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Morbidity profile of patients attended Siddha Regional Research Institute, Puducherry in 2017—A cross-sectional study

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ABSTRACT

Background: In India, understanding the patterns of utilization of AYUSH care has been considered vital for increased focus on its mainstreaming and integration with prevailing biomedical systems. This paper aims to evaluate the morbidity profiling of the patients attended Siddha Regional Research Institute (SRRI), Puducherry in 2017.

Methods: A cross-sectional study in the patients conducted from January to December 2017. Data was collected for variables including age, gender, and clinical diagnosis from the records maintained in the unit. The data are presented as frequencies and proportions.

Results: We have collected 48,204 patients' data from the out-patient facility of SRRI from January to December 2017. The important patient were women (51.3%), 13 - 59 years of age (adults 75.5 %), and re-visitations cases (83.5 %). Osteoarthritis (15 %), sinusitis (6 %), respiratory illness (6 %), psoriasis (5 %), and diabetes (5 %) were the top reported diseases. According to the *Siddha*, *Vatha* diseases are reported higher than *Pitha* and *Kabha* diseases.

Conclusion: Overall, in the year 2017 the SRRI OPD has more revisited cases than new ones, and women were slightly higher in proportion compared to males. The most frequently treated disease in both adults and the geriatric population was the musculoskeletal diseases, precisely osteoarthritis. More respiratory diseases were treated in children. These data could be used to analyze the people's perspective in the effective management of certain diseases through *Siddha*. The establishment of an integrative health facility with a cross-referral system would fetch more credulous among the public.

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1. Introduction

World Health Organisation (WHO) states that Traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences that are indigenous to different cultures, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses [1]. The WHO's 2019 Global Health Estimate demands the need for a promising remedy for non-communicable diseases, as it claims 15 million people each year in the age range of

30 - 69 years [2]. India's health transition is significant because of an increasing burden of chronic diseases. The WHO Director General's statement emphasized that Traditional and Complementary Medicine (T&CM) is habitually an undervalued health resource that is particularly applicable in the prevention and management of chronic lifestyle-related diseases and in the health needs of aging population [3]. Our Country has various native medical systems, and most of these systems use herbal medicines or traditional procedure-based therapies along with certain behavioral rules to inculcate healthy lifestyle. Due to our country's large population and extensive geographic spread, it is difficult to obtain optimum health for all citizens only through modern medicinal system [4].

The Department of Indian system of medicine was created and renamed as AYUSH, with a focus to provide increased attention to the development of these systems. AYUSH is an acronym for the

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traditional and non-conventional systems of health care and healing which include *Ayurveda*, *Yoga* and *Naturopathy*, *Unani*, *Siddha*, *Sowa Rigpa* and *Homeopathy*. These Indian systems of medicine are prevalent and practiced in India and some neighboring Asian countries, with very few exceptions. The AYUSH system, which addresses the health requirements of the Indian populace, has brought back age-old indigenous medical methods [5]. In Puducherry, the Indian Systems of Medicine and Homeopathy Department, Government of Puducherry conducts 17 *Siddha* facilities. Four of them are in Karaikkal, while the others are in the Puducherry region. *Siddha* Regional Research Institute (SRRI) has been operating in Puducherry since 1979 as a peripheral unit of the Central Council for Research in *Siddha* under the Ministry of AYUSH, Government of India.

Siddha medicine is an ancient time tested system, which deals with diseases as derangement of bodily compositions *Vatham* (The first type of pulse diagnosing tool and bodily composition according to *Siddha* concept), *Pitham* (Second type of pulse diagnosing tool and bodily composition according to *Siddha* concept) and *Kabham* (Third type of pulse diagnosing tool and bodily composition according to *Siddha* concept) which are called three *thaathus* (bodily composition). The literature enumerated 4448 diseases that can be occurred in humans [6]. In the *Siddha* system, a set of common symptoms within a group of genetic build is defined as disease entities such as *vatha* diseases, *pitha* diseases, and *kabha* diseases. The three *thaathus* imbalance can be predictable by using the *Siddha Udaliyal* (*Siddha* Physiology of human body) assessment tool that estimates the disease occurrence in a particular type of body, in order to achieve the personalized line of intervention for an individual [7].

To measure the impact of an illness the morbidity and mortality are being analysed to evaluate the disease burden which in turn helps us to assess the effectiveness of our health system and can direct the resources to where they are needed most [8]. The morbidity studies that involve diverse cultures reveals that diseases and its pattern are relatively same in all people [9]. It may be interpreted that a person's illness can be linked to the specific vicinity he resides. This could be correlated well with the diseases that could occur in specific lands of *Kurinji*, *Mullai*, *Marutham*, *Neithal*, and *Paalai* (Five types of the terrestrial state according to Tamil Literature) and with seasonal occurrences as described in *Tholkaappiam* - Ancient Tamil Literature [6]. Thus, it may possibly be described that the differences in morbidity pattern of a particular population are mostly a function of time and place [8]. The rationale for the study is to highlight the practicality of the *Siddha* system and to elucidate people's perspective towards it. This article covers the information regarding the frequency of diseases with certain demographical characteristics that are collected from the patients of SRRI, Puducherry in 2017.

1.1. Objective

This study was planned to evaluate the morbidity profile of the patients attended the Out-Patient Department (OPD) of *Siddha* Regional Research Institute (SRRI), Puducherry from January to December 2017.

2. Methods

2.1. Study setting & population

The outpatient facility functions from 8:00 am to 12:00 noon every day. On average 130–200 cases have reported for treatment in a day. New and re-visiting cases who attended the OPD of SRRI, Puducherry during January–December 2017 were included in the

present study. A cross-sectional study was carried out to analyze the information collected with age and sex variables in specific morbidities and the frequency of diseases to analyze the prevalence statistics. The collected data are presented as frequencies and proportions. We certify that this study has received In-Principle ethical approval from the institutional human ethics committee of *Siddha* Regional Research Institute, Puducherry on 23.03.2018. In this study, as the information is being used without identifiers, where the data are anonymized, the ethics committee suggested proceeding with in-principle approval to publish the findings in 2018.

2.2. Study variables and study tools

The socio-demographic variables including age, gender and clinical diagnosis were collected from previous records in the clinical section. The diagnosis of the cases was documented as reported in the out-patient record. Morbidities were categorized according to standard *Siddha* terminologies as prescribed in the *Siddha Maruthuvam* (A *Siddha* textbook in which the diseases and medicines are dealt) text book [10] and presented in their equivalent modern terminology. The measures such as incidence and period prevalence rate are also attempted.

2.3. Data entry and data analysis

Data were single entered in Microsoft Excel. 2010. Microsoft Corporation. Washington, United States and analyzed using Epi Info™, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA (Version 7.2). We used frequencies and proportions to summarize the morbidity profile stratified by age groups and gender. Age and sex-specific differentials on specific morbidities were also compared and tabulated.

2.4 Ethical approval

In principle, ethical permission to publish the data was obtained from the Institutional Human Ethics Committee of SRRI, Puducherry. The administrative approval was sought from the Head of the Institution.

3. Results

We have collected 48,204 data from outpatients of SRRI from January to December 2017. During the course, about 4000 cases were attended each month respectively. Majority were the ladies (24,730, 51 %) between 13 and 59 years of age (n = 36,391, 75.5 %) and revisiting cases (40,246, 84 %) (Table 1). The patient visits were increased in March (9.5 %) and December (8.7 %) in 2017. There was a slight difference in male and female patients who attended the OPD over the months. There were more female patients than males

Table 1
Distribution of patients attended the OPD of SRRI, Puducherry from January to December 2017 (n = 48,204).

Age in years	Gender		Total in no.(%)
	Male	Female	
≤12	1123	953	2076 (4.3)
13–59	16493	19898	36391 (75.5)
≥60	5858	3879	9737 (20.2)
New case	3814	4143	7957 (16.5)
Revisitation case	19660	20587	40247 (83.5)
Total	23474	24730	48204

in all the months except September (Fig. 1). The most common diseases treated were osteoarthritis (n = 7148, 14.8 %) followed by sinusitis (n = 2687, 5.6 %) and respiratory illness (n = 2636, 5.5 %) cases, followed by psoriasis (5 %), diabetes (4.6 %), lumbar spondylosis (3.8 %), bronchial asthma (3.4 %), eczema (3 %), urticaria (3 %) and Peptic ulcers (3 %). The top ten diseases comprised more than half of the total reported diseases in 2017.

According to the system-wise classification of diseases, the musculoskeletal (n = 13200, 27 %) diseases were majorly reported followed by skin diseases (n = 8688, 18 %) and respiratory diseases (n = 4688, 10 %). More than half of the total diseases are the first three system-wise diseases such as musculo-skeletal diseases, skin diseases and respiratory diseases (Table 2). During 2017, 547 Suram (Pyrexia conditions) (0.1 %) cases were reported and 2197 (4.56 %) cases of Type 2 diabetes (Madhumegam- Diabetes and its complications) were reported. In pediatrics, the majorly treated cases were respiratory diseases (52 %), skin diseases (22 %), digestive system-related diseases (11 %) and ENT diseases (8 %) (Fig. 2) in the said period. Respiratory diseases, gastro-intestinal diseases, skin diseases, musculo skeletal diseases and ENT diseases were the most commonly treated system wise diseases in all age groups which is represented in Table 3. We classified the listed diseases based on the *mukutram* (Three humors present in a human physique) *Vatham*, *Pitham*, and *Kabham*. Osteoarthritis (n = 7148, 32.1 %) was the major reported disease among the *Vatha* diseases, hemorrhoid cases were more common in *Pitha* disease (n = 1136, 22 %) and respiratory illness (n = 2638, 24.1 %) were common in *Kabha* diseases. *Vatha* diseases (58 %) were more than half of the total *mukutram* based diseases followed by *Kabha* (29 %) and *Pitha* disease (13 %) (Fig. 3).

4. Discussion

Here in the present study, musculoskeletal (*Vatha*) diseases were frequently attended to, followed by gastrointestinal and respiratory diseases among the individuals who opted for treatment in the *Siddha* facility in 2017. The male and female adults as well as elderly people were more likely to suffer from musculoskeletal diseases according to the survey. Respiratory illnesses in children are the most common cause for approaching *Siddha* management in the study period, followed by skin ailments and then digestive system-related diseases. However, nonspecific disease conditions such as generalized body aches, insomnia, anaemia and varicose veins with ulcer and inflammation were also present in remarkable proportions.

About half of the elderly people have chronic disease in our country [11]. Osteoarthritis (75%) was the most prevalent morbidity

Table 2
Distribution of system wise diseases among the patients attended the OPD of SRRI, Puducherry from January to December 2017 (n = 48204).

Diseases and its system wise grouping	No. of cases (%)
Musculoskeletal Diseases	13200 (27.3)
Osteo Arthritis	7148 (14.8)
Lumbar spondylosis	1831 (3.8)
Cervical spondylosis	1249 (3.11)
Rheumatoid arthritis	836 (1.7)
Skin diseases	8688 (18)
Psoriasis	2404 (5)
Eczema	1452 (3)
Urticaria	1448 (3)
Vitiligo	741 (1.5)
Tinea infection	395 (0.8)
Respiratory disorders	4688 (9.7)
Respiratory illness	2638 (5.5)
Bronchial Asthma	1625 (3.4)
Gastro Intestinal diseases	4227 (8.7)
Peptic ulcers	1445 (3)
Haemorrhoids	1136 (2.4)
E.N.T. diseases	3458 (7.2)
Sinusitis	2687 (5.6)
Migraine	305 (0.6)
Urinary disorders	2819 (5.8)
Urinary calculi	362 (0.8)
Gynaecological disorders	1377 (2.8)
Abnormal Uterine bleeding	274 (0.6)
Amenorrhoea	254 (0.5)
Poly cystic Ovarian Disease	213 (0.4)
Fibroid uterus	134 (0.3)
Neuro-psychological disorders	405 (0.8)
Insomnia	88 (0.18 %)
Cardio Vascular Disorders	318 (0.7)
Infectious diseases	311(0.6)
Pyrexia conditions	547 (1)
Male Reproductive disorders	1619 (0.3)
Erectile dysfunction	51 (0.1)
Lymphatic diseases	156 (0.3)
Non-specific conditions	8396 (17.4)
Diabetes	2197 (4.6)
Anaemia	137 (0.28)

among elderly individuals, as it has been in earlier surveys. The study data revealed that the elderly patients have a favourable opinion on the efficacy of *Siddha* medications for chronic arthritic disorders. The rebound to approach *Siddha* for fever management could be seen in the sheer spike of cases (n = 263 out of total 547 cases in 2017) in August, which was the epidemic period for viral fevers. In India, 50 million people have diabetes; this number is projected to increase to 87 million by 2030 [12] and the rising trend of chronic diseases due to unhealthy lifestyle and dietary behavior could be well managed with the available AYUSH potential in the country [13]. In 2017, there were

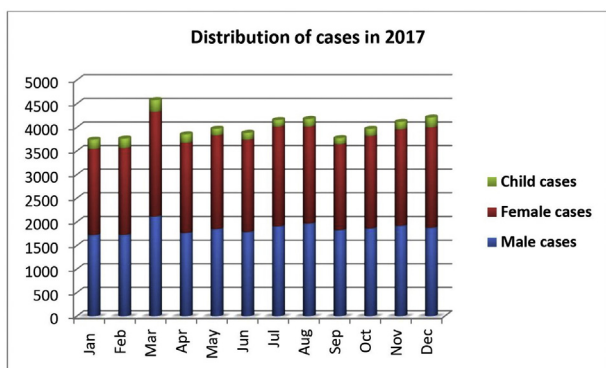


Fig. 1. Distribution of patients attended OPD of SRRI, Puducherry from January to December 2017 (n = 48,204).

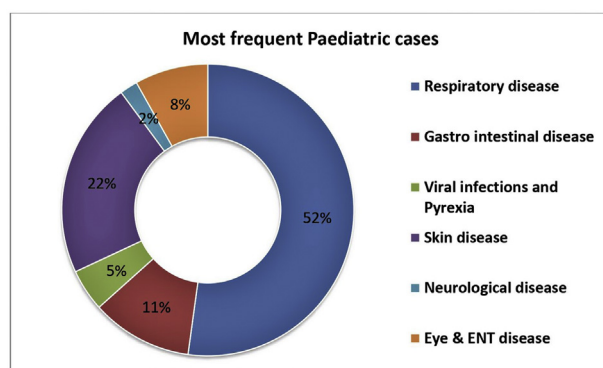


Fig. 2. Distribution of frequently visited paediatric cases among the patients attended the OPD of SRRI, Puducherry from January to December 2017.

Table 3
Distribution of top five system wise diseases with age among the patients attended the OPD of SRRI, Puducherry from January to December 2017 (n = 48204).

Age and disease	Respiratory diseases	Gastro-intestinal Diseases	Skin diseases	Muscuo skeletal diseases	ENT diseases
Children [<12 years]	988 ^a	215	398	18	148
Male Adult [13–59 years]	2265	2520	4717	5243 ^a	1809
Female Adult [13–59 years]	1719	1608	3684	7996 ^a	1461
Geriatric Male [≥60 years]	497	391	1070	1885 ^a	216
Geriatric Female [≥60 years]	208	223	398	1948 ^a	79

^a Top treated disease systems in pediatric, adult and geriatric age groups.

2197 cases of type 2 diabetes reported, all of which were treated with *Siddha sastric* medicines (Classical medicines given in ancient Siddha Literature and medicines followed by Tamil People in their family tradition), dietary restrictions, and regular regime of *Yogam* (Physical and mental exercises dealt in Siddha system) exercises. The previous studies conducted by Selvaraj et al. [14], Reddy et al. [15], Duraisamy et al. [16] has shown similar morbidity pattern of reported cases with the present study. Long-term care is required for the musculoskeletal, skin and neurological systems. The increase in such cases indicates that many people are approached by the *Siddha* system for chronic rather than acute ailments, and it also indicates that people have faith in *Siddha* treatment as it has fewer side effects. This further enhances their quality of life despite its slower health improvement. The genito urinary diseases were as follows, urinary disorders 2819 (5.8 %), gynecological disorders 1377 (2.8 %) and male reproductive disorders 161 (0.3 %). The other diseases notably reported were erectile dysfunction (0.1% n = 51) and urinary calculi (0.75 % n = 362). Similarly in 2017, diseases of female reproductive system such as abnormal uterine bleeding (n = 274), amenorrhoea (n = 254), polycystic ovarian syndrome (n = 213) and fibroid uterus (n = 134) were treated among the women of reproductive age (Table 2).

The seasonal attribution of disease occurrence in an individual is dealt in *Siddha* Literature. The six seasons in a year have a rhythmic influence on the *vatham*, *pitham*, and *kabham* in our physique. In *Muthuvenil kaalam* (Summer) and *Kaar kaalam* (Monsoon) (from July–October) *vatham thaathu* is increased by nature, therefore the *vatha* cases are increased. Consequently, in *Koothir kaalam* (Autumn) and *Munpani kaalam* (Winter) (from November–February), *pitha thaathu* is increased to cause *pitha* diseases. Similarly, in *Pinpani kaalam* (Early spring) and *Elavenil kaalam* (Spring) (from March–June) *kabham* is increased. So, the individuals of vaatha predominance may be affected with some disease manifestations at the time of vatha humor rise. Likewise, the change of seasons might impact the individuals with pittham and kapham dominant physique with their respective disease expressions [7]. It is comprehended that the disease incidence has been associated with

seasonal changes which are evident as there were more OPD attendees in March (9.5% n = 4577) (Fig. 2). It is established that the disease incidence may be linked to seasonal variations. However, with the available data, we could not generalise the disease occurrence of specific changes in a *mukkuutra* entity. Further, the disease incidence in a particular time is decided by the people who visit the facility. The most frequently reported top ten diseases in 2017 were categorised according to *mukkutram* based disease groups. Under *vatha* disease, osteo arthritis, lumbar spondylosis, and cervical spondylosis were categorized. Haemorrhoids, Peptic ulcers, and urinary calculi were classified as *pitha* diseases and respiratory illnesses, sinusitis, and bronchial asthma were classified as *Kabha* diseases. Based on this, *vatha* diseases hold an equal proportion to the other two *thaathus*, *pitham* and *kabham* combined (Fig. 3). The disease representation, according to *mukkutram* is an ideal pathway to diagnose diseases and helps to anticipate case incidence and drug supplies to some extent. The study was conducted at a regional research institute throughout the course of 2017, with a substantial number of cases that illustrates the prevailing morbidity trend at *Siddha* facilities across the state.

4.1. Limitations

Being a cross-sectional study, it does not reveal any causal associations between demographics and disease occurrence and these findings cannot be generalized to the all *Siddha* primary care settings as its a retrospective data. Additionally, reasons for preference of *Siddha* care by disease specific treatment approach can be studied through qualitative studies with subsequent follow-ups.

5. Conclusion

In the year 2017, there were more re-visited cases and female patients were slightly higher in proportion. The most common treated disease in adult and the geriatric population was musculoskeletal diseases, precisely osteoarthritis disease. Added to that, more respiratory diseases were essentially treated for pediatrics. As per *Siddha*, the most frequent *mukkutram*-based ailment was *Vatha* disease. This study shows that *Siddha* health care settings can serve a broad range of diseases.

5.1. Recommendations

Evaluating the statistics of diseases can help in logistics at the hospital such as drug procurement and assessment of the highly needed specialties in *Siddha* such as *Varmam* (*Siddha* form of Manipulative technique) and *Thokkanam* (*Siddha* form of Massage technique) divisions for treating musculoskeletal diseases and *Yogam* division for treating non-communicable diseases. The rising trend of chronic diseases caused by unhealthy lifestyles can be well managed with the *Siddha* treatment modalities. As the system encounters more cases in the musculoskeletal and integumentary system, the improvement of facilities according to the demand will serve the society well.

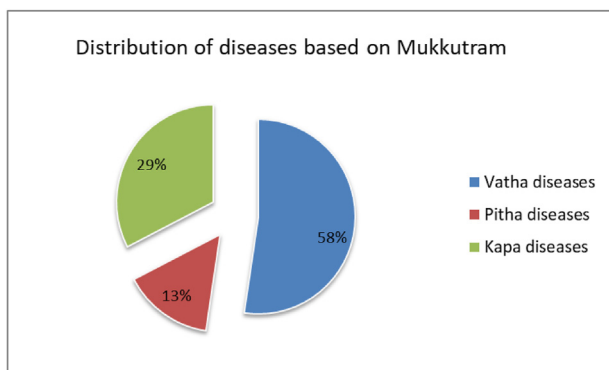


Fig. 3. Distribution of top ten diseases categorised according to mukkutram among the patients attended the OPD of SRRI, Puducherry from January to December 2017.

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Author contributions

Chitra Balasubramanian - Conceptualization, Methodology, Investigation, Writing - Original Draft; Shunmugaram Shenbagaraj - Formal analysis, Investigation; Sendhilkumar Muthappan - Data curation, Writing - Review & Editing, Visualization; Lavanya Alagusolaiyan - Formal analysis, Investigation; Rajendra Kumar Arumugam - Supervision.

Conflict of Interest

None.

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