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PROBLEMS ARE LARGER THAN WHAT WE EXPECT: LEARNING'S FROM SCREENING PROGRAM, AMMAAROGYATHITTAM(AAT) IN TAMIL NADU**T. S Selvavinayagam ***

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Abstract

Background: States like Tamil Nadu made reasonably good progress on managing health issues of its commonman and it is the right time to move towards wellness of them. The Amma Arogya Thittam is proposed towards reaching that objective of promoting Health and Wellbeing by providing free access to basic health check-up in the primary health centers run by the Government. **Objective:** To find out the outcome of Amma Arogya Thittam (AAT) in Tamil Nadu. **Methods:** Screening for selected basic 25 tests was conducted in 400 upgraded Primary Health centers (Upgraded PHCs) for two days in a week on Thursday and Friday after the outpatient services. The secondary data of this activity was analysed. **Results:** In the past 30 months around 27 lakh, beneficiaries are screened and the results of AAT reveals increasing prevalence of most of the risk factors/diseases beyond the existing reports and it needs further evaluation. **Conclusion:** There is an absolute need to follow up every screened positive individual for confirmation and treatment according to the need.

Key-words: Amma Arogya Thittam (AAT), Health screening, Basic tests, Public health system

Introduction

Tamil Nadu is one the best state in India as per health parameters are concerned. The details on health infrastructure and performance of various health programmes¹ are available in the public domain. Now there is need to improve and sustain the gains along with efficiency in providing the services. The screening for diseases which are emerging as a major public health problem needs attention.

Amma Arogya Thittam (AAT) in Tamil Nadu was started with an objective of

1. Promoting Health and Wellbeing through early detection and treatment of disease conditions by providing free access to basic health check-up, to all the people in the age of 30 years and above on annual basis.
2. Anticipate positive behaviour change to seek health check up on regular basis in future.
3. State will have basic health profile of the population over a period of time

It is well-known fact that, the screening, in medicine, implies a strategy used to identify the possible presence of a disease in individuals/populations without signs or

symptoms and it is different from diagnostic tests which confirms the presence of disease. Though so many screening tests are available we decided to adopt those 25 tests which fulfil the Wilson and Jungner classic screening criteria along with other emerging criteria as described in the Bulletin of WHO² and given in Box 1 and Box 2. This study explores the outcome of Amma Arogya Thittam (AAT) in Tamil Nadu.

Box-1: Wilson and Jungner classic screening criteria

1. The condition sought should be an important health problem.
2. There should be an accepted treatment for patients with the recognized disease.
3. Facilities for diagnosis and treatment should be available.
4. There should be a recognizable latent or early symptomatic stage.
5. There should be a suitable test or examination.
6. The test should be acceptable to the population.
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.
10. Case-finding should be a continuing process and not a "once and for all" project.

Box 2. Synthesis of emerging screening criteria proposed over the past 40 years

1. The screening programme should respond to a recognized need.
2. The objectives of screening should be defined at the outset.
3. There should be a defined target population.
4. There should be scientific evidence of screening programme effectiveness.
5. The programme should integrate education, testing, clinical services and programme management.
6. There should be quality assurance, with mechanisms to minimize potential risks of screening.
7. The programme should ensure informed choice, confidentiality and respect for autonomy.
8. The programme should promote equity and access to screening for the entire target population.
9. Programme evaluation should be planned from the outset.
10. The overall benefits of screening should outweigh the harm.

Materials and methods

Based on the Wilson and Jungner classic screening criteria along with emerging requirements, we selected simple 25 cost-effective tests which can be done at primary center level with health workers is devised for this program. This includes the following tests.

1. Height
2. Weight
3. Body Mass Index (BMI)
4. Blood Total count
5. Differential Count
6. Hemoglobin estimation through semi auto analyser
7. Peripheral Smear for malarial parasite and any abnormal cells
8. Blood Grouping and Rh Typing
9. Sputum Microscopy as specified under Revised national tuberculosis control program
10. Urine Albumin
11. Urine Sugar
12. Urine Deposits
13. Blood Cholesterol
14. Blood Creatinine
15. Screening for Hypertension by measuring blood pressure and history
16. Screening for Diabetes Mellitus by random blood sugar test
17. Eye Screening for acuity of vision and cataract
18. Screening for skin diseases
19. Screening for Oral Cancer
20. Screening for Cancer Cervix for females
21. Screening for Cancer Breast for females
22. X-Ray, if required based on symptoms
23. Ultrasound if required based on symptoms
24. ECG if required based on symptoms
25. General examination by medical officer

While deciding the above screening tests we also consider the Global Burden of Diseases, Injuries, and Risk Factors Study 2016³ which indicates that high blood pressure, high fasting plasma glucose, high body mass index and high total cholesterol were among the top 10 risk factors.

After the initial screening tests, there is provision to get free confirmatory investigations and also treatment through public institutions and empanelled private hospitals under The Chief Minister's Comprehensive Health Insurance scheme⁴.

The screening was conducted in 400 upgraded Primary Health centers (Upgraded PHCs) in the first phase for two days in a week on Thursday and Friday. The screening starts at 11.00 a.m after the outpatient services. Village Health Nurse (VHN) are also requested to mobilize the beneficiaries weekly twice to attend this program in addition to the direct walk-in patients. The program is designed in such a way that all the screening including investigations will be done on the same day, entered the results in the portal created for that purpose and printed report from the portal after saving it in the local system is handed over to the beneficiary with sign and seal of the duty medical officer. Since the program is conducted only for two days a week that too in the Upgraded PHCs required manpower can be mobilized from other PHCs if needed.

Data management: We created separate module for capturing the data through our existing HIMS network for PHCs. The results of preventive screening is entered immediately by NCD staff nurse. The report can be saved in the local computer and print out to be taken and issued as report to beneficiary which will display results for all 25 parameters in specific format. The analysis of data is being done at the regular intervals from the backend and shared to all the providers.

Results

The program was a massive success with around 2.7 million people screened in 30 months and we are in the process of expanding it to include 34 urban primary health centers and 99 Government hospitals at district and sub-district level. The performance of the scheme across the state in district wise is enclosed in Table 1.

The prevalence of hypertension was 18.1% in females and 20.75% in males. (Figure 1). And 32.52% of females and 35.75% of males were showing random blood sugar values (Figure 2) more than 110 mg/dl. Only 6-9 % of screened persons were normal (figure 3).

Figure 1. The proportion of screened beneficiaries showing abnormal blood pressure values, gender-wise

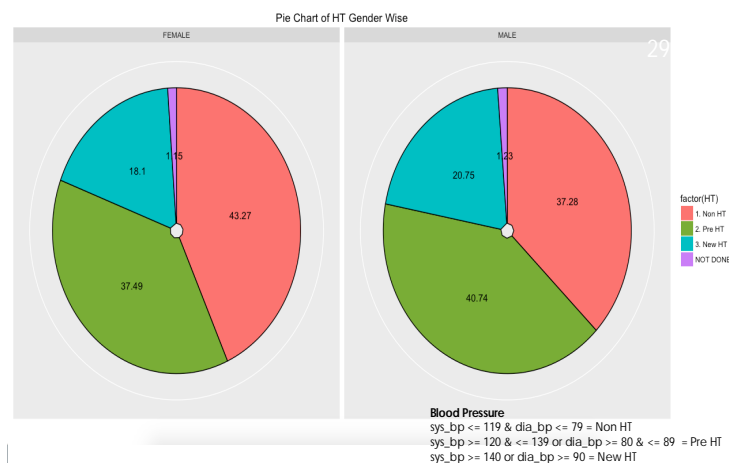


Table 1- Amma Arogya Thittam(AAT) Report (03-03-2016 to 22-09-2017)

S.No	Health District Name	AAT Centres	Male	Female	Total	Per AAT Centre
1	VELLORE	10	49932	60643	110579	11,058
2	POONAMALLE	1	2755	7517	10275	10,275
3	SAIDAPET	6	26486	33363	59854	9,976
4	TIRUVANNAMALAI	10	43841	51368	95216	9,522
5	ARIYALUR	6	23635	30188	53827	8,971
6	SALEM	20	82068	96028	178113	8,906
7	TIRUVARUR	11	45527	52099	97633	8,876
8	MADURAI	13	41705	70170	111888	8,607
9	RAMANATHAPURAM	6	19372	29135	48517	8,086
10	TIRUPUR	14	52328	60580	112912	8,065
11	KRISHNAGIRI	11	36495	51476	87982	7,998
12	PARAMAKUDI	6	18388	28128	46521	7,754
13	ERODE	14	46159	58961	105126	7,509
14	TUTICORIN	7	22908	28371	51288	7,327
15	ARANTHANGI	7	20062	29634	49698	7,100
17	TIRUVALLUR	13	38465	53812	92285	7,099
16	KALLAKURICHI	11	32237	45512	77764	7,069
18	TIRUPATHUR	11	28644	45910	74568	6,779
19	COIMBATORE	12	34080	42508	76595	6,383
20	PUDUKKOTTAI	7	17010	26656	43669	6,238
21	VIRUDHUNAGAR	6	14948	21854	36803	6,134
22	NAGARCOIL	10	24128	37029	61159	6,116
24	KANCHEEPURAM	7	18159	24312	42474	6,068
23	CHEYYAR	8	20978	27019	47999	6,000
25	KARUR	8	21158	25955	47116	5,890
26	DINDIGUL	8	20758	25087	45855	5,732
27	SIVAKASI	6	14276	20084	34363	5,727
28	TIRUNELVELI	11	22543	39544	62092	5,645
29	SANKARANKOIL	9	19661	30816	50484	5,609
30	NAMAKKAL	15	37382	45366	82753	5,517
31	SIVAGANGAI	12	22400	43140	65546	5,462
32	PERAMBALUR	5	12320	14534	26856	5,371
34	TIRUCHIRAPALLI	15	34266	45091	79364	5,291
33	VILLUPURAM	11	23165	34961	58137	5,285
35	KOILPATTI	5	10493	15189	25688	5,138
36	THANJAVUR	14	28220	42000	70232	5,017
37	CUDDALORE	14	28943	37622	66568	4,755
38	DHARMAPURI	9	18199	22836	41039	4,560
39	PALANI	8	15289	19717	35006	4,376
40	NAGAPATTINAM	11	19632	27892	47537	4,322
42	THENI	8	9835	15874	25713	3,214
41	THE NIGIRIS	4	5036	7487	12523	3,131
Total		400	11,23,886	15,25,468	26,49,617	6,624

Dyslipidemia was seen in around 57.07% females and 58.76% of male (Figure 4). BMI more than or equal to 25 kg/m² was seen in 21.6% in male to 24.4% in females (Figure 5)

Discussion

It is a known fact that hypertension and dyslipidemia are the two major contributing risk factors for cardiovascular

diseases (CVDs) which is increasing worldwide including India. The prevalence of Hypertension is 32.3% in urban areas and in rural areas, it is 28% in Tamil Nadu as per ICMR IndiaDia study⁵. As per our study, new hypertension which indicates the persons with a systolic blood pressure more than 140 mmHg and/or diastolic

blood pressure more than 90 mmHg is 18.1% in females and 20.75% in males Further NFHS4⁶ reported the prevalence of hypertension in 8.3% of women and 15.5% of men and our study values are on the higher side which needs attention. Though the term new hypertension is used in our analysis, results include both existing hypertension patients and newly diagnosed now in the screening program who have abnormal values.

Figure 2. The proportion of screened population showing abnormal Random blood sugar (RBS) value, gender-wise

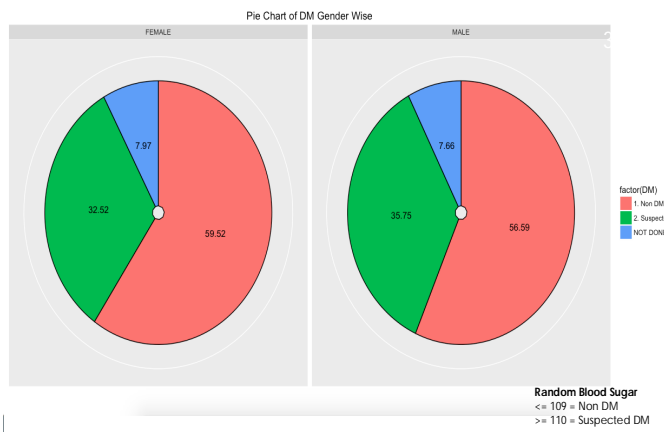
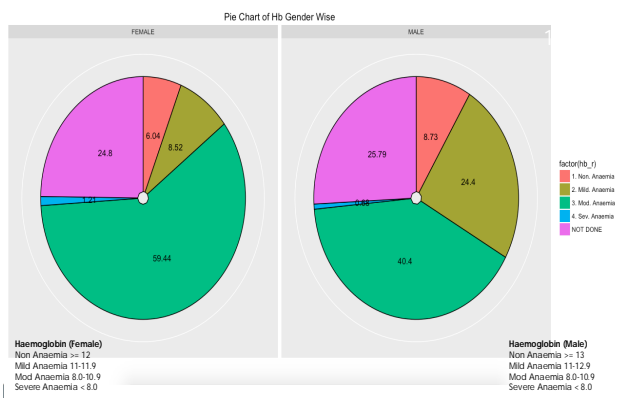


Figure 3. The proportion of public showing varying levels of Anemia levels among the screened, gender-wise



The prehypertension prevalence (values ranging from 120-139 mmHg as per Joint national committee guidelines) of 37.49% in females and 40.74% in males which is also on the higher side when compared with ICMR IndiaDia study. These prehypertension levels indicate the bomb that is waiting to explode unless suitable preventive and promotive strategy is implemented.

With regard to diabetes screening around 32.52% of females and 35.75% of males showing random blood sugar values more than 110 mg/dl in our study and it may be an indication that the prevalence of diabetes is more than the recent reports from WHO, NFHS4 and ICMR IndiaDia study. As per WHO reports in 20167 India had 69.2 million people living with diabetes (8.7%) with around 52% remained undiagnosed. The ICMR IndiaDia study shows a weighted prevalence of diabetes (both

known and newly diagnosed) in Tamil Nadu was 10.4% and the prevalence of prediabetes was 8.3%. NFHS4 also reported a similar prevalence of diabetes with 11% of females and 15% of males affected.

Figure 4. The proportion of public showing abnormal Cholesterol values among the screened gender-wise

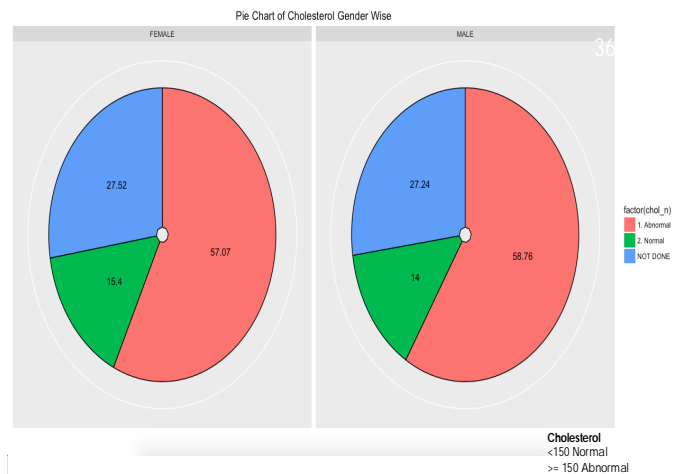
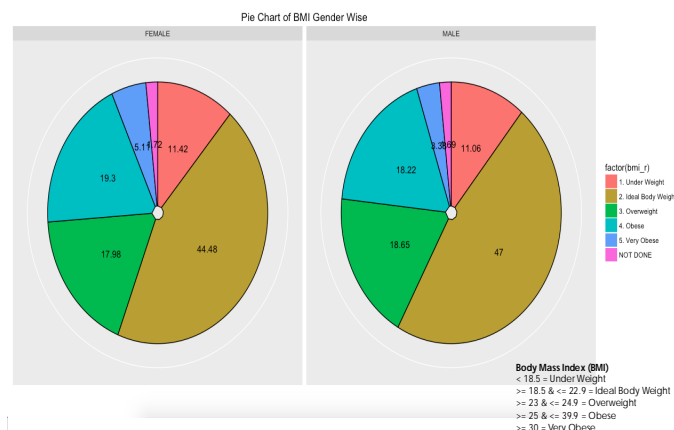


Figure 5. BMI among the screened population gender-wise.



In India, the age-standardized incidence rate of oral cancer is 12.6 per 100 000 population as per WHO8. As per our AAT report, 0.38% of the population is showing the suspected precancerous lesions in the oral cavity, which is less than the expected considering the above incidence rate and survival rate. There is scope for improvement and the co-located dental clinics in primary health centers to be suitably used for improving the performance and to take the biopsy from the precancerous lesions for histopathological examination.

Similarly, the age-adjusted incidence rate of carcinoma of the breast was found 37.9 per 100,000 women in Chennai9 and in our study, only 0.35% women who underwent clinical breast examination had suspected lesions which need further evaluation and there is potential to improve the performance.

Around 2.01 to 2.7 % of the screened population who are showing abnormal serum creatinine value needs evaluation for renal problems. Other reports need suitable

intervention and it is provided in the Government hospitals and empanelled hospitals under CMCHISTN.

With regard to anaemia, it is highly problematic as only 6-9 % of screened persons are normal (Figure 3) and rest of the population are at different levels of anaemia. When NHFS4 reported 55.1% of anaemic in women and 20.4% of men itself is an issue, this comes as a rude shock. Unless corrective measure is taken it will have an impact on increased mortality and morbidity particularly in the women of childbearing age.

Dyslipidemia is another issue confronting the state with around 57.07% females and 58.76% of male is showing abnormal values who's cholesterol value is more than 150 mg as per our AAT report, which is low when compare to 77.8% in urban areas and 76.5% in rural areas reported as per NFHS4

Our AAT reported analysis shows that obesity with BMI equal to/more than 25 kg/m² ranges from 21.6% in male to 24.4% in females of screened population. This is slightly less when compare to NHFS4 where obesity with BMI equal to/more than 25 ranges from 28.2% in male to 30.9% in females. As per ICMR India study prevalence of obesity in TN in urban areas is 35.7- 37.4% and in rural it ranges from 20-21%. There is an absolute need to implement the suitable measure to reverse the obesity trend in the community.

Learning and Limitations

Good start with program and needs improvement in both numbers and quality of screening. There may be quality issues in lab reports as not all the labs are following EQAS/ IQAS. All beneficiaries with abnormal values to be followed by the respective field health workers for appropriate medical care after confirmatory tests. The unique identifier (mobile, Aadhaar, ration card etc.) of the beneficiaries needs to be captured for future tracking. The results are based on people came to public health institutions and entire interpretation in this paper is based on that. The results may be different in the population going to the private sector.

Conclusion: Amma Arogya Thittam is the cost-effective solution to identify major health issues in the state through simple screening tools which can be done by health workers easily. The identified at-risk individuals should be followed up to take a confirmatory test and ensure treatment according to the need. Most of the intervention needed is available at Government facilities free of cost in Tamil Nadu and also through The Comprehensive health insurance scheme (CMCHISTN). There is a possibility of positive behaviours change in the community and overall health care cost will come down the future in view of this screening program.

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