

# Comparative morbidity profile of patients attending an Ayurveda clinic and a modern medicine clinic of a primary health center in rural Haryana, India

Shashi Kant<sup>1</sup>, Ayush Lohiya<sup>1</sup>, Farhad Ahamed<sup>1</sup>,  
Rizwan Suliankatchi Abdulkader<sup>2</sup>, Arvind Kumar Singh<sup>3</sup>, Vijay Silan<sup>4</sup>

<sup>1</sup>Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi, <sup>2</sup>Department of Biostatistics, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, <sup>3</sup>Department of Community and Family Medicine, All India Institute of Medical Sciences, Bhubaneswar, Odisha, <sup>4</sup>Department of Community Medicine, BPS GMC, Sonapat, Haryana, India

## ABSTRACT

**Context:** There is a paucity of data on the profile of patients accessing traditional systems of medicine. A comparison of profile of patients attending an Ayurveda clinic with that of modern medicine clinic will help in better understanding of utilization of services and preference for system of medicine by the patients seeking health care. **Aim:** The aim was to study the morbidity profile of patients who attended the Ayurveda clinic of a primary health center (PHC) in rural Haryana over 1 year and compared it with that of the modern medicine clinic attendees at the same facility. **Materials and Methods:** The study site was PHC, Dayalpur in block Ballabgarh, district Faridabad, Haryana, India. All new patients who attended the Ayurveda clinic of PHC Dayalpur in the year 2012 were included in the study. New attendees of modern medicine clinic of the same PHC in the year 2012 were used for comparison of profile of patients. **Results:** In year 2012, of the total new patients registered at PHC, 26% attended Ayurveda clinic. The male-to-female ratio (0.8:1) was similar in both clinics. The representation of children up to 5 years and elderly was significantly higher (12.0% vs. 6.7% and 19.5% vs. 11.0%) in modern medicine clinic as compared to Ayurveda clinic. The most common morbidities seen in Ayurveda clinic were *twak vikar* or skin disease (12.3%), *sandhivata* or osteoarthritis (10.3%), and *kasa* or cough (8.5%). Three most common morbidities in modern medicine clinic were acute respiratory infection (35.7%), hypertension (10.6%), and acute febrile illness (9.2%). **Conclusions:** The study provided evidence that Ayurveda was popular among rural population in North India. Therefore, the Government of India's initiative of setting up Ayurveda clinic in PHCs is well founded.

**Keywords:** Ayurvedic medicine, complementary medicine, morbidity, primary health care, traditional medicine

## Introduction

In 2002, the Department of Indian Systems of Medicine and Homeopathy, under the Ministry of Health and Family Welfare, Government of India, proposed a new approach of integrating the Indian Systems of Medicine and Homoeopathy with the existing system of modern medicine.<sup>[1]</sup> In 2003, the

department was renamed as Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH) to provide a focused attention to these systems of medicine.<sup>[2]</sup> Since long, these systems have enjoyed widespread acceptability among the masses and have the potential to improve the utilization of public health facilities, especially in rural areas, and areas with poor health-care access to modern medicine.<sup>[1]</sup> In 2014, for the further development and promotion of AYUSH systems of medicine, a separate Ministry of AYUSH was formed.<sup>[2]</sup>

**Address for correspondence:** Dr. Vijay Silan,  
Department of Community Medicine, BPS GMC, Khanpur Kalan,  
Sonapat - 131 305, Haryana, India.  
E-mail: vijay.silan@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Kant S, Lohiya A, Ahamed F, Abdulkader RS, Singh AK, Silan V. Comparative morbidity profile of patients attending an Ayurveda clinic and a modern medicine clinic of a primary health center in rural Haryana, India. J Family Med Prim Care 2018;7:374-9.

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmpc.com

**DOI:**  
10.4103/jfmpc.jfmpc\_347\_17

Ayurveda is one of the oldest and most organized the Indian Systems of Medicine.<sup>[3]</sup> A total of 2458 hospitals with 44,820 beds, 15,353 dispensaries, and 478,750 registered practitioners of Ayurveda were serving the Indian population as of 2010.<sup>[4]</sup>

AYUSH clinics have been set up at the various primary health centers (PHCs), community health centers, and district hospitals across the country for mainstreaming of AYUSH.<sup>[5]</sup> Facilities available at these clinics are in addition to the facilities provided by the already existing modern medicine clinics. Hence, now the patients availing services from these facilities have two options of system of medicine to choose from. It is necessary to examine the morbidity profile of the patients attending two types of clinics. However, very few studies have examined the profile of patients who utilize AYUSH clinics for health care.<sup>[6]</sup> Knowledge regarding morbidity profile of the patients attending these outpatient departments (OPDs) will help treating physicians to provide better management and diagnostic facilities. It will also help the managers to improve the facilities for the management of common illnesses. In the long-term, this information can also be used for rolling out prevention measures for the common diseases. Comparison of morbidity profile of both the clinics will throw some light on the preferences of individuals for a particular system of medicine. This will also tell us if there is any disease specific preference of individuals for a particular system of medicine. This information can further be used to look for the reasons of poor utilization of services. Prioritization of available resources could be done based on such evidence base. Therefore, we conducted this study. The objective was to study the morbidity profile of patients who attended the Ayurveda clinic of a PHC in rural Haryana over 1 year and compared it with that of the modern medicine clinic attendees at the same facility.

## Materials and Methods

### Study design

It was a record-based descriptive study.

### Study site

This study was carried out at PHC Dayalpur, in Faridabad district of Haryana. Ayurveda clinic was started in this PHC in September 2011. The Ayurveda clinic was manned by an Ayurveda Medical Officer and a pharmacist, who provided only outpatient services in the forenoon of working days. In addition to Ayurveda clinic, a modern medicine clinic was functional since 1965 at the PHC. The modern medicine clinic provided OPD services, inpatient obstetric services, and round the clock emergency services.<sup>[7]</sup> All new patients were provided with registration number on the OPD card. The OPD cards of repeat patients were simply stamped with their date of visit. The patients while registering could opt either the Ayurveda or modern medicine clinic. There was no incentive or disincentive provided to influence the patients' choice.

### Data source

The analysis in this study was restricted to new patients who attended the PHC from January 2012 to December 2012. The doctors themselves recorded provisional diagnoses in registers. In case of multiple ailments, the primary diagnosis was recorded first. Only the primary diagnoses were included for analysis. If a new patient visited both the clinics on the same day, then the clinic visited first, and the diagnosis made there was taken into account. After OPD hours, diagnosis register was kept in the room of medical officer in-charge to ensure safety. OPD diagnosis registers were maintained on yearly basis. OPD registers of previous years were kept in store of the PHC. This process is going on at PHC Dayalpur on a routine basis.

The Ayurveda diagnoses were recorded in the Sanskrit language, and they had to be translated into English language to an equivalent term which best described the condition or illness in modern medicine. This was achieved by the consensus arrived by the doctors of both system of medicine [Box 1].

### Data retrieval

Data retrieval from diagnosis registers were done by the medical officer in-charge of the PHC. Data entry was done by the data entry operators and was closely supervised by the medical officer in-charge of PHC. Five percent entries were cross-checked by one of the author (FA).

### Operational definitions

Modern medicine clinic: this refers to the OPD in PHC Dayalpur, where medical officers trained in Allopathic medicine were providing outpatient services to the visiting patients.

Ayurveda clinic: this refers to the OPD in PHC Dayalpur, where medical officers trained in ayurvedic medicine were providing outpatient services to the visiting patients.

### Ethics

All patient records were stripped off personal identifiers such as name and address to ensure confidentiality and anonymity. Collection of information from the patients visiting OPDs at PHC Dayalpur is being done routinely. Its purpose is to improve the health-care delivery in the future. No additional information was collected from the patients. Hence, no ethical clearance was sought.

### Statistical analysis

Analysis of data was done by AL and FA. Patients were grouped in the following age categories by sex;  $\leq 5$  years, 6–17 years, 18–59 years, and  $\geq 60$  years. The 5 most common diagnoses recorded in each of the two clinics are presented. After stratification by age, we compared the proportion of patients with three most common diagnoses that attended modern medicine and Ayurveda clinic. Chi-square test was applied to calculate the statistical significance. A  $P < 0.05$  was considered to be statistically significant.

All analyses were carried out in Stata 12 (StataCorp. 2011. Stata Statistical Software: Release 12. College Station, TX: StataCorp LP).

## Results

### Age and sex distribution of Ayurveda and modern medicine clinic patients

Among the 9669 new patients, 2517 (26%) had opted for the Ayurveda clinic. The male-to-female patient ratio (0.8:1) was similar in both the clinics. The proportion of patients in age group  $\leq 5$  years in modern medicine clinic (12.0%) was significantly more than that in Ayurveda clinic (6.7%) ( $P < 0.001$ ). Similarly, the proportion of elderly population in modern medicine clinic (19.5%) was significantly more than that in Ayurveda clinic (11.0%) ( $P < 0.001$ ). However, the proportion of patients in age group 18–59 years was significantly more in Ayurveda clinic (64.3%) than modern medicine clinic (50.6%) ( $P < 0.001$ ).

### Morbidity profile by type of clinic

#### Ayurveda clinic

About 80 different morbidities were recorded during the study period. Across all ages, *Twak Vikar* or skin disease (12.3%) was the most common morbidity. Other common morbidities recorded were *sandhivata* or osteoarthritis (10.3%), *kasa* or cough (8.5%), *koshta badhata* or constipation (5.0%), and *shweta pradara* or white discharge (per vaginum) (4.5%) [Table 1].

When classified by organ systems, the gastrointestinal system disorders (23.5%) were most common, followed by musculoskeletal system disorder (14.5%). Among Ayurveda clinic attendees, 0.5% had *Prabema* or diabetes mellitus (DM), and 0.6% had *uchcha rakitchap* or hypertension (HTN). Among disease condition that required surgical intervention, *asmari* or urinary calculi (1.3%) and *arsba* or hemorrhoids (0.8%)

were the most common surgical problems. Apart from *shweta pradara* or white discharge (8.0%), *rakta pradara* or increased vaginal bleeding (menorrhagia) was the second most common gynecological problem (0.6%) among females (data not shown).

#### Modern medicine clinic

Among the patients attending the modern medicine clinic, acute respiratory infection (ARI) (35.7%) was the most common diagnosis; and the second most common diagnosis was HTN (10.6%). Skin diseases and osteoarthritis constituted 8.8% and 7.6%, respectively [Table 1]. Trauma (3.9%) and DM (3.0%) were also among the top 10 diagnoses in the modern medicine clinic.

### Morbidity profile of total outpatient department patients stratified by age of the patient

#### Children up to age 5 years

The three most common morbidities among children aged  $\leq 5$  years were cough/ARI, skin condition, and diarrhea. A total of 169 patients in this age group attended Ayurveda clinic, out of which 26% were suffering from cough/ARI. Skin condition was the second most common diagnosis affecting 15.4% of patients. Modern medicine clinic was attended by 861 patients, of which more than half of the patients had cough/ARI. Skin conditions affected almost 8% of modern medicine clinic patients. The proportion of patients who presented with fever was 3.6 and 8.9% in Ayurveda and modern medicine clinic, respectively. Worm infestation diagnosed among patients in Ayurveda and modern medicine clinic was 11.2 and 0.8%, respectively [Table 2].

#### Morbidity profile in 6–17 years age group

Cough/ARI, skin condition, and fever were the most common morbidities in this age group. In Ayurveda clinic, most common

**Table 1: Distribution of patients attending Ayurveda and modern medicine clinic by diagnosis and sex (in decreasing order of frequency)**

Morbidity (equivalent modern medicine term)	Ayurveda clinic		Total, n (%)
	Males, n (%)	Females, n (%)	
<i>Twak Vikar</i> (skin condition)	159 (14.3)	151 (10.7)	310 (12.3)
<i>Sandhivata</i> (osteoarthritis)	61 (5.5)	198 (14.1)	259 (10.3)
<i>Kasa</i> (cough)	113 (10.2)	100 (7.1)	213 (8.5)
<i>Koshta badhata</i> (constipation)	71 (6.4)	54 (3.8)	125 (5.0)
<i>Shweta pradara</i> (white discharge)	(0)	113 (8.0)	113 (4.5)
Others	705 (63.6)	792 (56.3)	1497 (59.4)
Total	1109 (100.0)	1408 (100.0)	2517 (100.0)
Morbidity	Modern medicine clinic		Total, n (%)
	Males, n (%)	Females, n (%)	
Acute respiratory infection	1220 (38.5)	1332 (33.5)	2552 (35.7)
Hypertension	309 (9.7)	448 (11.2)	757 (10.6)
Acute febrile illness	282 (8.9)	373 (9.4)	655 (9.2)
Skin condition	325 (10.2)	301 (7.6)	626 (8.8)
Osteoarthritis	183 (5.8)	359 (9.0)	542 (7.6)
Others	852 (26.9)	1168 (29.3)	2020 (28.1)
Total	3171 (100.0)	3981 (100.0)	7152 (100.0)

**Table 2: Distribution of patients attending Ayurveda and modern medicine clinic by gender and age group**

	Ayurveda clinic, n (%)	Modern medicine clinic, n (%)
Age ≤5 years	169 (100.0)	861 (100.0)
Cough/ARI	44 (26.0)	498 (57.8)
Skin condition	26 (15.4)	67 (7.8)
Diarrhea	19 (11.2)	71 (8.2)
Fever	6 (3.6)	77 (8.9)
Worm infestation	19 (11.2)	7 (0.8)
Age 6-17 years	454 (100.0)	1281 (100.0)
Cough/ARI	79 (17.4)	667 (52.1)
Skin condition	111 (24.4)	151 (11.8)
Fever	19 (4.2)	161 (12.6)
Diarrhea	25 (5.5)	43 (3.4)
Worm infestation	17 (3.7)	12 (0.9)
Age 18-59 years	1617 (100.0)	3620 (100.0)
Cough/ARI	76 (4.7)	1,017 (28.1)
Skin condition	151 (9.3)	272 (7.5)
Hypertension	9 (0.6)	387 (10.7)
Fever	50 (3.1)	322 (8.9)
Osteoarthritis	181 (11.2)	181 (5.0)
Age ≥60 years	277 (100.0)	1390 (100.0)
Hypertension	5 (1.8)	439 (31.6)
Cough/ARI	14 (5.1)	302 (21.7)
Osteoarthritis	74 (26.7)	92 (6.6)
Gastritis	12 (4.3)	68 (4.9)
Constipation	42 (15.2)	36 (2.6)

\*Subtotal included other morbidities as well. For comparison, only top five diagnoses in a particular age group were presented. ARI: Acute respiratory infection

morbidity in this age group was skin diseases (24.4%), followed by cough/ARI (17.4%). In modern medicine clinic, 52.1% were suffering from cough/ARI and 11.8% were suffering from skin conditions [Table 2].

#### Morbidity profile in 18–59 years age group

In this age group, three most common morbidities were cough/ARI, skin condition, and HTN. The proportion of patients who presented with HTN in Ayurveda and modern medicine clinic was 0.6 and 10.7%, respectively. Similarly, proportion of patients that presented with osteoarthritis in Ayurveda and modern medicine clinic was 11.2 and 5.0%, respectively [Table 2].

#### Morbidity profile in >60 years age group

Among elderly aged 60 years or more, HTN, cough/ARI, and osteoarthritis were the three most common morbidities. The proportion of elderly patients presenting with gastritis was 4.3% and 4.9% for Ayurveda and modern medicine clinic, respectively. Similarly, constipation was the presenting complaint in 15.2% and 2.6% of patients in Ayurveda and modern medicine clinic, respectively [Table 2].

## Discussion

This study describes the profile of patients attending the Ayurveda clinic at a PHC and compares it with that of the

modern medicine clinic at the same PHC. The introduction of an additional Ayurveda clinic had widened the basket of health-care options for the patients visiting this PHC. Many studies in the past have shown that people have faith in the traditional systems of medicine; and hence, AYUSH clinics could complement the services provided in the existing health-care system.<sup>[1]</sup>

#### Age and sex distribution of Ayurveda and modern medicine clinic patients

The proportion of new patients that attended Ayurveda clinic in its 1<sup>st</sup> year of operation was nearly one-fourth of the total. Almost equal proportion of males and females were attending Ayurveda clinic; hence, sex was not a determinant for attendance in Ayurveda clinic. However, the proportion of patients attending Ayurveda clinic in age group 18–59 years was more than modern medicine clinic. However, the proportion of OPD patients attending Ayurveda clinic in age groups ≤5 and ≥60 years was less than that of modern medicine clinic. Adult population was more interested in availing services from Ayurveda clinic. Under-five and elderly population was availing services more from modern medicine clinic.

#### Morbidity profile of Ayurveda clinic

The morbidity profiling revealed that the Ayurveda clinic attracted patients with certain specific complaints. For example, majority of the patients attending Ayurveda clinic were suffering from *twak vikar* or skin diseases (12.3%), *sandhivata* or osteoarthritis (10.3%), *kasa* or cough (8.5%), and *koshta badhata* or constipation (5.0%).

#### Comparative morbidity profile of patients attending Ayurveda and modern medicine clinic

Comparative analysis of two clinics revealed that among all age groups, the proportion of patients presenting with acute conditions such as cough/ARI, fever was more in modern medicine clinic as compared to Ayurveda clinic. On the other hand, the proportion of patients presenting with skin conditions, worm infestation, osteoarthritis, and constipation was more in Ayurveda clinic than modern medicine clinic. The reason for this could be that cough/ARI, and fever are acute conditions and response to the treatment is quicker in modern medicine clinic. Skin conditions, worm infestation, osteoarthritis, and constipation are most of the times chronic in nature. These diseases also mostly respond to treatment slowly. This could be one reason for the preference of Ayurveda clinic for these ailments. Published literature also provides evidence of effectiveness of various ayurvedic medicines for the treatment of joint disorders such as osteoarthritis and low back pain.<sup>[8-12]</sup>

In line with our finding in different age groups, one previous study showed that as many as 40% of patients seek treatment for dermatological conditions in complementary and alternative medicine (CAM).<sup>[13]</sup> Recent studies have also shown that traditional and complementary medicine are effective in treating skin diseases.<sup>[14]</sup> As expected, patients with dog bites and other

injuries preferred the modern medicine clinic, probably because of the availability of surgical assistance and vaccination in the modern medicine clinic that were not available in the Ayurveda clinic. However, recent studies have shown promising results of ayurvedic medicine in surgical illnesses such as anal fistula and urinary stones.<sup>[15,16]</sup>

The results indicated the level of acceptance of such clinics among the rural masses in even 1<sup>st</sup> year of its operation. Factors such as people's perception about Ayurveda's effectiveness, easy access to the clinic, novelty of the system of medicine, recommendation by previous attendees, or the perceived lack of side-effects to ayurvedic medications may have been responsible for this acceptance. However, these need to be explored further through qualitative research methods.

Noncommunicable diseases (NCDs) such as diabetes and HTN were common in the modern medicine clinic. A very low percentage of Ayurveda clinic attendees had HTN or DM. It is possible that though only new cases were included, some of them were actually already diagnosed and were on treatment from modern medicine clinic. They had got a new card made and wanted to continue with their earlier treatment regimen. Since Ayurveda clinic was a new addition, it did not attract these diagnosed HTN or DM patients. Patients who were unaware of their disease diagnosis might have got distributed in either of the clinics. Another factor that might have contributed to already diagnosed patients to opt for modern medicine system was the fact that medicines for HTN and DM was provided for 1 month at a time. In ayurvedic system, the medicines were provided for shorter period, typically for 5 days at a time. Moreover, already diagnosed patients might have experienced benefits of treatment or control of HTN and DM, and therefore, probably decided to continue with a proven therapy.

It has been shown that many NCD patients sought treatment from Ayurveda facilities also in other parts of the country.<sup>[6]</sup> This finding warrants the need for improving the services provided at the Ayurveda clinic for the management of NCDs at primary health-care level. Some ayurvedic medicines have shown promising results for the treatment of chronic diseases such as DM.<sup>[17]</sup> Nonetheless, this preference of NCD patients for the modern system of medicine needs a qualitative study for better understanding.<sup>[18]</sup>

The use of CAM in the general population has been reported as high as 80% in some developing countries.<sup>[19,20]</sup> The number of patients attending Ayurveda clinic in its 1<sup>st</sup> year of existence was less than that of the modern medicine clinic. However, depending on the experience of the clients, it could increase in subsequent years. Having option of CAM empowers the patients and may lead to greater utilization of the government health facility.

The field of traditional, CAM has recently gained the interest among the people and the governments across the world. Traditional systems of medicines have the advantages of diversity,

### Box 1: Ayurveda diagnoses and their corresponding diagnoses in modern medicine

Ayurveda diagnoses	Modern medicine diagnoses
<i>Amlapitta</i>	Gastritis
<i>Arsha</i>	Hemorrhoids
<i>Asmari</i>	Urinary calculi
<i>Atisara</i>	Diarrhea
<i>Jwara</i>	Fever
<i>Kasa</i>	Cough
<i>Koshta badhata</i>	Constipation
<i>Krimi</i>	Worm infestation
<i>Pandu</i>	Anemia
<i>Prahema</i>	Diabetes mellitus
<i>Rakta pradara</i>	Menorrhagia
<i>Sandhivata</i>	Osteoarthritis
<i>Shweta pradara</i>	White discharge
<i>Twak Vikar</i>	Skin disease
<i>Uchcha raktchap</i>	Hypertension

flexibility, easy accessibility, and broad continuing acceptance in developing countries and increasing popularity in developed countries.<sup>[13,20]</sup> Relatively low cost, low levels of technological input, relatively less side effects, and growing economic importance are some of the other features favoring traditional medicine.<sup>[13,20]</sup> The findings of this study provides evidence for the integration of such traditional systems of medicine into the mainstream modern medicine in India. Periodic analysis of case mix could assist the managers in deciding the type and quantum of medicines required to efficiently run these clinics.

### Strengths and limitations

The strengths of this study included standardized methods of diagnoses and record keeping and comparison with the modern medicine clinic data of the same time period in the same facility. Some of the limitations of the study include our inability to capture multiple diagnoses of the same patient that may have led to classification errors, and the noncomparability of ayurvedic and modern medicine diagnoses due to the basic differences in the theories of health and disease in the two systems. Furthermore, this study captures only the first visit of a new patient to a particular clinic and does not reflect the cross-referrals.

### Conclusions

The study provided evidence that Ayurveda was popular among rural population in North India. Therefore, the Government of India's initiative of setting up Ayurveda clinic in PHCs is well founded.

### Recommendations

Since Ayurveda clinic is attended by a considerable proportion of population in rural North India, such clinics can be established in other existing health centers as well to widen the basket of services available for the patients. Further qualitative studies

are required to explore the reasons for client preferences to a particular system of medicine. Morbidities such as ARI, HTN, and DM are mostly catered by modern medicine clinic. Hence, services related to these morbidities need to be scaled up in the exiting and upcoming Ayurveda clinics.

### Acknowledgment

We acknowledge the staff members of PHC Dayalpur who facilitated data collection.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### References

- Ministry of Health and Family Welfare. Department of Indian Systems of Medicine and Homeopathy. National Policy on Indian Systems of Medicine and Homoeopathy-2002. New Delhi: Ministry of Health and Family Welfare; 2002. Available from: [http://www.ayush.gov.in/sites/default/files/7870046089-Ayush2020n20policy20ISM20and20H20Homeopathy\\_0.pdf](http://www.ayush.gov.in/sites/default/files/7870046089-Ayush2020n20policy20ISM20and20H20Homeopathy_0.pdf). [Last accessed on 2016 Sep 04].
- Ministry of AYUSH. Background. New Delhi: Ministry of AYUSH; 2014. Available from: <http://www.ayush.gov.in/about-the-ministry>. [Last accessed on 2016 Sep 04].
- Mohan M. Presented at International Congress on Cardiology on internet; Role of Yoga and Ayurveda in Cardiovascular Diseases; 2007. Available from: <http://www.fac.org.ar/qcvc/lave/c039i/madanmohan.php>. [Last accessed on 2016 Sep 04].
- Ministry of AYUSH. Summary of Infrastructure Facilities Under AYUSH. New Delhi: Ministry of AYUSH; 2010. Available from: <http://www.ayush.gov.in/sites/default/files/File44202020202.pdf>. [Last accessed on 2016 Sep 04].
- Ministry of Health and Family Welfare. National Rural Health Mission. Mission Document. New Delhi: Ministry of Health and Family Welfare; 2005. Available from: [http://www.pbnrhm.org/docs/mission\\_doc.pdf](http://www.pbnrhm.org/docs/mission_doc.pdf). [Last accessed on 2016 Sep 04].
- Kumar D, Quasmi NA, Chandel JK, Bhardwaj AK, Raina SK, Sharma YK, *et al.* Assessment of clinical profile of the patients treated at ayurvedic health facilities in North India. *Int J Prev Med* 2013;4:1082-5.
- Kant S, Misra P, Gupta S, Goswami K, Krishnan A, Nongkynrih B, *et al.* The ballabgarh health and demographic surveillance system (CRHSP-AIIMS). *Int J Epidemiol* 2013;42:758-68.
- Ratheesh M, Sandya S, Pramod C, Asha S, Svenia JP, Premal S, *et al.* Anti-inflammatory and antioxidant effect of Kerabala: A value-added ayurvedic formulation from virgin coconut oil inhibits pathogenesis in adjuvant-induced arthritis. *Inflammopharmacology* 2017;25:41-53.
- Kessler CS, Pinders L, Michalsen A, Cramer H. Ayurvedic interventions for osteoarthritis: A systematic review and meta-analysis. *Rheumatol Int* 2015;35:211-32.
- Chopra A, Saluja M, Tillu G, Sarmukkaddam S, Venugopalan A, Narsimulu G, *et al.* Ayurvedic medicine offers a good alternative to glucosamine and celecoxib in the treatment of symptomatic knee osteoarthritis: A randomized, double-blind, controlled equivalence drug trial. *Rheumatology (Oxford)* 2013;52:1408-17.
- Kumar S, Rampp T, Kessler C, Jeitler M, Dobos GJ, Lüdtker R, *et al.* Effectiveness of ayurvedic massage (Sahacharadi taila) in patients with chronic low back pain: A Randomized controlled trial. *J Altern Complement Med* 2017;23:109-15.
- Singh BB, Mishra LC, Vinjamury SP, Aquilina N, Singh VJ, Shepard N, *et al.* The effectiveness of *Commiphora mukul* for osteoarthritis of the knee: An outcomes study. *Altern Ther Health Med* 2003;9:74-9.
- Chen YF, Chang JS. Complementary and alternative medicine use among patients attending a hospital dermatology clinic in Taiwan. *Int J Dermatol* 2003;42:616-21.
- Bodeker G, Ryan TJ, Volk A, Harris J, Burford G. Integrative skin care: Dermatology and traditional and complementary medicine. *J Altern Complement Med* 2017;23:479-86.
- Kasote DM, Jagtap SD, Thapa D, Khyade MS, Russell WR. Herbal remedies for urinary stones used in India and china: A review. *J Ethnopharmacol* 2017;203:55-68.
- Yokogawa T, Sasaki Y, Ando H, Yamamoto K, Mikage M. Pharmacological evaluation for improvement of Kanazawa sutra, medicinal thread for anal fistula. *J Nat Med* 2017;71:339-48.
- Rathor L, Pant A, Awasthi H, Mani D, Pandey R. An antidiabetic polyherbal phytomedicine confers stress resistance and extends lifespan in *Caenorhabditis elegans*. *Biogerontology* 2017;18:131-47.
- Singh RH. Perspectives in innovation in the AYUSH sector. *J Ayurveda Integr Med* 2011;2:52-4.
- Payyappallimana U. Role of traditional medicine in primary health care: An overview of perspectives and challenges. *Yokohama J Soc Sci* 2006;14:57-78.
- Bodeker G, Kronenberg F. A public health agenda for traditional, complementary, and alternative medicine. *Am J Public Health* 2002;92:1582-91.