Original Research Article

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

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A B S T R A C T

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 revisitation 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 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 Karaikal, 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 thathus (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 kapha diseases. The three thathus imbalance can be predictable by using the Siddha Udalival (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 a 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 InfoTM, 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.

| Age in years | Gender | Total in no. (%) |
|--------------|--------|-----------------|
| ≤ 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 mukkutram (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 mukkutram 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 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

### Table 2

| Diseases and its system wise grouping | No. of cases (%) |
|--------------------------------------|------------------|
| **Musculoskeletal Diseases**          |                  |
| Osteo Arthritis                       | 7148 (14.8)      |
| Lumbar spondylosis                    | 1831 (3.8)       |
| Cervical spondylosis                  | 1249 (3.1)       |
| Rheumatoid arthritis                  | 836 (1.7)        |
| **Skin diseases**                     |                  |
| Psoriasis                             | 2404 (5)         |
| Eczema                                | 1452 (3)         |
| Vitiligo                              | 741 (1.5)        |
| Tineal infection                      | 395 (0.8)        |
| **Respiratory disorders**             |                  |
| Respiratory illness                   | 2636 (5.5)       |
| Bronchial Asthma                      | 1625 (3.4)       |
| **Gastro Intestinal diseases**        |                  |
| 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 Urine 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 Diseases**          |                  |
| 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)       |

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.
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 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 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 kabhham in our physique. In Muthunenil 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 Pinnapi 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 pitham 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 mukkutra 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 vaathu 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 Varnam (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.

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**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 | Musculo-skeletal diseases | ENT diseases |
|-----------------|----------------------|-----------------------------|---------------|--------------------------|-------------|
| Children [<12 years] | 988\(^*\) | 215 | 398 | 18 | 148 |
| Male Adult [13–59 years] | 2265 | 2520 | 4717 | 5243\(^*\) | 1809 |
| Female Adult [13–59 years] | 1719 | 1608 | 3684 | 796\(^*\) | 1461 |
| Geriatric Male [≥80 years] | 497 | 391 | 1070 | 1885\(^*\) | 216 |
| Geriatric Female [≥60 years] | 208 | 223 | 398 | 1948\(^*\) | 79 |

\(^*\) Top treated disease systems in pediatric, adult and geriatric age groups.

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**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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