Research Article

Role of naturopathy and yoga therapy on subjective well-being and prevention of non-communicable diseases

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ABSTRACT

Background: National Health Policy 2017 recognizes the need to nurture Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy (AYUSH) system of medicine through the development of infrastructural facilities of teaching institutions, improving quality control of drugs, capacity building of institutions and professionals. It also recognizes the need for building research and public health skills for preventive and promotive health care. Linking AYUSH systems with Accredited Social Health Activists and Village Health Sanitation and Nutrition Committee would be an important plank of this policy. **Objectives:** The objectives of the study were to determine patients' subjective feeling of well-being and outcomes after naturopathy treatment. **Materials and Methods:** The study was conducted among inpatients (IP) of a naturopathy center in the field practice area of an Rural Health Training Centre attached to the Department of Community Medicine in a Medical College, Navi Mumbai. Questionnaires were distributed for 3 months to all the IP who were willing to participate and give their feedback at discharge. A total of 64 subjects responded. They were personally interviewed, their history and presenting complaints were listed, clinical examination was done, positive findings were noted, details of treatment and advice given were enumerated. Obtained data were tabulated in MS Excel and analyzed using SPSS software. Patients received normal care from the respective therapists and no intervention was done from our side. Permission from the Institutional Review Board for conducting the study was taken. **Results:** Systolic blood pressure before and after therapy was compared, there was a difference of mean reduction in 4 mmHg with $P = 0.00$. Significant reduction in weight was noticed among overweight and obese people taking the therapy. A strong positive correlation was seen when quantity of weight reduction was correlated with initial Body Mass Index (BMI). The correlation constant was 0.811 with a significance level of 0.00. **Conclusion:** Naturopathy therapy as well as yoga practice results in a broad range of outcomes from physical and emotional change through to wider benefits involving the patients' lifestyle, outlook, and attitude toward their health.

KEY WORDS: Yoga; Naturopathy; Hypertension; Obesity; Non-Communicable Diseases

INTRODUCTION

Health is defined by the World Health Organization (WHO) as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."[1] Non-communicable diseases (NCDs) kill 41 million people each year – 71% of all deaths globally. Among them 14 million people die every year from NCDs between the age group of 30 and 70 years. About 86% of such premature deaths occur in developing nations such as India. According to the WHO's projections, the total annual number of deaths from NCDs will increase from 41 million (2016) to 55 million (2030) if "business as usual" continues.[2] If left unaddressed, it shall negatively impact the agenda of sustainable development goals (target 3.4 – one-third reduction of premature deaths from NCDs by 2030)[3]. NCDs are related to physical and mental stress levels. Many socio-demographic factors in developing countries like India are responsible for altered lifestyles and increased stress, taking their toll on people's health.

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Naturopathy is a distinct type of primary care medicine that blends age-old healing traditions with scientific advances and current research. It is guided by a unique set of principles that recognize the body's innate healing capacity, emphasize disease prevention, and encourage individual responsibility to obtain optimal health.[4] Yoga, pranayama, and other naturopathic practices have been effective in producing physical and mental relaxation, influencing almost all systems in our body and improving the quality of life.[5,6] National Health Policy 2017 recognizes the need to nurture Ayurveda, Yoga, Naturopathy Unani, Siddha, and Homeopathy (AYUSH) system of medicine. It also recognizes the need for building research and public health skills for preventive and promotive health care. Linking AYUSH systems with Accredited Social Health Activists and Village Health Sanitation and Nutrition Committee would be an important plank of this policy. Promotion of healthy living and prevention strategies from AYUSH systems and practicing yoga at the workplace, in the schools and community would also be an important form of health promotion. It also has a special appeal and acceptability in the Indian context.[7] With this background, to know the benefits of naturopathy and yoga therapy on physical and mental well-being of patients taking treatment in a naturopathy center, to understand how integration of AYUSH systems into public health help in achieving better holistic health care of the community, this study was planned.

Objectives

The objectives are as follows:

1) To study the effect of naturopathy and yoga therapy on chronic NCDs
2) To determine patients' subjective feelings of well-being and their perspectives on the outcome of naturopathy and yoga therapy.

MATERIALS AND METHODS

Setting

A naturopathy center in the field practice area of a Rural Health Training Centre, attached to the department of community medicine of its parent medical college. A pilot study was conducted in the month of September 2017. A total of 9 out of 18 inpatients (IP) who stayed for more than 5 days and were willing to participate were studied. The feasibility of the study was assessed and questionnaires were validated. Patients received normal care from the respective therapists and no intervention was done from our side. It is an observational cross-sectional study. Permission from the Institutional Review Board – Ethics Committee was taken for the study.

Sampling Procedure and Sample Sizes

For a period of 6 months (October 2017–March 2018), all the IP satisfying the inclusion criteria who were willing to participate were studied. Universal convenient sampling was taken. The total sample size came to 64 IP during the actual study period. Since the minimum course of the therapy was for 6 days, only the patients who stayed for this period or more were considered for the study.

Inclusion Criteria

All the IP (both males and females) who stayed for more than 5 days and gave consent were included in the study.

Exclusion Criteria

All IP who either stayed for <5 days or were unwilling to participate in the study were excluded from the study. Patients who consulted on OP (Out Patient) basis were excluded from the study. Pilot study subjects were not considered.

Collection of Data

Validated and pre-tested questionnaires were distributed to all responding in patients who were willing to give feedback, at discharge. They were personally interviewed, history and presenting complaints were listed, clinical examination was done, and positive findings were noted. The details of treatment and advice given were enumerated. Examination findings at the time of admission and at discharge were noted. Anthropometric measurements such as weight and height were measured by a standard weighing scale and a measuring tape, respectively. Blood pressure (BP) was measured by mercury sphygmomanometer. Data thus obtained and the questionnaire feedback was tabulated in MS Excel and analyzed using SPSS software.

RESULTS

A total of 64 patients studied, 26 were males and 38 were females. The overall mean age was 55.4 years with a standard deviation (SD) of 14 years. The mean age for males was 58.4 years with a SD of 14.6 years and for females was 53.3 years with a SD of 13.4 years. Distribution of males and females according to the age group is shown in Table 1 and distribution according to body mass index (BMI) at admission

Table 1: Age- and sex-wise distribution

Distribution of subjects	Sex	
	Males	Females
Age group in years		
20–30	4	2
30–40	0	6
40–50	0	8
50–60	8	8
60–70	8	10
70–80	6	4
Total	26	38

Table 2: Distribution of BMI according to SES

Variables	SES			Total
	Upper (class I)	Upper middle (class II)	Lower middle (class III)	
BMI				
17–18.49 (underweight) (%)	0	0	3 (6.8)	3 (4.7)
18.5–24.99 (normal) (%)	0	6 (33.3)	11 (25)	17 (26.6)
25–29.99 (overweight) (%)	0	8 (44.4)	14 (31.8)	22 (34.4)
30–34.99 (obesity grade 1) (%)	0	4 (22.2)	16 (36.4)	20 (31.25)
35–39.99 (obesity grade 2) (%)	2 (100)	0	0	2 (3.13)
Total	2	18	44	64

BMI: Body mass index, SES: Socioeconomic status

with socioeconomic status (SES) – Modified Kuppuswamy scale[8] is shown in Table 2.

Out of the three underweight patients, two were anemic and one was a patient of pulmonary tuberculosis on treatment. As we see percentage of obesity Grade 1 is higher among lower middle class than upper-middle, although this does not reflect the prevalence in general population (since the study only includes patients getting admitted), we do get an indication here that obesity is no longer illness of higher SES.

Weight was measured during admission and at discharge. Four out of 64 gained weight during the course of therapy, three underweight and one with normal BMI. All the four who gained weight had normal BMI at discharge. The rest of the subjects (60) lost weight during the course of therapy. Weight loss among them was compared with duration of stay [Table 3]. It was clearly evident that there was an average weight loss of 2.4 Kg in the first 10 days of therapy. Although the rate of weight loss slowed down, the total weight loss increased with increased duration of stay, indicating that continuous practice of yoga and getting naturopathy treatment is useful in weight reduction.

When reduction in weight (dependent variable) was plotted against BMI at admission, there was a strong positive correlation [Figure 1]. It was observed that quantity of weight reduction varied throughout the spectrum of BMI. Higher quantity of weight reduction was seen with higher Body Mass Index (at admission). The correlation constant was 0.811 with a significance level of 0.000 (Correlation is significant at the 0.01 level [two-tailed]). Initial BMI is a significant predictor of degree of weight reduction with $R^2 = 0.658$ and the linear regression equation being:

"y = 0.3123x - 6.1961." The effect of the therapy on BP was also assessed in the study. Average of two readings on the day of admission and an average of two readings on the day of discharge were taken. They were noted down and compared. Thirty-five out of 64 had a difference of BP ≤4 mmHg. Twenty-seven subjects showed reduction of BP more than 4mmHg and two showed an increase in BP more than 4 mmHg. BP was classified according to AHA guidelines and the stage of hypertension at admission was compared with

Table 3: Mean weight reduction with duration of stay

Duration of stay	Mean weight reduction (in kg)	Number of subjects	Standard deviation
6–10 days	2.4167	24	1.34864
11–20 days	2.8571	28	1.58030
21–30 days	3.2500	8	2.05287
Total	2.7333	60	1.56082

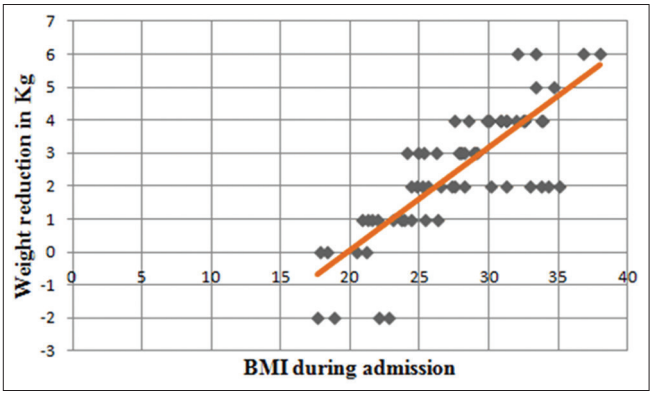

Figure 1: Correlation between body mass index during admission and reduction in weight

the stage at discharge [Table 4]. As we see in the table, the number of subjects at admission with Stage 1 and Stage 2 hypertension is more compared to the subjects in the same stages after treatment. Table 5 shows that the therapy has a significant role in conversion of number of hypertensives into normotensives or pre hypertensives ($P = 0.0025$).

Systolic BP (SBP) before and after therapy was compared; there was a difference of mean (125.3125 mmHg–121.3125 mmHg), i.e., reduction in 4 mmHg with $P = 0.000$ [Tables 6 and 7]. It was also noted that the before and after SBP readings had a significant positive correlation with correlation coefficient of 0.760 and $P = 0.000$.

Subjective Feeling – Patient's Perspectives

The patient's subjective responses to the feedback questionnaire were taken and the pattern of responses to different questions by the respondents is summarized in

Table 4: Number of people with different stages of hypertension before and after therapy

Stages of hypertension	Stage 2 before Rx	Stage 1 before Rx	Prehypertensive before Rx	Normotensive before Rx	Total (after Rx)
Stage 2 after Rx	4	-	-	-	4
Stage 1 after Rx	4	12	-	-	16
Prehypertensive after Rx	2	10	6	8	26
Normotensive after Rx	2	4	2	10	18
Total (before Rx)	12	26	8	18	64

Rx: Treatment

Table 5: Stages of hypertension before and after the therapy

Stages of hypertension	HTN Stages 1,2	Normo or pre-HTN
Before	38	26
After	20	44

P=0.0025 Chi-square. HTN: Hypertension

Table 6: Mean BP before and after treatment

Variables	Mean systolic BP in mmHg	Number	Standard deviation	Standard error mean
Before Rx	125.3125	64	11.89621	1.48703
After Rx	121.3125	64	7.81711	0.97714

Rx: Treatment, BP: Blood pressure

Figures 2 and 3 and Table 8. Respondents showed high levels of satisfaction with the outcome of therapy with regard to energy levels, stress management capacity and decrease in physical symptoms. They felt that yoga and naturopathy therapy has improved their mental and emotional status as well. An overall positive effect on health has indeed given a sense of good subjective well-being. It was also noted that only 22 out of 64 were still taking allopathic treatment for their presenting complaints. Out of the total 64 subjects 24 said that they are highly likely to continue with exercise, lifestyle, and dietary modifications introduced to them during the course of therapy, 30 said they had 50:50 chances of continuing, and 10 said that they could not continue.

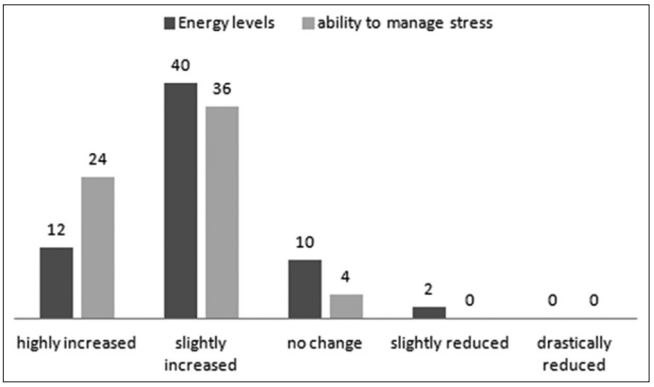

Figure 2: Energy levels and ability to manage stress among participants

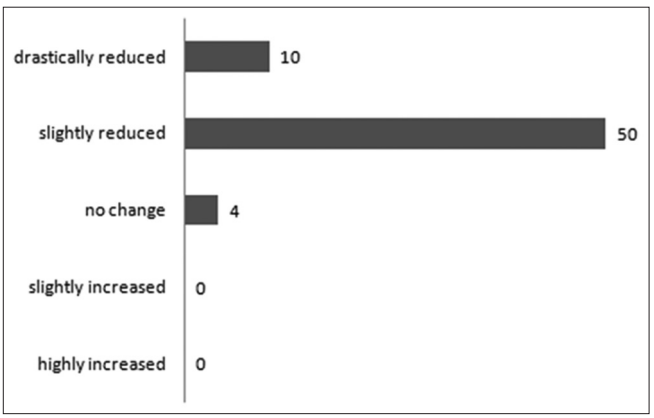

Figure 3: Physical symptoms after therapy

DISCUSSION

As the results show, therapy with principles of naturopathy and yoga not only have physical impact such as reduction of weight and BMI in obese individuals or reducing physical symptoms in patients with chronic illnesses but also has good effect on mental and emotional status at subjective levels. Participants felt increased energy levels in them and also said their stress management ability has increased after attending the treatment course. There was also significant reduction of BP in hypertensive patients. Hence, practicing yoga and also utilization of naturopathy principles in daily life would actually prevent the early occurrence of stress-related disorders such as essential hypertension. Diet patterns reduce metabolic stress and reduce the risk of cardiovascular disorders in addition to giving physical and psychological relief from diseases. In addition, more disciplined lifestyle reduces the chances of addiction and substance abuse, as well as improves the overall performance by enhancing the focus and streamlining one's mind on more positive and productive things in life.

Our study results show a significant reduction in mean systolic BP of 4 mmHg compared between the values before and after therapy (P = 0.000). Satyanand *et al*. in a prospective study on yoga and hypertension on 100 cases and controls found that reduction in mean systolic BP in patients after yoga therapy was found to be 31.9 mmHg.[9] We here observe more reduction in mean systolic BP as compared to our study. The probable reason for difference would be because the subjects were followed up for 3 months with yoga therapy and also the selected cases were patients suffering

Table 7: Reduction in mean systolic blood pressure (in mmHg)

Paired differences					T	Df	Sig. (two-tailed)
Mean	Standard deviation	Standard error mean	95% confidence interval of the difference				
			Lower	Upper			
4.00000	7.83359	0.97920	2.04323	5.95677	4.085	63	0.000

Table 8: Subjective responses to different feedback questions

Variables	Strongly agree	Moderately agree	No change	Disagree	Strongly disagree
Taking this treatment has helped improving your mental and emotional status	30	32	02	00	00
This has a positive influence affecting the overall outlook and attitude toward health and health care	52	12	00	00	00
Integration of Naturopathy center with usual allopathic hospitals would be a great initiative for assisting public health care	32	32	00	00	00

Table 9: Diet plan

Time	Diet and activity
5:00 AM–6:00 AM:	Yogasana/walking/swimming/jogging/pranayama
6:00 AM:	Breakfast–lime+honey water/lime+water/barley+water/methi+water
6:30–7:30 AM:	Naturopathy therapy–morning session
8:00 AM:	Juice–Carrot/Grapes/Sweet lime/apple, milk/almonds/dates/raisin/banana/papaya/mango/green turmeric juice/tulsi juice, wheat grass juice etc.,
11:00 AM:	Lunch–roti/khakkhara/kichadi/boiled vegetables/green salad/moong soup/tomato soup/curd/bhaji/boiled suran/milk/seasonal fruits
2:00–3:30 PM:	Naturopathy therapy–Afternoon session
4:00 PM	Khada/milk/carrot juice/coconut water/grape juice/sweet lime juice/amla juice/apple juice/seasonal fruits/basil/adulsa/green turmeric/ginger
7:30 PM:	Dinner–roti/khakkhara/kichadi/boiled vegetables/green salad/moong soup/tomato soup/curd/bhaji/boiled suran/milk/seasonal fruits
8:30 PM:	Milk

from obesity, hypertension, and dyslipidemia either singly or in combination (multiple comorbidities). In a similar study conducted by Murthy *et al*., there was a 10 mmHg reduction in mean systolic BP after 21 days of therapy.[10]

In a study conducted by Dubey *et al*.,[11] on 50 diabetic patients who were instructed to practice yoga, Anulom Vilom Pranayam, and Kapalbhati for 5 min each, daily for a total period of 6 months, there was a significant reduction of fasting blood sugar but had no significant reduction in BP. Contrary to our study where the therapy was full time, the above-mentioned study emphasized only two yoga practices and hence it appears that this does help subjects to lower their blood sugar level but is not helpful in achieving control of their BP. In our study, there is a significant conversion of Stages 1 and 2 hypertensives into prehypertensives or normotensives similar to the results obtained in the study conducted by Edla *et al*.[12] They compared the mean BP >140/90 mmHg and <140/90 mmHg before and after therapy for 3 months in 80 individuals. There was a significant conversion of people with BP >140/90 mmHg–<140/90 mmHg.

A study conducted by Naveen *et al*., on 30 subjects for 7 days found that there was a significant reduction in perceived stress levels, also body weight, and BMI.[13] Similar results are obtained in our study, as well. Although perceived stress scale was not used to assess difference in perceived stress, the subjective feeling of ability to manage stress and higher levels of energy were clearly evident by assessing the feedback questionnaires. Our study also showed significant reduction in weight and BMI in obese and overweight patients, similar to the above-mentioned study and also to the one conducted on 40 obese individuals by Kumari *et al*.[14]

Naturopathy is based on the principles of dinacharya (daily routine), ritucharya (seasonal routine), pathya apathya (Food indicated and contraindicated), and Chikitsa (treatment). While the first three principles are mainly preventive (primary or secondary prevention), Chikitsa is predominantly curative and specific treatment. Ritucharya involves diet (pathya apathya) and lifestyle modifications according to different seasons (six seasons). This is an important aspect in prevention of early onset of NCDs since doing anything against nature would

Table 10a: Yogasanas

Position	Yoga
By sitting	Prayer, Mantrochhar, Padmasan, Sukhaasan, Andha padmasan, Vajrasana, Shashankasana, Yoga mudra (Bhunamanasana), Parvatasana, Paschimotanasan, Virasana
By recumbent	Makarasan, Shavasan, Uttanpadasan, Pavanmuktasan, Sarvangasana, Halasana, Chakrasana, Bhujangasan, Salbhasan
Standing	Tadasana, Parvatasana, Ardhakati, Chakrasana, Trikonasana, Virbhadrasan, Vrikshasan, Surya Namaskar

Table 10b: Pranaayama

Types of pranayamas	Bhastrika, Kapal Bhati, Sheetali, Suryabhedi, Bhramari, Agnisar kriya, Purak, Rechak, Kumbha, Mul bandh, Uddiyana bandh, Jalandhar bandh, Jalneti, Sutraneti, Vamana, Shankhprakshalan, Nashya

build up unwanted physical and mental stresses gradually leading to chronic diseases. Hardly any lifestyle or diet changes according to seasons are evident in the community because of continuous busy work schedule throughout the year. The therapy also includes many rehabilitative and palliative modalities, which is also a very important part of health care. Specific treatment modalities offered are – hip bath, enema, massage, steam bath, sauna bath, mud bath, spinal bath, mud pack, acupressure, local steam, lapet (cotton, woolen) – hot/cold, kidney pack – hot bag/ice bag, gastro-hepatic pack – hot bag/ice bag, infrared lamp, foot bath – cold/normal/hot, local massage – partial massage, ice massage, local (partial) mud bath. This was accompanied by lifestyle modifications such as diet [Table 9] and exercise [Table 10a and b].

Common presenting symptoms came across during the study were low backache, pain in the neck, ankle, knee joint, shoulders, heal, numbness and pain in the soles, weight gain, radiculopathy, general fatigue, weakness of arms and legs, chronic sinus problem, headache, migraine, acidity, rhinitis, constipation, insomnia, bleeding per rectum, bloating, attacks of breathlessness, snoring, loss of focus, concentration, etc. The center provides treatment and rehab for body ailments such as disc compression, osteoarthritis, spondyloarthropathy, obesity, chronic uncontrolled hypertension, paralysis, gouty arthritis, chronic sinusitis, tuberculosis, pedal edema, calcaneal spur, hemorrhoids, gastroesophageal reflux disease, intestinal dysmotility, asthma, sleep apnea, posterior intervertebral disc compression, sciatica, chronic constipation, anemia, and other common disorders. Common reasons given by in patients for acquiring naturopathy consultation were – how to stay close to nature, for general detoxification and relaxation, weight reduction and pain relief, to be healthy and have healthy aging. Common responses to the question "What changes in lifestyle and personal habits have you experienced along the course of this treatment?" were – waking up early, reduced food and sleep disturbances, normal bowel movements due to regular food habits, improved energy levels, and sense of relaxation. Since the whole course of therapy involved materials that occur only naturally and mainly focused on natural changes in lifestyle with proper diet, there were hardly any adverse effects reported by the respondents but people who did not take the minimum duration (≥6 days) of therapy were not included in this study and the reason for their discontinuation is not known. Busy schedules and work overload have made us ignore these ancient and traditional lifestyle guidelines. Stress uncalled for is increasing day by day leading to early-onset and higher prevalence of NCDs. It is utterly shocking to see the increasing trend of NCDs and their effects in India of late. NCDs, as the cause of premature death and disability, are progressively increasing.[15] Such changes that constitute healthy lifestyles are not only required for people with any disease, but are essential for general population as well. The therapy is also considered to have a very high therapeutic index with minimal side effects. Spreading awareness through health education is the need of the hour. Reaching out for different modalities of holistic therapy is a good option to complement the existing system of health care. The therapy also involves whole-body massage techniques with natural medicinal oils, gives physical relaxation, and improves blood circulation. We might have come across many Spas which are utilizing its benefits by commercializing the advantages of indigenous medicine. It would be much better to integrate the actual therapy in hospitals for physical and mental detoxification, for providing sense of relaxation from daily life stresses and as an integral part of palliative care.

By integration of AYUSH systems at the level of knowledge with mainstream care, allopathy doctors can work in tandem by conscious referral to complementary medical specialists. A separate short course with evidence-based knowledge of indigenous integrated with allopathic systems could be an alternative for mid-level care providers to reach the unreached in the underserved areas. Efforts must be ensured to popularize the benefits of these complementary systems. A professional job guarantee would improve merit help in recruitment of more skilled specialists for better overall health care. A special curriculum of training close to the place where they live or work and ensuring their recruitment in the underserved areas (instead of the workforce migrating to urban areas) could be a Game Changer in our vision to achieve "Health for all."

Limitations

- Caution must be exercised in drawing larger and generalized conclusions from this study as the study included only 64 patients over a period of 6 months and thus the sample size is low
- Since no investigations were done to measure the changes (except for weight and BP), most of the changes experienced are either subjective or derived by clinical assessment.

CONCLUSION

The study suggests that there is a satisfactory patient-centered subjective outcome. Remedy seekers valued the holistic style of treatment offered, including a close practitioner-patient working relationship. The spectrum of treatment modalities that aid in improving quality of life is quite wide with yoga and naturopathy. Yoga and Naturopathy therapists have a very important role to play in 'prevention of NCDs' and also in 'maintenance of general well-being', among people of the community. Thus, AYUSH doctors practicing in the field of their expertise not only provides comprehensive holistic health care in the society but also serves as an add-on to the usual allopathic treatment. Integration into mainstream as an additional health-care service is a much better option than trying for universal coverage by legalizing practice of allopathy by specialists in a different branch of medical field, through bridge courses. This also aids in conserving ancient methods of indigenous medicine such as Yoga, Siddhi, and Ayurveda.

Lack of evidence-based approach in these complementary/alternative medical fields might have prevented us from exploring the in-depth knowledge and immense potential that they have in supplementing the existing health-care system. Contrary to the usual belief, the subjective outcomes from patients who get admitted are quite satisfactory. Hopefully this small study conducted could help further research on a larger scale over this topic and also influence doctors to practice medicine in a holistic manner, engaging with the emotional and mental dimensions of treatment, the related inner changes in relationship to self, for example, practicing one to one health education would make significant positive changes to lifestyle and help a better recovery of the patient. Hence, from stand-alone to a three-dimensional mainstreaming and integration of complementary medical systems across all the 3-tier levels is highly recommended by this study results. Involvement of nongovernmental organizations, public and private players into this would be a cornerstone in establishment of wholesome health care in this country. In addition, investing further in evidence-based research of complementary medical subjects could unveil a new dimension in preventive, curative, and rehabilitative community health care. It would be a driving force for achieving the WHO theme of the year 2018 and 2019[16,17] – "Universal Health Coverage."

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