects of a monk's life. The present lifestyle in the urban setup will have a significant impact on the various aspects and quality of life of the monks.

Sampling: The study was conducted on a representative group of 100 Buddhist monks between the age group of 12 to 60 years. The samples were collected by random sampling technique. All the monks participated willingly for the study.

Inclusion Criteria:

- Buddhist monks (age group of 12 to 60 years)
- Monks who are not terminally ill

Location: The present study was conducted in the Maha Bodhi Society, Gandhi Nagar, Bengaluru.

Research Design: The investigation is a descriptive study and was conducted using suitable pre-tested questionnaires on a representative group of Buddhist monks. The details of various aspects included:

- **Demographic profile:** Data on Age, Education, and Marital status were collected
- **An assessment on the food choices and dietary habits among the Buddhist monks :** Questions regarding the pre and post ordination food choices, consumption of breakfast, reasons and frequency of skipping breakfast, consumption and preferred choice of snacks , frequency of snack consumption, consumption and frequency of meat, consumption of dietary supplements.
- **Anthropometric measurements and Daily activities:** The subjects were screened by taking their height, weight and BMI by random sampling technique. The daily activities of monks were collected through the questionnaire. It included type of activities done, frequency and duration of activities done and sleep conditions of the monks in a day.
- **Clinical Assessment:** The clinical assessment of the subjects were done through a validated questionnaire .It included prevalence of diseases like Diabetes ,Obesity ,High Blood pressure, Osteoporosis, Osteoarthritis/Joint pains, Anemia, Cardiovascular /atherosclerosis. It included symptoms of other common gastrointestinal ailments (Cold, Cough, Acidity or burning, Nausea, Vomiting), psychological issues (depression, anxiety) and allergies.
- **Dietary Pattern:** Dietary food intake was taken through a 3 day dietary recall method for a sub sample (25%) of monks. The subjects were all asked to recall what was eaten in a day and the calories were counted.
- **Biochemical Parameters:** The secondary data available from the recently done blood reports were collected from the subjects (40%) and the parameters observed included- fasting blood sugar, postprandial blood sugar levels, HbA1C cholesterol, HDL and LDL.

Statistical analysis: The data collected was classified, tabulated and expressed as percentage, mean and SD. The results were analyzed statistically using Standard 't' test for the sampled population mean with a 5% level of significance.

RESULTS AND DISCUSSION

Buddhist monks are susceptible to various lifestyle modifications. Their presence in an urban setup can impact dietary pattern. In the recent decades the has been a steady rise in overweight or obese cases [9]. By being able to forecast the future prevalence of overweight and obesity which can help in policy reformation in our country. As Buddhists become a part of our population, inclusion in assessment and programmes aimed at their well being can immensely improve their health and nutrition status.

Demographic profile of the Buddhist monks

The results indicate that more than half (55%) of the Buddhist monks fall under the age group of below 23 years followed by 45 percent under the age group of 23 to 50 years. The results reveal that 36 percent of Buddhist monks were illiterate , followed by 26 percent having primary , while a mere 8 percent having secondary education. This shows that ordination into monkhood could happen at any stage of life, irrespective of the degree of formal education. The results about the marital status of the respondents reveal that all (100%) the Buddhist monks were unmarried.

Thus the results indicate early ordination into monkhood which increases the duration lived as a monk, also preventing exposure to marital lifestyle

which would reduce the risk to developing any Non communicable diseases as the appearance of depression, anxiety and stress is comparatively lesser than working professionals and married individual.

TABLE 1 : Classification of Respondents by Age , Educational qualification, Marital status and Health conditions N=100

Characteristics	Category	Respondents	
		Number	Percent
Age group (years)	Below 23	55	55.0
	23-50	45	45.0
Educational qualification	Illiterate	36	36.0
	Primary	26	26.0
	Secondary	8	8.0
	Higher secondary	17	17.0
	Degree	16	16.0
Marital status	Unmarried	100	100.0
	Married	0	0.0
Total		**100**	**100.0**

BMI of the respondents

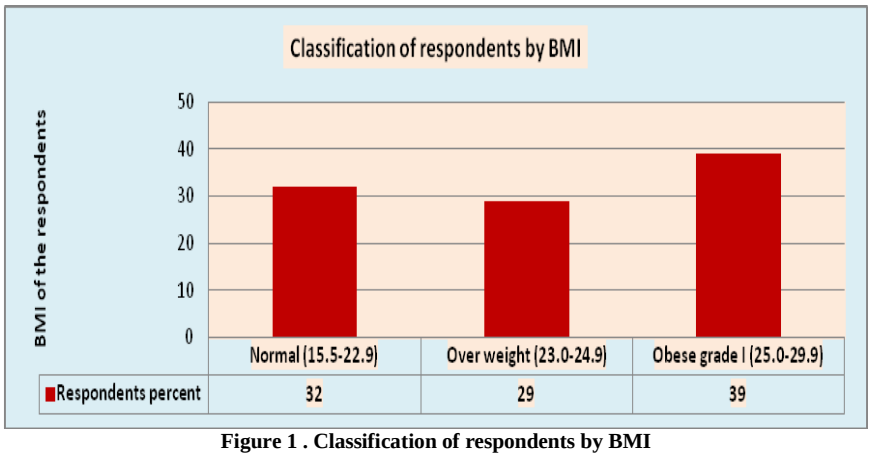

Figure 1 . Classification of respondents by BMI

Obesity and overweight cases have greatly dominated today's generation. The results reveal that 39 percent of monks are obese grade I followed by 32 percent and 29 percent fall normal BMI and overweight category. The monks in obese (I) and overweight category could be due to their sedentary lifestyle and changing dietary pattern. This could become predisposed risk factors for non-communicable diseases. [10]

The number of years of ordination can have a significant positive correlation with BMI. [11] *So the sedentary lifestyle for a prolonged period of ordination could increase the risk for developing non communicable diseases. Increased BMI can become a predisposition to obesity. Obesity can in turn become a risk factor in developing other non communicable diseases. Therefore monitoring the food consumption behavior of the monks and community attitudes during alms could improve the health of the monks.*

Response to pre and post ordination food choice

Food choices of monks are generally revered if its vegetarian. But there aren't specific rules that become a universal code of conduct. Besides that, the evolving urban culture also a great bit of influence.

The results reveal that most (78%) of the monks were non-vegetarians before attaining monkhood, while remaining 22 percent were vegetarians. The results also reveal that post ordination most (74%) of the monks were non-vegetarians while the remaining 26 percent were vegetarians .The results go to show that even though most of the monks post ordination lead an austere

lifestyle , they still have a choice of remaining a non-vegetarian due to various reasons.

The results indicate that there is no much change in the food choice pre and post ordination. This could be due to the acceptance of food offered through alms without resistance/preference. Lately due to health concerns also adaptation to meat diet is being accustomed to.

TABLE 2 : Classification of Respondents by Food Choice Pre and Post Ordination N=100

Characteristics	Category	Respondents	
		Number	Percent
Food choice before ordination	Vegetarian	22	22.0
	Non-vegetarian	78	78.0
Total		**100**	**100.0**
Food choice post ordination	Vegetarian	26	26.0
	Non-vegetarian	74	74.0
Total		**100**	**100.0**

Since most monks are non-vegetarians there, response on consumption of meat (of all kinds)/ poultry/fish / eggs among the monks and their specific circumstances for consumption can be observed.

It is clear from the above table that there were multiple responses by monks who consume meat (of all kinds)/ poultry/fish / eggs. A crossover in their dietary preference to more than one of the above mentioned options seems clear. 45 percent monks choose to consume red meat, followed by 41 percent, 38 percent, 22 percent and only 4 percent monks choose to consume fish, poultry, eggs and others respectively.

It can also be noted from the results that majority (93%) of the monks choose to eat meat /poultry/fish /eggs only when offered in alms followed by 4 percent and 3 percent consume on special occasions and as a normal part of the diet.

This goes to show that most of the monks are conscious of the Buddhist doctrines and very few are exempted from it due to their health requirements, allowing them to consume meat /poultry/fish /eggs as a part of their normal diet

TABLE 3 : Response on Consumption of meat/poultry/fish/eggs and Specific circumstances for their Consumption N=100

Aspects	Category	Respondents	
		Number	Percent
Consume food @	Red meat	45	45.0
	Poultry	38	38.0
	Fish	41	41.0
	Eggs	22	22.0
	Others	4	4.0
Specific circumstance	Meat is a normal part of diet	3	3.0
	Only on holiday/special occasion	4	4.0
	In alms	93	93.0

@ Multiple response

Frequency of snacks consumption and preferred choice of snacking

The results show that, 35 percent monks consume snacks once a month, and only 4 percent weekly thrice As revealed by the earlier results, skipping breakfast can impact the dietary pattern of the monks. This could be one of the reasons that the frequency of snacks will be influenced. Having good breakfast can reduce the intake of high-carbohydrate, high-fat foods and sugar at evening when compared with skipping breakfast.[12]

TABLE 4: Response on Frequency of Snacks Consumption N=100

No.	Frequency Consumption of Snacks	Respondents	
		Number	Percent
1	Daily	34	34.0
2	Weekly thrice	4	4.0
3	Weekly twice	5	5.0
4	Weekly once	14	14.0
5	Fortnightly	8	8.0
6	Once a month	35	35.0
	Total	**100**	**100.0**

The monks have a varied preference for snacks consumption. Among the beverages, more than half (65%) of monks prefer packaged fruit juices followed by 53 percent. Among the solid snacks , packaged foods is preferred by 46 percent monks followed by 17 percent and 6 percent for deep fried foods and processed flour based snacks respectively. This could be due to exposure of the monks to various environmental conditions, technological advancement and most monks being in adolescent and young adult age group could trigger curiosity of palate. So when frequent snacking could affect the health of the monks as increased intake of high fat, low dietary fiber and carbonated/sweetened beverages are associated with increased risk of type II Diabetes and obesity. [13]

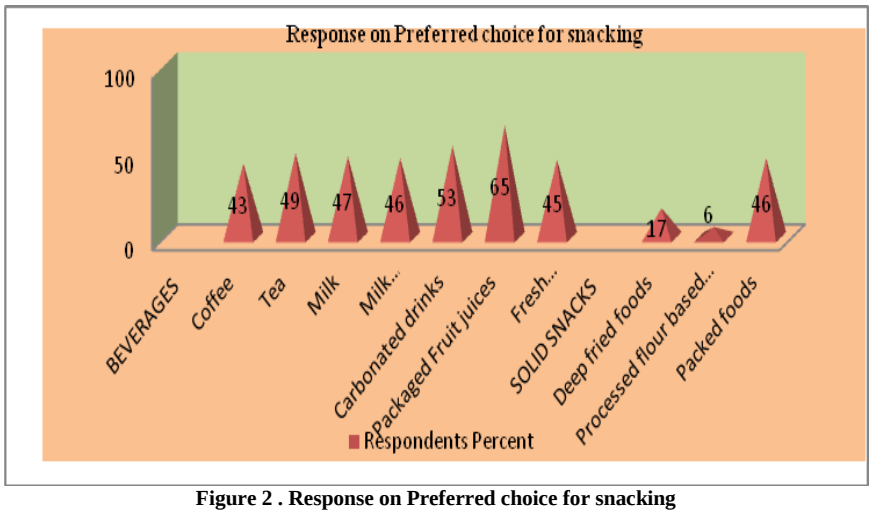

Figure 2 . Response on Preferred choice for snacking

Consumption of Dietary Supplements

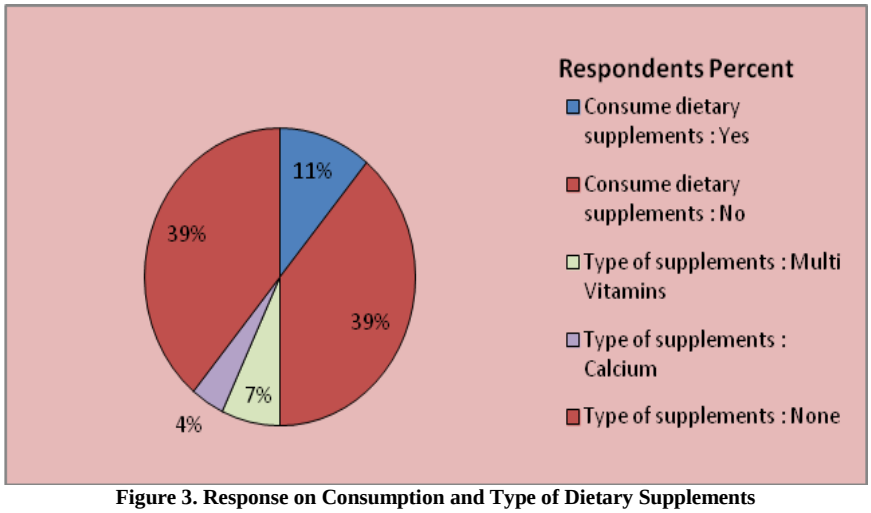

Figure 3. Response on Consumption and Type of Dietary Supplements

It's revealed from the study that, majority (78%) of the monks doesn't consume any dietary supplements while the remaining 22 percent do consume them. Among the 22 percent, 14 percent monks consume multi vitamins and only 8 percent monks consume calcium supplements. Due changing health needs and availability of commercial supplements, it can be noted that monks have considered using dietary supplements as a part of their lifestyle.

As majority monks (78%) don't consume any dietary supplements, it only goes to show that either their nutritional needs are being met by adequate diet or that they lack any ailments. There could also be

lacunae, due to lack of regular clinical screening which could pose to be another reason for non consumption of dietary supplements.

As the monks have a regimental food practice, consumption of dietary supplements when mandated therapeutically / general physical requirements could definitely improve their overall health status. Having said that, provision of a nourishing and balanced diet can help maintain optimum nutritional and health status.

Major Nutrients Adequacy

The mean energy of Buddhist monks is 1672 Kcal . The mean protein and mean fat is 44.3 g and 18.5 g respectively. The monks are able to meet the energy adequacy by 68 percent, protein adequacy by 76.8 percent and fat adequacy by 59.1 percent. Further the data was subjected to statistical test, which indicated that the difference in the mean consumption with respect to RDA of all the nutrients was found to be statistically significant at 5 % level.

Even though there is deficient in nutrient adequacy, earlier results had revealed 39 percent and 29 percent monks were obese (I) and overweight. Thus indicating plausible reasons such as:

- Sedentary lifestyle (decreases physical activity)
- Hormonal imbalance
- Endogenous fat production in the body

TABLE 5 :Mean consumption of Major nutrients and Adequacy N=25

No.	Nutrients	RDA (mean)	Respondents		Adequacy (%)	Standard 't' Test
			Mean	SD		
1	Energy (Kcal)	2435	1672	123	68.7	31.02*
2	Protein (g)	58	44.3	4.3	76.8	15.58*
3	Fat (g)	31	18.5	2.9	59.1	22.07*

**Significant at 5 % level , t (0.05,99df) = 1.96*

Daily activities

The results reveal that the monks are involved in various activities throughout the day like chanting, meditation and maintenance of the temple premises.

Morning chanting was done by more than half (73%) of the monks for less than or equal to 30 minutes while 27 percent monks do it for 31 – 60 minutes. The evening chanting was also done by more than half (64%) of the monks for less than or equal to 30 minutes while 36 percent of the monks do it for 31 – 60 minutes. Meditation, which is an important aspect for Buddhism was done for 31 – 60 minutes by more than half (52%) of the monks followed by less than or equal to 30 minutes by 38 percent. Maintaining the temple premises is done as both a form of activity and responsibility by the monks. It was done for 31 – 60 minutes a day by more than half (52%) of the. Thus by the above data we can conclude the monks don't get involved in rigorous activities, but do follow a routine in their daily activities. They seem to fall into a sedentary lifestyle category.

TABLE 6: Classification of Respondents by Daily activity N=100

No	Daily activity	Respondents				Mean Time (mins)
		≤ 30 mins		31-60 mins		
		N	%	N	%	
1	Morning chanting	73	73.0	27	27.0	36.4
2	Evening chanting	64	64.0	36	36.0	35.0
3	Meditation	38	38.0	52	52.0	48.2
4	Maintenance of temple premises	48	48.0	52	52.0	36.7

Alms gathering

Alms gathering is both a form of spiritual benevolence on the part of donors and an form of physical activity for the monks. This practice helps the monks get detached to materialistic needs. It ultimately

helps them in reflecting food with a cloying thought and also decreases the desire for tastes thus facilitating in development of a tranquil mental state. This tranquility helps in achieving nirvana. [14]

The results reveal that alms gathering was done by more than half (70%) of the monks while remaining 30 percent was not. The lack of alms gathering by the 30 percent monks could be due to serious health conditions or because, factually monks can generally share the food got through alms with fellow monks. The results reveal that walking was the preferred means of alms gathering by 54 percent of the monks while 16 percent prefer other means of transport. Walking as was preferred by majority monks reiterates a conscious or unconscious effort to be physically active. The other monks could be using alternative modes of transport due to lack of substantial residential complexes near their premises.

The results also reveal the approximate distances travelled by the monks for gathering alms. 40 percent of the monks travel for 1-2 kilometers distance, while remaining 30 percent travel between 3- 4 kilometers. The provision of food provided at the monastery could also prevent the monks from travelling long distances to gather alms.

TABLE 7: Response to Alms gathering, its Preferred means and Approximate distance travelled N=100

Aspects	Category	Respondents	
		Number	Percent
Alms gathering	Yes	70	70.0
	No	30	30.0
Preferred means	Walking	54	54.0
	Others	16	16.0
Approximate distance travelled	1-2 kms	40	40.0
	3-4 kms	30	30.0

Sleep pattern

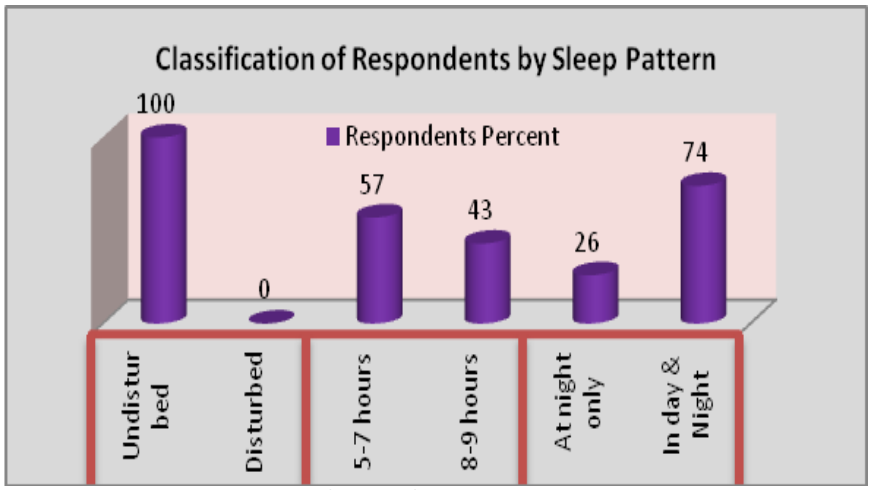

Figure 4. Classification of Respondents by Sleep Pattern

The results reveal that all (100%) the monks have undisturbed sleep. More than half (57%) of the monks slept for 5- 7 hours a day while 43 percent for 8-9 hours. Sleeping both in the day and at night was seen by more than half (74%) of the monks while 26 percent only at night.

Average adults need 7 hours of sleep and teenagers need 9.5 hours of sleep. Longer sleep durations is associated with lowered adiposity factors, better emotional quotient and improved quality of life. [15]

Some studies have reported that there is a correlation between obesity and sleep deprivation, as the dietary pattern is affected due to activated stress mechanism (cortisol activation). This has an impact on the circadian rhythms and can be linked in

correlation between BMI and sleep. There is increased sense of carving for fatty foods , binging at night and increased cravings for snacks thus deregulating appetite and could also cause insulin resistance. [15]

Even though the all monks have undisturbed sleep , 57 percent monks who relatively sleep less than 7 hours a day would see the negative health implications associated with lack of adequate sleep in the near future.

Prevalence of disease patterns

High blood pressure was seen in 31 percent fathers of the monks .Anaemia was seen in 12 percent of the mothers of the monks .Diabetes was seen in only 9 percent of the fathers of the monks. Osteoarthritis was seen in 6 percent of mothers. Osteoporosis was seen in 6 percent of mothers. Cardio vascular diseases were seen in only 2 percent of the fathers followed by obesity in only 2 percent fathers of the monks. Even though sedentary lifestyle / sedentary behaviour is associated with risks of hypertension a study among the Tibetan monks has implied otherwise.

The sedentary behaviour of monks does have psychosocial factors (mediation, chanting, Buddhist teaching) that could act antihypertensive and thus is associated with regulation of stress, countering inflammatory behaviour and regulating neuro-endocrine system. The study also revealed that compared to sitting duration, mental stress has a greater impact on hypertension. [16]

Thus the non existence of non communicable diseases among majority (98%) of the monks could be due to the positive psychological effects of monastic lifestyle.

TABLE 8 :Classification of Respondents (%) by Disease pattern

No.	Type of disease	Self	Family history (%)			
			Father	Mother	Siblings	Grand parents
1	Diabetes	0	9	0	0	0
2	Obesity	0	2	0	0	0
3	High Blood pressure	2	31	12	0	2
4	Osteoporosis/	0	0	6	0	1
5	Osteoarthritis/Joint pains	0	5	7	0	2
6	Anemia	0	0	12	5	0
7	Cardiovascular	0	2	0	0	0

Common ailments and psychological issues

The common ailments and psychological issues were seen among the monks in the recent times (past 1 year). Instances of cough was seen in 42 percent of the monks, followed by 41 percent, 14 percent, 9 percent and only 7 percent instances of cold, acidity, nausea and vomiting respectively. Instances of cold and cough could be due to frequent weather changes. These gastro intestinal ailments could be the result of occasional deregulation of the gastro intestinal system due to indigestion, skipping meals etc. It could be more prevalent among the novice monks as they are slowly adapting to Buddhist doctrines.

Psychological issues like instances of anxiety was seen in 14 percent of the monks followed by 6 percent and only 2 percent facing instances of depression and allergies. The novice monks generally belong to adolescent age group and could face the psychological issues as their transition into monkhood could be difficult due to the lifestyle and food doctrines differing from the regular. But with progression of time. The spiritual aspects will become more significant in their lifestyle.

Overall the monks seem to be healthy, other than the occasional spells of common ailments which are treatable.

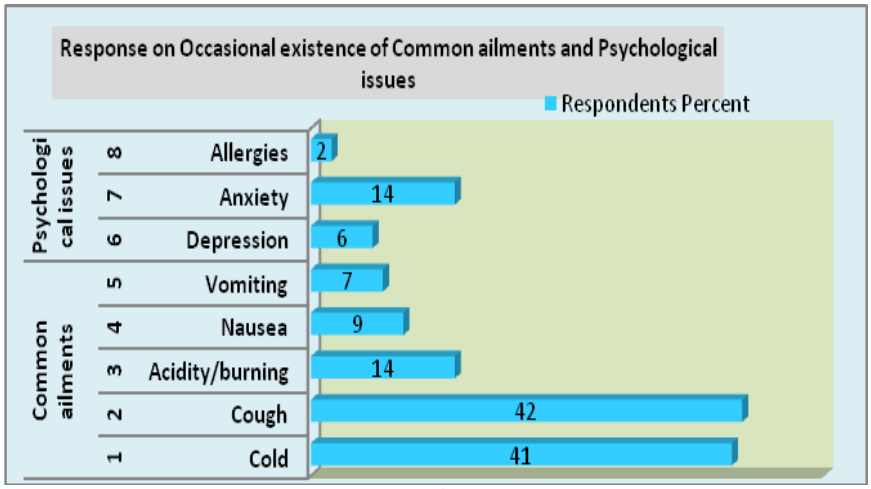

Figure 5. Response on Occasional existence of Common ailments and Psychological issues

Biochemical assessment

The biochemical parameters like fasting blood sugar, postprandial blood sugar levels, HbA1C cholesterol, HDL and LDL of the monks were all in the normal range.

The results pose a contradiction to the sedentary behavior / sedentary lifestyle adopted by the monks. The effect of meditation could possibly outweigh their sedentary lifestyle. Meditating controls stress levels, which could lower the inflammatory responses, thus also influences the neural link of mid-gut axis. It has also been found that meditation lowers symptoms of gastro intestinal disorders, which in turn explains the effect of meditation on the gut. [17] Thus calming their mind through meditation can help the monks alleviate from suffering from various non communicable diseases.

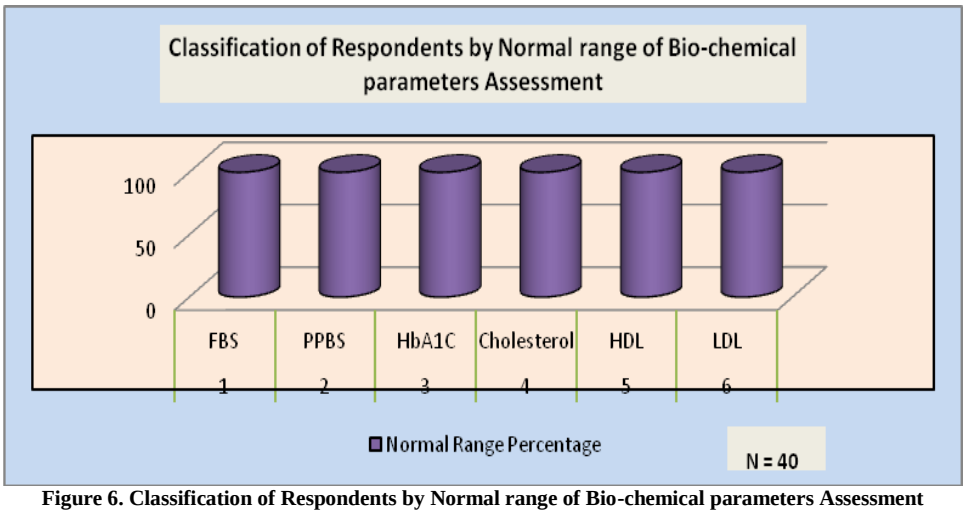

Figure 6. Classification of Respondents by Normal range of Bio-chemical parameters Assessment

SUMMARY AND CONCLUSION

The study revealed the health status and lifestyle of the monks. A broad age group of 12 - 60 years was considered for this study. The urban lifestyle and its influence have a bearing on the overall well being of the monks. The monks are exposed to not only technology but also processed food which could subtly enter their monastic lifestyle.

Based on the study, assessment of lifestyle and health status of Buddhist monks, it can be concluded that monks lead a sedentary lifestyle with a changing dietary pattern that has lead to overweight and obese (I) in more than half of the monks.

Yet the biochemical parameters remain in normal range. It can be therefore concluded that the psychological effects of the monastic life seem to outweigh the risks of developing any non communicable diseases. Yet the long term risks of sedimentary lifestyle could affect the health status of the monks and cannot be left unacknowledged or uninspected.

Therefore 30-45 minutes moderate physical activities for at least 3- 4 days a week along with well balanced and nourishing diet is recommended. Creation of awareness on one hand on the health repercussions of excessive practice of consuming snacks or dining out and on the other the health benefits of regular breakfast consumption could help them consider better food choices.

Also improving the gastronomic and culinary experience of monks in the monastery could bode well for the health and well being of the monks. Regular health assessments through checkups could also help in early treatment and prevention of any ailments.

This study has some limitations that should be taken into account for further research

Limitations of the study

- The study is only restricted to one society of monks residing in Bengaluru
- The lack of primary data on biochemical parameters of the monks
- The relatively small sample size

Recommendations for further research

- Conducting similar research in different parts of India and eventually globally to understand and observe the lifestyle and health status of the monks
- Collecting data from a larger sample size to classify and segment the respondents which also includes collection of biochemical parameters first hand could help in better understanding and identifying any risk factors.
- Conducting research in areas which help in creating awareness about healthy diet and healthy lifestyle practices.

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