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TNJPHMR

TAMILNADU JOURNAL OF PUBLIC HEALTH AND MEDICAL RESEARCH

Letter
from the
Editor's Desk

Dear all,

We are happy to release this issue of Tamil Nadu Journal of Public health and medical research with various topic touching from communicable diseases like tuberculosis, dengue, maternal healthcare covering birth preparedness including complication readiness, Child abuse and rehabilitation services etc.

It is very clear from the range of topics that, this journal is for everyone who works for the PUBLIC health. It is not restricted to any speciality or part of the body. The entire spectrum of health care workers right from doctors, specialists, nurses and paramedic technicians etc. can share their academic views here to improve the public health.

Also it is the one-stop solution for your academic and research needs. We have our own institutional ethics committee and qualified public health officials who can guide you and what is needed is, the thirst for research.

We also open up for partnership with individuals, academic and research institutions who can work with our administrative data for operational research to improve our services to the community.

We have pleasure in informing you that, we are planning to release a special edition of TNJPHMR to commemorate with our centenary celebrations of Directorate.
Looking forward to work with you all.

Best wishes

Dr. T.S.Selvavinayagam MD., DPH., DNB.,

Director of Public Health & Preventive Medicine

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REVIEW ARTICLE - PUBLIC HEALTH

TUBERCULOSIS AND TOBACCO SMOKING – INDIA'S VERY OWN SYNDEMICS

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Abstract

Background : Doll and Peto established the link between smoking and lung injury in their renowned 'British Doctor's Study' in 1976, but the link between smoking and tuberculosis (TB) was investigated as early as 1918. Various studies have proven beyond doubt that active and passive tobacco smoke exposure increases the risk of developing TB disease and leads to faster and more rapid progression of TB, with higher rates of relapse and death. Nonetheless, this pandemic has received far too little attention. This lack of focus has the potential to derail India's goal of eliminating tuberculosis by 2025. Healthcare workers must be aware of the heinous effects of smoking and its impact on the outcome of tuberculosis. It is also essential for the public health community to disseminate this knowledge to patients to achieve better treatment outcomes.
Keywords: Tuberculosis, Tobacco, Syndemic, Smoking, TB.

MAIN CONTENT

COVID-19 has stolen the limelight in the perspective of public health and a vast majority of clinicians across the globe have been concentrating on the pandemic for the past two years. While it is still uncertain if another wave of the pandemic would strike us down the lane, the fight against India's much older syndemics, tuberculosis (TB), and tobacco smoking are being overlooked.

Tuberculosis has long been an important cause of illness and death around the world, and until the COVID-19 pandemic, it was the leading cause of mortality from a single infectious agent. India is the world's most high-burden country for tuberculosis, accounting for 26% of global incidence, 38% of global TB deaths amongst HIV-negative individuals, and 34% of the overall number of TB deaths among HIV-positive and HIV-negative people.[1]

Tobacco is the world's largest preventable cause of morbidity and mortality. Tobacco use alone is accountable for far more than six million fatalities every year worldwide, with more than eight million fatalities anticipated by 2030.[2] India is the world's second-largest producer and user of tobacco. According to the 2nd Global Adult Tobacco Survey (GATS2), there are 266.8 million adult tobacco users in India, and tobacco-related mortality is estimated to be over 1.3 million, with one million ascribed to tobacco smoking and the remainder to smokeless tobacco use.[3]

Tuberculosis and tobacco smoking are two key public health issues that each have a significant health and economic impact on our country, let alone the adverse association that they share. Since 1918, TB has been linked to tobacco use,[4] their association, on the other hand, has just recently received widespread attention.[5] There is currently enough data to establish that smoking is substantially linked to the development of tuberculosis disease.[6,7] The substantial amount of carcinogens and toxic chemicals inhaled during tobacco smoking predisposes smokers to risk for malignant and non-malignant diseases, involving the respiratory tract. Smoking directly impacts both the innate and adaptive immunity and plays a role in aggravating pathogenic immune responses or attenuating defensive immunity[8] which paves way for a breakdown of TB infection or predisposes to TB disease. Regular smoking doubles the risk of TB recurrence and is also known to increase TB mortality by three to four-fold. If the patients were not smokers, one out of every five TB deaths may well be avoided.[9] Tobacco smoke exposure, both active and passive, increases the risk of tuberculosis,[10] and smoking hastens the progression of the disease.[11] Smoking is associated with isoniazid resistance[12] and 'alcoholism with smoking' is associated with acquired MDR-TB,[13] in addition to being an independent predictor of relapse.[14] Awaisu et al. established that at the end of the six months post smoking-cessation intervention given along with the DOTS regimen, the intervention group had significantly higher sputum smear conversion, radiological resolution of lung lesions than the DOTS alone group along, with a lesser loss to

follow-up rate and higher cure rates.[5]

According to the GATS2, the large number of tobacco users in our nation harmed the sustainability of TB case management due to the TB-Tobacco syndemic. Since tobacco use and tuberculosis (TB) are both widespread illnesses in the general population, even a marginal increase in the relative risk of TB due to tobacco use, particularly smoking, results in a high attributable risk of TB infection. In India, the TB and tobacco control measures were implemented through the Revised National Tuberculosis Control Programme (RNTCP) [currently National Tuberculosis Elimination Programme (NTEP)] and the National Tobacco Control Programme (NTCP) respectively. Realizing the adverse association that these two public health issues share in our country, the 'Tuberculosis-Tobacco Collaborative Framework' was constituted by the Ministry of Health and Family Welfare (MoH&FW) of the Government of India[15] to develop mechanisms for coordination between the two programs to combat TB-tobacco co-morbidity.

To ensure smooth coordination between these two national programs, a 5-step implementation strategy was developed under this framework, which included the establishment of joint coordination mechanisms at the national, state, district, and sub-district levels, screening for active TB symptoms complex (that includes cough and/or fever for more than two weeks, significant weight loss, and night sweats) among registered tobacco users in the NTCP, and training program staff in TB-Tobacco activities and to create joint public awareness campaigns. All healthcare personnel is responsible for administering Directly Observed Treatment Shortcourse (DOTS) were briefed and educated as part of this framework on the various processes and procedures that needed to be followed to help patients quit smoking and be tested for TB promptly. The adoption of 'Brief Advice' for tobacco cessation in RNTCP was the most important tactic within this framework.

The MoH&FW conducted a pilot study in Vadodra, Gujarat, based on the model proposed by the World Health Organization (WHO) and The Union, in which tobacco cessation services were delivered as 'Brief Advice' to TB patients registered for DOTS. 67.3% of patients who received 'Brief Advice' were able to quit smoking at the end of the pilot.[16] In a comparable pilot study conducted by the Central Tuberculosis Division in Jaipur, Rajasthan, 75% of TB patients who were counseled with the 'Brief Advice' by the DOTS provider quit smoking.[17] These pilots led to a logical conclusion of including tobacco cessation as an integral part of all TB control programs. Smokers with tuberculosis need to receive repeated counseling programs to quit smoking[18,19] and it is possible to set up cessation counseling programs that do not require any advanced or expensive training.[18] The National Institute for Research in Tuberculosis found that enhanced counseling by DOTS providers to TB patients attending NTEP centers for TB treatment, as well as the use of sustained-release formulation of Bupropion in conjunction with standard counseling, were both effective smoking cessation strategies among TB patients treated in the TB program.[19] However, many healthcare personnel who work with tuberculosis patients are unaware of or not involved in the provision of smoking cessation services. 20 This strongly suggests a dearth of knowledge regarding the link between cigarette smoking and tuberculosis. Healthcare practitioners must urge tuberculosis patients to quit smoking and avoid passive smoke exposure, as they are crucial steps in tuberculosis control.

All UN Member States have pledged to stop the worldwide tuberculosis scourge by 2030, whilst India aspires to accomplish this target by 2025, five years before the WHO's target to 'End TB'. The National Strategic Plan For Tuberculosis Elimination 2017–2025 outlines 'Detect-Treat-Prevent-Build' as the four strategic pillars to achieve the feat of TB elimination. Prolonged cough often misinterpreted as 'smoker's cough' is known to delay the detection of TB.[21] In a dose-dependent manner, smoking was observed to impede culture conversion during pulmonary tuberculosis treatment. At 60 days of typical first-line treatment, Renee et al. discovered a robust and independent link between current smoking and positive sputum culture. In addition, the number of cigarettes smoked each day had a significant dose-response association[22] and Visser et al. reported a 2 months delay in sputum conversion among smokers.[23] According to Leung et al., smokers with TB had a severe clinical and radiological presentation, frequent sputum positivity at presentation and after 2 months of treatment, a lower likelihood of success, and a higher risk of relapse if successfully cured.[24] In a group of patients with TB and HIV infection, Vanden et al. found that smokers had a worse treatment outcome than nonsmokers. This was attributed to smokers having a higher rate of loss to follow-up.[25]

One can sense that tobacco usage has a role to play in three out of four strategic pillars for TB elimination. COVID-19 has had an unprecedented global impact and the works done by the TB control front were no exception to this strife. The pandemic has set back the fight against TB by several years. Yet, the hard work of public health professionals.

MAIN CONTENT

COVID-19 has stolen the limelight in the perspective of public health and a vast majority of clinicians across the globe have been concentrating on the pandemic for the past two years. While it is still uncertain if another wave of the pandemic would strike us down the lane, the fight against India's much older syndemics, tuberculosis (TB), and tobacco smoking are being overlooked.

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To ensure smooth coordination between these two national programs, a 5-step implementation strategy was developed under this framework, which included the establishment of joint coordination mechanisms at the national, state, district, and sub-district levels, screening for active TB symptoms complex (that includes cough and/or fever for more than two weeks, significant weight loss, and night sweats) among registered tobacco users in the NTCP, and training program staff in TB-Tobacco activities and to create joint public awareness campaigns. All healthcare personnel is responsible for administering Directly Observed Treatment Shortcourse (DOTS) were briefed and educated as part of this framework on the various processes and procedures that needed to be followed to help patients quit smoking and be tested for TB promptly. The adoption of 'Brief Advice' for tobacco cessation in RNTCP was the most important tactic within this framework.

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One can sense that tobacco usage has a role to play in three out of four strategic pillars for TB elimination. COVID-19 has had an unprecedented global impact and the works done by the TB control front were no exception to this strife. The pandemic has set back the fight against TB by several years. Yet, the hard work of public health professionals and support staff saw the NTEP regain its numbers. When compared to the previous year, 2021 witnessed a 19% increase in TB patients' notification.[2] India's tuberculosis control program was renamed NTEP (from RNTCP) on January 1, 2020, to focus on the wider goal of eliminating TB by 2025. At that juncture, several of our professional counterparts asserted that the disease cannot be eliminated even by 2050 citing a lack of adequate technology and proper system to do so. But if this arduous fete is to be achieved, the simple, yet effective solution would be to focus on the TB-Tobacco adverse association, as smoking is responsible for more than 20% of global tuberculosis incidence. Weighing in the negative effects of tobacco in general and more specifically its role in exacerbating tuberculosis, the TB-Tobacco syndemic must be given the attention that it is due.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A CROSS-SECTIONAL STUDY ON AWARENESS OF BIRTH PREPAREDNESS AND COMPLICATION READINESS (BP/CR) AMONG ANTENATAL MOTHERS ATTENDING PRIMARY HEALTH CENTRE

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Abstract

BACKGROUND : Maternal and child health (MCH), Despite Maternal morbidity and mortality in a declining trend, developing countries are still burdened with high rates of Maternal morbidity and mortality. In most of the situation MMR could be attributed to the "Three Delays" related to pregnancy, (1) Decision making, (2) Travel to health facility and (3) Adequate care in obstetric emergency. These delays could be alleviated by Health promotion and participation of individuals, families, and communities in Maternal and Child Health. Birth Preparedness and Complication Readiness (BPCR) is one of the interventions suggested by WHO for Health promotion. Tamil Nadu is one of the best states in maternal-child health in India but the three delays are still a problem of concern. Assessing BP/CR would help in identifying the preparation level of mothers and also address these three delays.

OBJECTIVES : To Assess the awareness of BP/CR among Primigravida mothers who completed 12 weeks of gestational age attending Medavakkam Primary Health Centre and factors influencing it.

METHODS : It was a cross-sectional study done at Medavakkam PHC, which is the field practice area of Institute of Community, Medicine Madras Medical College, during November 2020-November 2021, in the primigravida mothers who had completed 12 weeks of gestational age. The sample size was calculated as 130. AN mothers attending OPD had included in the study. A study tool is semi-structured questionnaire comprising demographic details and components of birth preparedness & complication readiness. Birth preparedness and complication readiness (BP/CR) Index, awareness of maternal danger signs, level of birth preparedness was calculated.

RESULTS : 130 primi mothers were included in the study, mean distribution of age among participants were 23.2±2.6 years and 11 (8.5%) were going to job, 86 (66.2%) were coming from nuclear families and 61 (46.9%) belonged to middle class, and 77 (59.2%) were in 3rd trimester, 84 (64.6%) had completed 4 antenatal visits. BP/CR index was 57.8%, awareness of maternal danger signs was 23%, the level of Birth preparedness was 50% in this study population. The primi mothers in their 3rd trimester had higher awareness in maternal danger signs (36.4%) and high level of birth preparedness (64.9%), those who had awareness about maternal danger sign were well prepared for delivery (birth) and the odds of birth preparedness was 3.6 (1.5-9) times among them.

CONCLUSION : This study had shown that the awareness of maternal danger signs among primi gravida Antenatal mothers was very poor and the birth preparedness level was average, suggesting BP/CR counselling and practices should be initiated from the 1st visit of Antenatal period itself.

KEY MESSAGES : BP/CR, MMR, Birth preparedness, complication readiness.

INTRODUCTION

Maternal and child health (MCH), despite Maternal morbidity and mortality in a declining trend, developing countries are still burdened with high rates of Maternal morbidity and mortality.[1] The target 3.1 of Sustainable Development Goals (SDG) set by the United Nations aims at reducing the global Maternal Mortality Ratio(MMR) to less than 70 per 100,000 live births by 2030. Maternal Mortality Ratio in India is 113/1,00,000 population,[2] with large inter- and intra-state inequities. In Tamil Nadu it is 63/1,00,000 population.[2] Though Tamil Nadu has attained the SDG target earlier, if compared with some countries the value is still high and it's necessary to work for sustained reducation of MMR.

In 1994, Thaddeus and Maine proposed The "Three Delays" related to pregnancy-related mortality delay in -[1] deciding to seek appropriate medical help for an obstetric emergency,[2] reaching an appropriate obstetric facility[3] receiving adequate care when a facility is reached.
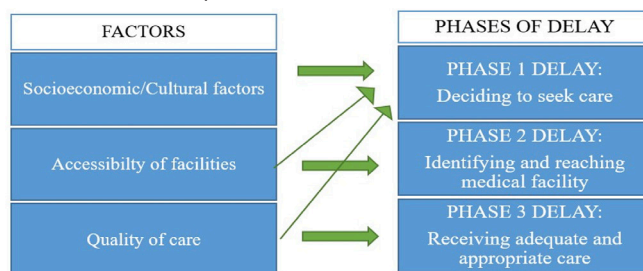

Figure 1: Covid-19 vaccination status among study participants (n=2850)

SUBJECTS AND METHODS

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Fig.1 stated the factors which contribute to these delays. These factors are directly linked with Health promotion and participation of individuals, families, and communities in Maternal and Child Health.

In the year 2003, WHO introduced the important concept - IFC framework to address these factors and by the way reduce these delays, this framework focused on Health promotion and participation of individuals, families, and communities in Maternal and Child Health.[3] Birth Preparedness and Complication Readiness (BPCR) is one of the interventions suggested by WHO under this framework, as an essential element of the antenatal care package given by health care workers.[3]

BP/CR worked at each level (Individual, Family, and Community). BPCR facilitates women and their families to be prepared before childbirth for successful delivery and improves problem reorganization by symptoms and thereby reduces delay in seeking health care.[4] Health care workers are the persons responsible for providing BP/CR awareness to the mother and the family, in the context of identifying maternal danger signs, identifying place of delivery, skilled assistant during delivery, saving money for delivery, local transport facility, and blood donor.

In 2014 Dieudonné et al.[5] had shown in a Systematic Review and Meta-Analysis that there was a 28% reduction in MMR when BP/CR interventional strategy was applied. No studies have been done regarding BP/CR level in Tamil Nadu. Tamil Nadu is one of the best states in maternal-child health but the three delays are still challenges. Assessing BP/CR would help in identifying the preparation level of mothers and also address these three delays. This study focused on the individual level of awareness in primi gravida mothers to exclude the experience gained from the previous child birth. BP/CR could be assessed by calculating a compound BPCR Index, which comprised of the above-said BP/CR components.[6]

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To Assess the awareness of BP/CR among Primigravida mothers who completed 12 weeks of gestational age attending Medavakkam Primary Health Centre and factors influencing it.

METHODOLOGY

3.1 Study area and study period : This was a cross-sectional study done at Medavakkam PHC, which is the Rural Health Training Centre for the Institute of Community Medicine, a field practice area of Madras Medical College. The study was done during November 2020-November 2021.

3.2 Study population, Sample size and sampling technique

The study population was Primigravida mothers who had completed 12 weeks of Gestational age and attended Medavakkam Primary Health Centre Outpatient department(OPD). The sample size was calculated using the formula, $n = Z^2 \times pq / d^2$, using the prevalence of 45% taken from previous study[7] and relative precision of 9%, with 10% non response rate and the sample size was calculated as 130.

Ethical approval was obtained from the Institutional Ethical Committee of Madras Medical College. The mothers who gave consent were included in the study till the sample size reached.

3.3 Study tool and Data collection : A pretested, prevalidated, semi-structured questionnaire comprising demographic details and components of birth preparedness & complication readiness was adopted from "Monitoring Birth Preparedness and Complication Readiness, Tools and Indicators for Maternal and Newborn Health (jhpiego)" – Individual-level.[8] Modified B.G.prasad scale was used for Socio-economic status assessment. Data collection was done by face-to-face interview technique.

3.4 Operational definition

3.4.1. Birth preparedness and complication readiness (BP/CR) Index:

The average of the following components enlisted in the table-1 is called BP/CR Index(4).

3.4 Operational definition

3.4.1. Birth preparedness and complication readiness (BP/CR) Index:

Table 1 : BP/CR Index components[4]

S.No	BP/CR Components
1.	% of women knew any existing govt. financial scheme. (MRMBS,JSY)
2.	% of women knew at least one key danger signs of pregnancy
3.	% of women knew at least key danger signs of childbirth
4.	% of women knew at least key danger signs of post partum period
5.	% of women knew at least one key danger sign of newborn
6.	% of women who (plan to) saved money for childbirth
7.	% of women who (plan to) identified vehicle for emergency transportation
8.	% of women who knew about government ambulance services
9.	% of women who (plan to) identified blood donor
10.	% of women who identified place of delivery
11.	% of women who knew about government blood services

3.4.2. Awareness of maternal danger signs : If a participant is able to specify atleast one key danger signs in all the phases of antenatal, labor and postnatal period then the individual was considered to be aware of maternal danger signs.

3.4.3. Birth preparedness : If a pregnant woman have planned three components out of four in the following, she was considered as being "well prepared" and the rest were

considered "not prepared" i) identified place for childbirth; ii) identified blood donor; iii) saved money for child-birth and iv) arranged transport in case of delivery and obstetric emergency.

3.5. Data Analysis

The data was entered in MS Excel and analyzed using SPSS Version 16. Descriptive statistics are expressed as Percentages. A Chi-square test was used to determine the statistical significance.

RESULTS

4.1. Socio-Demographic Details

130 primi mothers were included in the study, mean distribution of age among participants were 23.2±2.6 years with the minimum of age of 18 years and the maximim age of 32 years.

Table 1 : Socio-Demographic factors

FACTORS		FREQUENCY	PERCENTAGE
Education	Primary School education	2	1.5%
	Secondary School education	2	1.5%
	High School education	34	26.2%
	Higher Secondary School education	23	17.7%
	Under Graduate	69	53.1%
Job	Employed	11	8.5%
	Un-employed	119	91.5%
Type of Family	Joint family	44	33.8%
	Nuclear family	86	66.2%
Socio-Economic status	Lower class	3	2.3%
	Lower middle	6	5.4%
	Middle	61	46.9%
	Upper Middle	37	28.5%
	Upper class	22	16.9%

Among the 130 participants 69 (53.1%) were under graduates, only 11 (8.5%) were going to job, 86 (66.2%) were coming from nuclear families and 61 (46.9%) belonged to middle class.

4.2. Obstetric details :

Table 2 : Obstetric details

Variables		Frequency (percentage)
Pregnancy Related Complications	Yes	32(24.6%)
	No	98(75.4%)
Antenatal Visits	Less than 4 visits	46(35.4%)
	More than 4 visits	84(64.6%)
Trimester	2nd Trimester	53(41%)
	3rd Trimester	77(59%)

Among 130 participants 77 (59.2%) were in 3rd trimester & 53 (40.85) were in 2nd trimester, 32 (24.6%) were suffered from any complications in current pregnancy, 84 (64.6%) had completed 4 antenatal visits.

4.3 Awareness of maternal danger signs

Awareness of maternal danger signs was 23%
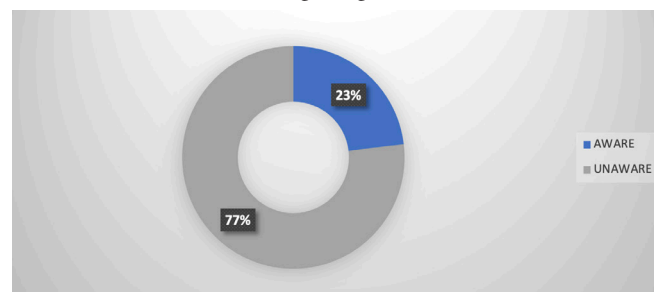
Figure 2 : Awareness of maternal danger signs

4.4. Awareness of danger signs in various phases

	During Pregnancy	During Labour	Post Partum	New born in 1st 7 days
Known	65.40%	39.80%	26.20%	33.10%
Not-known	34.60%	60.80%	73.80%	66.90%
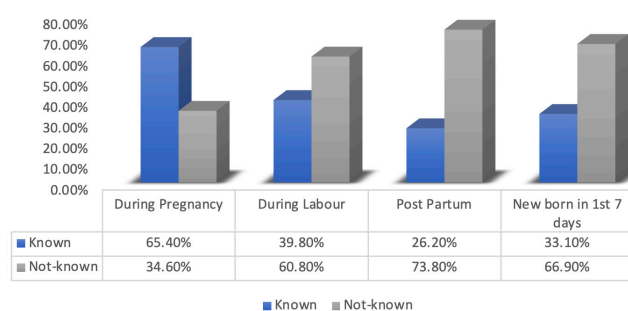
Figure 3 : Awareness of danger signs

The awareness of maternal danger signs among primi mothers during pregnancy, labour, postnatal period and fetal danger sign during the 1st 7 days of newborn life were 65.6%, 39.8%, 26.2% and 33.1% respectively.

4.5. Individual components of Birth preparedness

	Delivery place-Chosen	Transport Ready	Saved money for emergency	Donor ready
Yes	83.10%	75.40%	20.00%	46.90%
No	16.90%	24.60%	80.00%	53.10%

Figure 4 : Individual components of Birth preparedness

The birth preparedness among primi mothers in the component of choosing delivery place, ready with the transport in emergency, saved money for delivery and reday with blood donor were 83.1%, 75.4%, 20% and 46.9% respectively.

4.6. Birth Preparedness
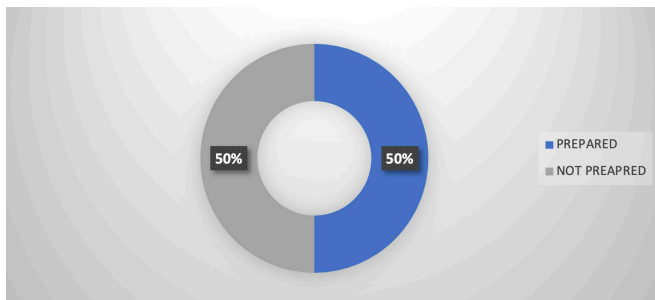
Figure 5 : Birth Preparedness

The level of Birth preparedness is 50% in this study population.

4.7. BP/CR Index

BP/CR INDEX = 57.8%
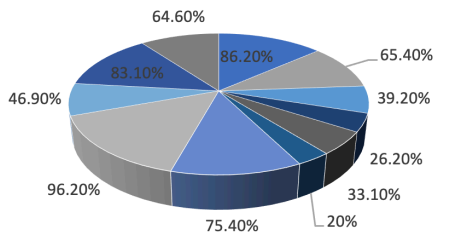
- % of women knew any existing govt. financial scheme. (MRMBS,JSY)
- % of women knew at least one key danger signs of pregnancy
- % of women knew at least key danger signs of childbirth
- % of women knew at least key danger signs of post partum period
- % of women knew at least one key danger sign of newborn
- % of women who (plan to) saved money for childbirth
- % of women who (plan to) identified vehicle for emergency transportation
- % of women who knew about government ambulance services
- % of women who (plan to) identified blood donor
- % of women who identified place of delivery
- % of women who knew about government blood services

Figure 9 : BP/CR Index

4.8. Associations

Table 3 : Awareness of danger signs & Birth preparedness

		Birth preparedness		Odds ratio	P value
		Prepared	Not prepared		
Awareness of danger signs	Aware	22(73.3%)	8(26.75)	3.6 (1.5-9)	**0.004***
	Unaware	43(43%)	57(57%)		

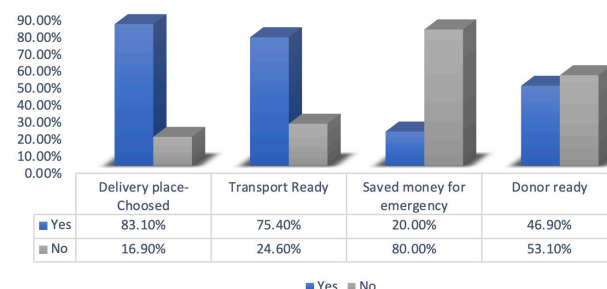The participants those who were going to job had higher awareness in maternal danger signs (27.3%) and high level of birth preparedness (54.5%) than the particpants were not going to job, and this was not statistically significant. The participants those who were from nuclear family had higher awareness in maternal danger signs (26.7%) and high level of birth preparedness (53.5%) than the participants from joint family, again this was not statistically significant.

Table 4 : Socio demography Vs Awareness of danger signs & Birth preparedness

VARIABLES		Awareness of maternal Danger Sign		Birth preparedness	
		Aware	Unaware	Prepared	Not prepared
Education	Primary School (n=2)	0 (0%)	2 (100%)	2 (100%)	0 (0%)
	Secondary School education(n=2)	0 (0%)	2 (100%)	0 (0%)	2 (100%)
	High School education(n=34)	4 (11.8%)	30 (88.2%)	16 (47.1%)	18 (52.9%)
	Higher Secondary School education(23)	10 (43.5%)	13 (56.5%)	9 (39.1%)	14 (60.1%)
	Under Graduate (n=69)	16(23.2%)	53 (76.8%)	38 (55.1%)	31 (44.9%)
	p-Value	0.06		0.206	
Job	Employed(n=11)	3 (27.3%)	8 (72.7%)	6 (54.5%)	5 (45.5%)
	Un-employed(n=119)	27 (22.7%)	92 (77.3%)	59 (49.6%)	60 (50.4%)
	p-Value	0.730		0.753	
Type of Family	Joint family(n=44)	7 (15.9%)	37 (84.1%)	19 (43.2%)	25 (56.8%)
	Nuclear family(n=86)	23 (26.7%)	63 (73.3%)	46 (53.5%)	40 (46.5%)
	p-Value	0.266		0.180	
Socio-Economic status	Lower class(n=3)	0 (0%)	3 (100%)	3 (100%)	0 (0%)
	Lower middle(n=7)	0 (0%)	7 (100%)	2 (28.6%)	5 (71.4%)
	Middle(n=61)	14 (23%)	47 (77%)	32 (52.5%)	29 (47.5%)
	Upper Middle(n=37)	10 (27%)	27 (73%)	16 (43.2%)	21 (56.8%)
	Upper class(n=22)	6 (27.3%)	16 (72.7%)	12 (54.5%)	10 (45.5%)
	p-Value	0.617		0.381	

Table 5 : Obstetric related details Vs Awareness of danger signs & Birth preparedness

VARIABLES		Awareness of maternal Danger Sign		Birth preparedness	
		Aware	Unaware	Prepared	Not prepared
Trimester	2nd Trimester (n=53)	2 (3.8%)	51(96.2%)	15 (28.3%)	38 (71.7%)
	3rd Trimester (n=77)	28 (36.4%)	49 (63.6%)	50 (64.9%%)	27 (35.1%)
		0.000*		**0.000***	
Complications in current pregnancy	Yes (n=32)	8 (25%)	24 (75%)	17 (53.1%)	15 (46.9%)
	No (n=98)	22 (22.4%)	76 (77.6%)	48 (49%)	50(51%)
		0.766		0.684	
AN visits	Less than four (n=46)	0	46 (100%)	13 (28.3%)	33 (71.7%)
	More than four (n=84)	30 (35.7%)	54 (64.3%)	52 (61.9%)	32 (38.1%)
		0.000*		**0.000***	

The Primi mothers in their 3rd trimester had higher awareness in maternal danger signs (36.4%) which was statistically significant, they were also high level of birth preparedness (64.9%) in the 3rd trimester and which was statistically significant.

DISCUSSION

In this study around 130 primi gravida antenatal mothers were participated. BP/CR index of the current study was 57.8% Kar M et al,[4] in Odisha had shown that BP/CR index value was 28.6% among Antenatal mothers, this could be due to the better Maternal and Child health services in Tamil

Nadu.

Awareness of danger signs during the period of Antenatal, labour, Postnatal (atleast one in each phase) in this study was 23%, this is comparable with the study in Kanchipuram done by Gopalakrishnan et al. (2019).[9] who had shown 21% of Antenatal mothers had awareness of maternal danger signs, Pervin et al. in Bangladesh had shown the awareness was 45.6%,[10] which was not comparable with the current study.

The level of birth preparedness was 50% in this study, Pervin et al. in Bangladesh had shown the birth preparedness was 23.6%[10] and Kar et al. in Odisha had also shown only 26% of the birth preparedness, both were lower than the current study.[4]

According to the current study, those who had awareness about maternal danger sign were well prepared for delivery (birth), the odds of birth preparedness was 3.6 (1.5-9) times higher and it was statistically significant, p value was 0.004. Akshaya and Shivali et al. in Karnataka[1] also had a similar kind of results and the odds of occurrence was 5 (2.2-11.8).

In a study done at karnataka study they had shown that socio-econmic status had a role in awareness and birth-preparedness.[1] Gopalakrishnan et al.[9] had established a significant association betweeen maternal literacy status and awareness of maternal danger signs, but in the current study social factors like maternal education, job, type of family and Socio-economic status were not significantly associated with BP/CR.

In the current study all the participants in the 3rd trimester had more than 4 Antenatal visits, very few from the 2nd trimester had also more than 4 antenatal visits, and there was significant association between BP/CR and the participants had more than 4 visits this result was comparable with the Akshaya and Shivali et al.

BP/CR index level in this study was 57.8% shows there was significant association between the awareness of maternal danger signs with the birth preparedness.

The highest level of awareness in maternal danger signs and birth preparedness were noted in the participants those who had more than 4 visits and also in their 3rd trimester

CONCLUSION

Key Factors related to awareness on AN care have been studied. The crucial factors like maternal danger siogns are related to birth preparedness . Hence mothers to be instructed often.

RECOMMENDATION

Health care workers has to create awareness among antenatal mothers about maternal danger signs of each phases of pregnancy.

BP/CR counselling and practices should be initiated from the 1st visit itself.

LIMITATIONS

This study was done in the field practice area of the Institute of Community Medicine, Madras Medical college. So, it may not be generalizable to other parts of the Antenatal mothers.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A STUDY TO ASSESS THE PREVALENCE OF MALNUTRITION AMONG UNDER-FIVE CHILDREN IN ALAMADHI VILLAGE,CHENNAI

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Abstract

BACKGROUND : Malnutrition is defined as a pathological state resulting from absolute or relative deficiency or excess of one or more of the nutrients that are considered essential for normal life. Primary malnutrition is due to lack of primary health care and other social or environmental factors, and secondary malnutrition is due to the presence of some basic pathological conditions. Malnutrition is considered to be one of the foremost causes of morbidity and mortality in children less than five years of age throughout the world. Malnutrition may range from mild to severe and life-threatening.

OBJECTIVES : 1.To determine the prevalence of malnutrition among children aged 0-60 months in Alamadhi village.
2. To identify the associated factors of malnutrition among children aged 0-60 months in Alamadhi village.

METHODS : Descriptive Cross-sectional study was conducted from July 2018 to September 2018 in Alamadhi village among randomly selected 200 children aged 0-60 months. After obtaining informed consent data pertaining to Socio-demographic details, child caring practices , utilization of services were collected through face-to-face interview from the mother of the child through validated semi-structured questionnaire. Anthropometric measurements were made following standard procedure for children. Data were entered in excel and analysed using SPSS Version 16.

RESULTS : The overall prevalence of underweight, stunting and wasting were 36.5%, 27.5%, 36.4% respectively. 52% of the study participants were females. The nutritional status of the children were significantly associated with family size, literacy status of the mother, socio-economic status, breast feeding practices and household hygiene practices.

CONCLUSION : The study revealed that the prevalence of malnutrition was relatively high in alamadhi village. Particular emphasis on early initiation of breastfeeding, small family norms and household hygiene practices need to be enhanced to improve the nutritional status of young children.

INTRODUCTION

Malnutrition is defined as a pathological state resulting from absolute or relative deficiency or excess of one or more of the nutrients that are considered essential for normal life. Primary malnutrition is due to lack of primary health care and other social or environmental factors, and secondary malnutrition is due to the presence of some basic pathological conditions. Malnutrition is considered to be one of the foremost causes of morbidity and mortality in children less than five years of age throughout the world. Malnutrition may range from mild to severe and life-threatening.[1,2]

Globally, over 10 million children under the age of 5 years die every year from preventable and treatable illnesses despite effective health interventions. At least half of child death are due to malnutrition. Malnourished children have lower resistance to infection; therefore, they are more likely to die from common childhood illnesses such as diarrhoeal diseases and respiratory infections. In addition, malnourished that survive are likely to suffer frequent illnesses, which severely affects their nutritional status and locks them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability in developing countries. Malnutrition is a major health problem.[1,2]

The burden of malnutrition is more in South East Asia than compared to Africa and to rest of the world. The prevalence of underweight & stunting in South-East Asia had been recorded as 44% and 46% respectively.[3]

It has been found that non-exclusive breast feeding in the first six months of life results in 1.4 million deaths and 10% of the disease burden among infants and young children every year in the developing countries.[3]

About 21% of global deaths and DALYs in children younger than 5 years are attributed to stunting ,severe wasting and intrauterine growth retardation.

A well-nourished child is one with access to adequate food supply, care and health. Such a child will have weight and height measurements that compare very well with the standard normal distribution of heights(H) and weights (W) of healthy children of the same age and sex. Thus, the best way to evaluate the nutritional status and overall health of a child is to compare the child's growth indices with the set cut-off points in the standard normal distribution of well nourished children that are associated with adequate growth. Factors that contribute to malnutrition are many

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and varied. The primary determinants of malnutrition, as conceptualized by several authors relate to unsatisfactory food intake, severe and repeated infections, or a combination of the two. The interactions of these conditions with the nutritional status and overall health of the child and by extension - of the populations in which the child is raised have been shown in the UNICEF Conceptual framework of child survival. Briefly, the model characterizes the correlates of malnutrition as factors that impair access to food, maternal and child care, and health care. It is these very factors that impact the growth of children.[1,2]
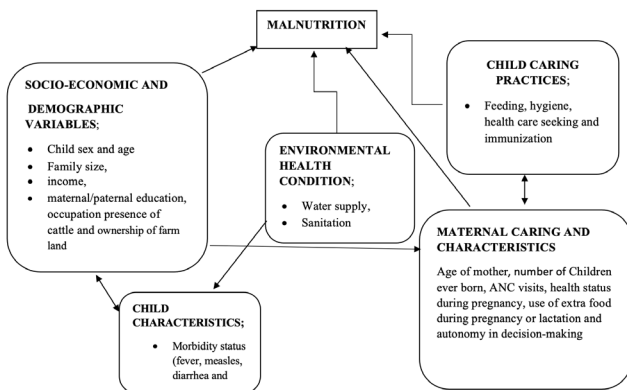

Figure 1 : Conceptual frame work of malnutrition

In India 21 %of children under five years of age suffer from wasting due to acute under nutrition. More than one third of the world's children who are wasted, live in India. 35.7% of Indian children under five years of age are underweight and 38.4 per cent (i.e. 61 million children) are stunted due to chronic under nutrition. India accounts for about 3 out of every 10 stunted children in the world. Under nutrition is substantially higher in rural than in urban areas.[4]

Malnutrition is one of the main health problems faced by children in under five age group in developing countries. The prevalence of malnutrition imposes significant costs on the Indian economy as well. The high mortality due to malnutrition leads to loss of economic potential of the child. It affects the child in many ways, predisposing them to many infectious diseases, psychosocial maldevelopment and cognitive deficiencies.

The prevalence of malnutrition in India is relatively well documented, but not specific to the regions, localities and residence. Here in this study we particularly concentrated more on a rural area in a relatively backward district of Tamil Nadu.[5]

Therefore this study was designed to assess the prevalence of malnutrition among children from age 0-60 months and to determine the factors contributing to malnutrition

particular to that village.

OBJECTIVE

1.To determine the prevalence of malnutrition among children aged 0-60 months in Alamadhi village.

2. To identify associated factors of malnutrition among children aged 0-60 months in Alamadhi village

METHODOLOGY

STUDY DESIGN : A Descriptive Cross Sectional Study.

STUDY DURATION : 3 months (July 2018 - September 2018)

STUDY POPULATION : Children aged 0-60 months residing in Alamathi village

STUDY AREA : Alamadhi is a village located some 23.8 km away from the Tamil Nadu state capital Chennai. Alamadhi belongs to the Sholavaram administrative block of Tiruvallur district.

SAMPLE SIZE : We calculated the sample size using NFHS-4 data of Tiruvallur district where the prevalence of malnutrition was 12.9%

Sample size (n) = $4pq/d^2$

Where p = 12.9, q = 87.1, d = 5

Sample size (n) = 4(12.9) (87.1)/ (5)(5) = 180.

In our study 200 children were selected with non-responsive of 10%.

SAMPLING TECHNIQUE : Simple Random Sampling – After obtaining list of Under-five Children from Anganwadi Centre, 200 children were selected randomly by generating random number.

INCLUSION CRITERIA :

1. Both Male and Female children aged 0-60 months residing at Alamathi village

EXCLUSION CRITERIA :

1.Children with Congenital defects

2.Households who were not available on two consecutive visits.

METHOD OF DATA COLLECTION

A total of 200 randomly selected children were covered for nutritional assessment from 150 households in Alamadhi village. After explaining the purpose of the study, informed and written consent was obtained from all the mothers of the children who were selected for the study. The mother and child were treated as one unit in the study. The validated Semi-structured questionnaire was used to interview mother regarding Socio-demographic factors, infant and young child feeding practices, household hygiene and sanitation, coverage for immunization and ICDS utilisation. Anthropometric

measurement were collected following standard procedure.

DATA ANALYSIS

Data was entered in MS EXCEL and analysed using Statistical Package for Social Sciences software (SPSS) Version 16.Desprictive statistics (mean, median, mode) were used to describe continuous variable, while proportion were used for categorical variable.

OPERATIONAL DEFINITIONS

Malnutrition : The term "Malnutrition" generally refers to both undernutrition and overnutrition, but in this study, the term is used in its traditional sense i.e "Undernutrition"

Undernutrition : Undernutrition includes Wasting, Stunting and Underweight and is defined as weight for age (underweight), Weight for Height (Wasting), Height for age (Stunting) less than 2 z scores below the median of the WHO child growth standards.

Wasting : The Child is said to be wasted if the weight of the child is lower when compared to the weight of a healthy child of the same Height and Sex (Weight for Height)

Stunting : The Child's Height is lower than what is expected of a healthy child of the same age and sex. (Height for Age)

Underweight : The Child's Weight is lower than what is expected of a healthy child of the same age and sex. (Weight for Age)

Fully Immunized : A Child who had received all due vaccines as per National Immunization Schedule up to date.

Partially Immunized : A Child who had missed any of the vaccines given under the national immunization programme.

RESULTS

1. SOCIODEMOGRAPHIC PROFILE

A total of 200 children were assessed for malnutrition and the Socio-demographic characteristics were presented in (Table 1).

Among 200 children participated in the study 96 (48%) were male and 104 (52%) were females and 50% of them belonged to age group of 12-36 months. Nearly 47.5% of mothers of Under-5 children had done schooling up to 6-10th. 86.5% of the mothers were housewives and remaining 13.5% were engaged in other labour. About 62% of the households had family size less than (≤) 4 persons, 37% of the study family belonged to middle class (Table 1).

Table 1: Frequency of Sociodemographic Characterisitics

VARIABLE		FREQUENCY (%)
Age Distribution	<12 months	25(12.5)
	12 to 36 months	99(49.5)
	>36 to <60 months	76(38)
Gender of the children	Male	96(48)
	Female	104(52)
Family Size	≤4 members	124(62)
	5-9 members	72(36)
	≥10 members	4(2)
Literacy Status of the Mother	Graduate	32(16)
	Higher Secondary	41(20.5)
	High School	95(47.5)
	Primary Education	18(9)
	Illiterate	14(7)
Socio-economic Class (BG Prasad Scale)	Upper	17(8.5)
	Upper Middle	35(17.5)
	Lower Middle	74(37)
	Upper Lower	55(27.5)
	Lower	19(9.5)

2. CHILD FEEDING PRACTICES

Among 200 children, 98% of them received breastfeeding from mother and the remaining 2% were not breastfed. The chief cause behind not breastfeeding the child was lactation failure.

59% of the infants received breast feeding within one hour delivery, 14.5% within 1-3hrs, 12.0% within 4-11hrs, 2% within 24 hrs and 10.5% after 1 day as shown in figure 2.

Only 20.5% of the mothers gave prelacteal food to their children. The most common prelacteal feed given was sugar syrup (33%).
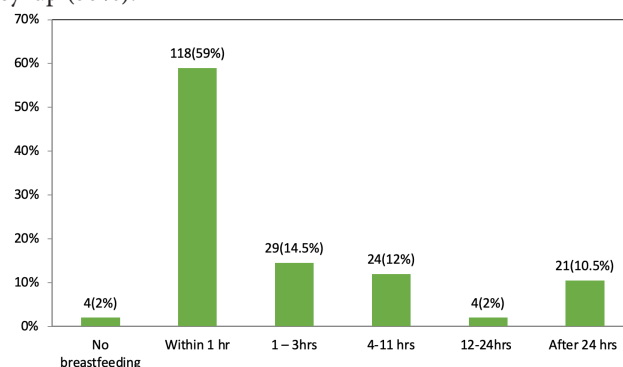

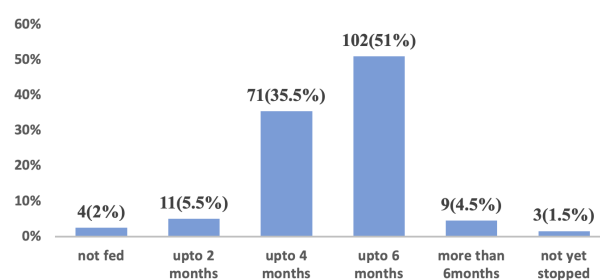*Figure 2 : Frequency of Duration Between Delivery And Breast Feeding Initiation*

Figure 3 : Frequency of Duration of Exclusive Breast Feeding

Majority of the mothers (51%) of the children exclusively breastfed their children for the first 6 months. 35.5% of them up to first four months, 5% up to 2 months and 6% of them more than 6 months as shown in Figure 3.
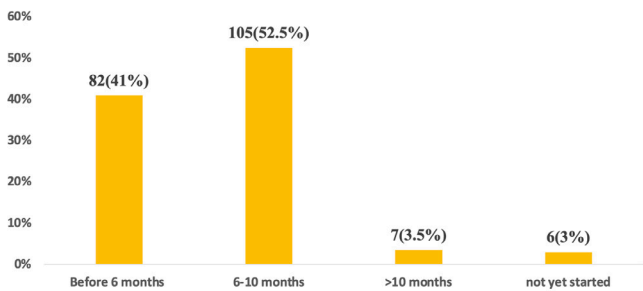

Figure 4 : Frequency of Initiation of Weaning

52.2% of the mothers in our study introduced complementary feeding in 6 to 8 months and nearly 41% before 6th month and stated that it was due to reduced milk secretion as shown in figure 4.

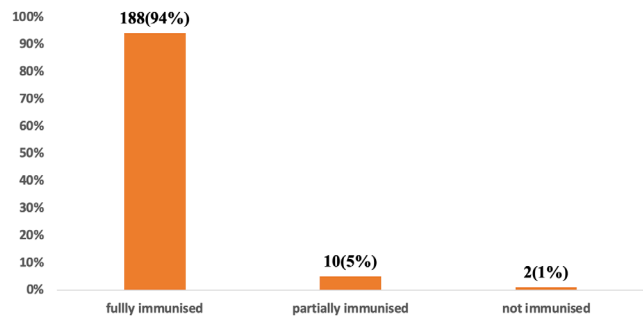## 3. IMMUNIZATION STATUS OF THE CHILDREN

Figure 5 : Frequency of Immunization Status of the Children

The particulars of coverage of children for immunisation under UIP during the first year of life was shown in figure 5 where 94% of the children were fully immunised, 5% were partially immunised and 1% of them were not immunised.

4. SANITATION AND HYGIENE

In our study population, the major source of drinking water was public tap (81%), and 66.5% of the children drank the water without any prior treatment, 29.5% of them drank boiled water and 4% after filtration. 58% didn't had separate toilet in their home and utilized public toilet facility. Nearly 62% child had practice of open air defecation. 99% of the mother used to wash hands after using toilet while only around 30% used to wash hands before using toilet and before cooking and only 50% had a practice of washing hands before feeding as shown in (Table 2).

5. INTEGRATED CHILD DEVELOPMENT SERVICE UTILIZATION

The ICDS service utilization in our study population was

85%.The reason behind not utilising ICDS services were distant from home, not aware about service and not willing to utilize the service.

Table 2 : Frequency of Sanitation & Hygiene Practice

VARIABLE			FREQUENCY (%)
Source of Drinking Water	Pipe water		9(4.5)
	Public Tap		162(81)
	Protected Well		4(2)
	Pond		1(0.5)
	Can Water		24(12)
Toilet Facility	Public		116(58)
	Private		84(42)
Hand Washing Practices (Mother)	Before using Toilet	Yes	56(28)
		No	144(72)
	After using Toilet	Yes	198(99)
		No	2(1)
	Before Cooking	Yes	70(35)
		No	130(65)
	Before Feeding	Yes	98(49)
		No	102(51)
Open Air Defecation Practice	Yes		124(62)
	No		76(38)
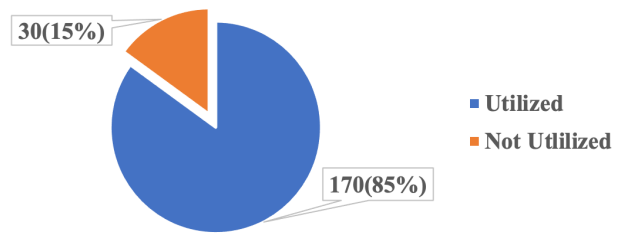
Figure 6 : Frequency of ICDS Service Utilization

6. ANTHROPOMETRIC MEASUREMENTS

The Prevalence of underweight (weight for age < median -2SD), stunting (height for age < median -2SD) and wasting (weight for height < median - 2SD) according to age and gender were shown in figure 7. None of the child had severe malnutrition (< median - 3SD).

The overall prevalence of underweight, stunting and Wasting among children < 5 years in Alamathi village was 36.5%, 27.5% and 36.4% respectively.
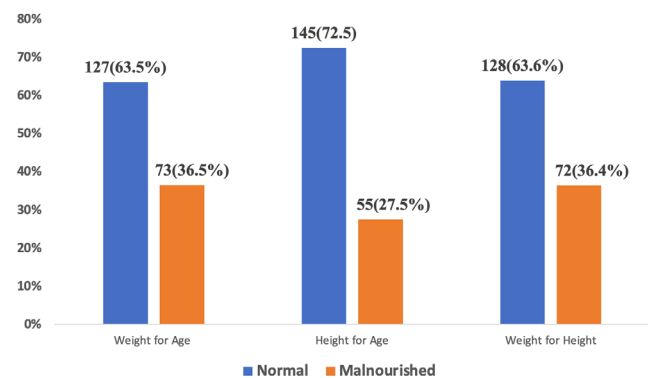
Figure 7 : Prevalance of Malnutrition Among Study Participants

7. DETERMINANTS OF MALNUTRITION AMONG STUDY PARTICIPANTS

* Statistically Significant association with p value <0.05 with Chisquare test

Gender of the child didn't influence the occurrence of malnutrition in our study, Family size with total members more than 4 had significant association with the occurrence of stunning among study participants. Mother's education had significant association with occurrence of stunting and wasting and socio-economic factors played a role in occurrence of underweight among study participants as shown in (Table 3).

Table 3: Association between Socio-Demographic Characteristics and Malnutrition

| Variable		Underweight		p Value	Stunting		p Value	Wastage		p Value
		Yes	No		Yes	No		Yes	No	
Socio-Demographic										
Gender of the Child	Male	34 (35.4)	62 (64.6)	0.760	22 (22.9)	74 (77.1)	0.163	30 (31.3)	66 (68.8)	0.179
	Female	39 (37.5)	65 (62.5)		33 (31.7)	71 (68.3)		42 (40.4)	62 (59.6)	
Family Size	≤4	38 (30.6)	86 (69.4)	0.08	26 (21)	98 (79)	0.016*	43 (34.7)	81 (65.3)	0.509
	5-9	34 (46.6)	39 (53.4)		27 (37)	46 (63)		27 (37)	46 (63)	
	≥10	1 (33.3)	2 (66.7)		2 (66.7)	1 (33.3)		2 (66.7)	1 (33.3)	
Literacy Status of the mother	Graduate	8 (57.1)	6 (42.9)	0.206	8 (57.1)	6 (42.9)	0.0403*	10 (71.4)	4 (28.6)	0.022*
	Higher Secondary	7 (38.9)	11 (61.1)		5 (27.8)	13 (72.2)		8 (44.4)	10 (55.6)	
	High School	37 (38.9)	58 (61.1)		27 (28.4)	68 (71.6)		27 (28.4)	68 (71.6)	
	Primary Education	14 (34.1)	27 (65.9)		11 (26.8)	30 (73.2)		17 (41.5)	24 (58.5)	
	Illiterate	7 (21.9)	25 (78.1)		4 (12.5)	28 (87.5)		10 (31.3)	22 (68.8)	
Socio-economic Class	Upper	5 (29.4)	12 (70.6)	0.045*	3 (17.6)	14 (82.4)	0.276	7 (41.2)	10 (58.8)	0.360
	Upper Middle	13 (37.1)	22 (62.9)		8 (22.9)	27 (77.1)		9 (25.7)	26 (74.3)	
	Lower Middle	20 (27)	54 (73)		21 (28.4)	53 (71.6)		24 (32.4)	50 (67.6)	
	Upper Lower	23 (41.8)	32 (58.2)		14 (25.5)	41 (74.5)		25 (45.5)	30 (54.5)	
	Lower	12 (63.2)	7 (36.8)		9 (47.4)	10 (52.6)		7 (36.8)	12 (63.2)	

* Statistically Significant association with p value <0.05 with Chisquare test

Children who were exclusively breast fed till 6 months of age, initiation of weaning at appropriate time 6-10 months and early initiation of breast feeding after delivery had normal nutritional status which was statistically significant as shown in (Table 4).

8 .ASSOCIATION BETWEEN HYGIENE AND NUTRITIONAL STATUS

There was no association statistical between source of drinking water, toilet facility used by family with malnutrition in our study, and there was significant association between hand hygiene practice and open air defecation with malnutrition.

Table 4: Association between Child Feeding Practices and Malnutrition

Variable		Underweight			Stunting			Wastage		
		Yes	No		Yes	No		Yes	No	
Child Feeding Practice										
Duration between Delivery and Initiation of Breast Feeding	No Breast Feeding	3 (75)	1 (25)	0.480	3 (75)	1 (25)	0.022*	3 (75)	1 (25)	0.081
	Within 1 hr	39 (33.1)	79 (66.9)		32 (27.1)	86 (72.9)		43 (36.4)	75 (63.6)	
	1-3 hrs	11 (37.9)	18 (62.1)		8 (27.6)	21 (72.4)		8 (27.6)	21 (72.4)	
	4-11 hrs	11 (45.8)	13 (54.2)		4 (16.7)	20 (83.3)		11 (45.8)	13 (54.2)	
	12-24 hrs	2 (50)	2 (50)		2 (50)	2 (50)		3 (75)	1 (25)	
	After 24 hrs	7 (33.3)	14 (66.7)		5 (23.8)	16 (76.2)		17 (81)	4 (19)	
Duration of Exclusive Breast Feeding	Not Fed	3 (75)	1 (25)	0.504	3 (75)	1 (25)	0.052	3 (75)	1 (25)	0.024*
	Till 2 months	6 (55)	5 (55)		5 (45)	6 (55)		3 (21)	8 (79)	
	Till 4 months	25 (35.2)	46 (64.8)		18 (25.4)	53 (74.6)		30 (42.3)	41 (57.7)	
	Till 6 months	34 (33.3)	68 (66.7)		25 (24.5)	77 (75.5)		29 (28.4)	73 (71.6)	
	>6 months	4 (44.4)	5 (55.6)		4 (44.4)	5 (55.6)		7 (77.8)	2 (22.2)	
	Not yet Stopped	1 (33.3)	2 (66.7)		-	3 (100)		1 (33.3)	2 (66.7)	
Initiation of Weaning	Before 6 Months	39 (47.5)	43 (52.5)	0.03*	35 (43)	47 (57)	0.04*	40 (48)	42 (52)	0.05*
	6-10 months	45 (43)	60 (57)		40 (48)	65 (52)		44 (41)	61 (59)	
	>10 months	5 (71)	2 (29)		4 (57)	3 (43)		6 (85)	1 (15)	
	Not yet started	5 (83)	1 (17)		4 (66)	2 (44)		5 (83)	1 (17)	

* Statistically Significant association with p value <0.05 with Chisquare test

Utilization of ICDS service was not associated with malnutrition, while immunization status of the child had been significantly associated with stunting and wasting as shown in (Table 5).

DISCUSSION

Among 200 children The overall prevalence of underweight among children < 5 years in Alamathi village is much higher (36.5%) compared to that reported for state of T.N by NFHS 4 (29.8%), and the overall prevalence of stunting among children < 5 years in Alamathi village is similar compared to that reported for state T.N by NFHS 4 (27.5%).[5]

Table 5: Association between Utilization of Health Services and Malnutrition

Variable		Underweight			Stunting			Wastage		
		Yes	No		Yes	No		Yes	No	
Immunization										
Immunization Status	Fully Immunized	68 (36.2)	120 (63.8)	0.896	47 (25)	141 (75)	0.04*	64 (34)	124 (66)	0.03*
	Partially Immunized	4 (40)	6 (60)		7 (70)	3 (30)		6 (60)	4 (40)	
	Not Immunized	1 (50)	1 (50)		1 (50)	1 (50)		1 (50)	1 (50)	
ICDS Service	Utilized	60 (35.3)	110 (64.7)	0.416	47 (27.6)	123 (72.4)	0.912	61 (35.9)	109 (64.1)	0.934
	Not Utilized	13 (43.3)	17 (56.7)		8 (26.7)	22 (73.3)		11 (36.7)	19 (63.3)	

Majority (52%) were female, nearly 49.5% of them were in age group of 12-36 months, While in other studies by sawan kumar et al, Geethanjali et al had higher proportion of male children and more than 50% belonged to age group of 48-60

months.[7,8] In our study 47.5% of mothers had completed their education till high school which was similar to study done at Berhampur, odisha by geethanjali et al. Similar to study done at Belgavi, majority of them belonged to upper-lower class.[7,8]

According to a study published by philip et al, there lies a significant association between prevalence of malnutrition with mother's literacy and family size; similarly in our study also there was a significant association between mother's literacy and family size with stunting and wasting.[9]

A study done in Chandigarh by Dinesh kumar et al showed that there was a significant relationship between improvement in nutritional status of under five children and adoption of proper infant-feeding practices by their mothers.

The proportions of stunting among children whose mothers initiated breastfeeding within six hours was significantly less (P<0.02) than that for those whose mothers initiated breastfeeding after six hours which was similar to our study.[10]

According to a study published by Jee Hyun Rah and et al on association between household sanitation and personal hygiene with child stunting, it was seen that there was a 16-39% reduced odds of stunting among children while in our study there was no significant association between household practices and malnutrition.[11]

According to a study published by Philip et al showed that there was a significant association between immunisation status and malnutrition among children below 5 years which was similar to our findings.[9]

In an article published by Srinivasan et al., they found a positive association between utilisation of ICDS programme and reduction of malnutrition in India while in our study there was no significant association between malnutrition and utilization of ICDS Service. [6]

CONCLUSION

The study revealed that the prevalence of malnutrition was relatively high in alamadhi village compared to urban areas. According to investigations of independent variables with dependent variables, time of initiation of breastfeeding, time of stoppage of breastfeeding, time of weaning, immunization status, household hygienic practices showed significant statistical association. Also household size is also associated with malnutrition.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A CROSS SECTIONAL STUDY ON THE PREVALENCE OF CHILD ABUSE AND ITS DETERMINANTS AMONG SCHOOL GOING ADOLESCENT GIRLS IN A GOVERNMENT HIGHER SECONDARY SCHOOL IN GREATER CHENNAI CORPORATION

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Abstract

INTRODUCTION : Despite reporting of child abuse in India at around 14% to 28% in various researches, only 211 sexual assault cases were booked in Tamilnadu as per the Crime Report, 2016, indicating huge under reporting. Children lack awareness on how and whom to approach in case of an abuse which is compounded by the fact that in a many times, the abuse is perperated by the parents and/or close relatives of the child. One of the major problems in Indian context has been the low level of self-disclosure by children, particularly the schoolgoing girls. The Union Ministry of Social Welfare has been taking efforts to improve self disclosure of child abuse through awareness creation by respective school teachers and Community organisations like NGO's, Self Help Groups etc. Inspite of all these measures, self reporting of abuse is significantly less.

OBJECTIVES : This study establishes the prevalence and determinants of child sexual and physical abuse among adolescent school going girls and explores the reasons for nondisclosure of abuse.

METHOD : The study was conducted as a cross sectional study among adolescent girls studying in classes of 9th, 10th and 11th grades in a Government Higher Secondary school in Greater Chennai Corporation. School for the study was selected by simple random sampling. Data was collected from 300 students using a semi structured questionnaire and analysed using SPSS software.

RESULTS : : Regarding awareness on child abuse, 86.33% children were aware about physical abuse and 93.66% children were aware about sexual abuse. More than 85% children stated that they have already identified the first person to whom they may reveal if they encounter an incident of child abuse. About 13% of children interviewed revealed about child abuse; 9.66% children had suffered from physical abuse and 5.66% had suffered sexual abuse and 2.33% children had suffered both physical and sexual abuse. Among physically abused, slapping was the most common type of physical abuse which was experienced by 82.14% of children and 17.85% of the children had faced serious physical abuse in the form of being locked up in a room, being tied up and suffering burns. Of the 17 children who had suffered sexual abuse, 17.64% revealed been abused more than once. Only 82.14% children among physically abused and 56.52% of sexually abused had disclosed about their abuse that too mainly to their peer group friends. Prevalence of child abuse is statistically significant among children not residing with their parents.

CONCLUSION : Structuring proper solutions to address child abuse is the need of the hour. Also, a child friendly social system which encourages the child to reveal abuse at earlier stage and guides to safeguard from getting victimised should be developed.

KEYWORDS : Child abuse, Self-disclosure, School going adolescent girls.

INTRODUCTION

India is a highly populous country with a huge child population. According to the Protection of Children from Sexual Offences (POCSO) Act which came into effect from 14th November in 2012, a child is defined as a person below 18 years of age.[1] According to 2011 census, about 470 million people in India were aged below 18 years constituting a child population of 41% of India's total population.[2] This huge child population has a vital role to play in shaping future of the country. Hence maintaining child health, both physical and emotional, is crucial for development of the country and hence must be the prime concern of the Government.

World Health Organisation (WHO) defines child abuse or child maltreatment as all types of physical and/or emotional ill treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power.[3]

Child abuse can be classified into :

(i) **Physical abuse** involving intentional use of physical force against child such as causing physical injury by hitting, beating, shaking, biting, scalding, burning, kicking, poisoning and suffocating.

(ii) **Sexual abuse** involving engaging the child in sexual activities like fondling genitals, intercourse, incest, rape, sodomy, exhibitionism or pornography.

(iii) **Emotional and psychological abuse** refers to behaviours that harm a child's self-worth or emotional well-being such as name calling, shaming, rejection, withholding love, and threatening.

(iv) **Neglect** is failure to meet basic needs of a child like housing, food, clothing, education and medical care.

Study on child abuse conducted by Ministry of Women and Child Development in India in 2005 reveals prevalence of physical abuse in 69% of child respondents, sexual abuse in 53% children and emotional abuse in 48% children.[4] Various studies in Tamil Nadu shows the prevalence of child abuse at about 14% to 28%. According to Crime Report 2016, Tamil Nadu reports 1583 crimes against children, out of which 1169 were rape cases and only 211 were booked under the category of other sexual assault.[5] This shows huge underreporting of child abuse, particularly non-rape cases, even with implementation of strong provisions like POCSO Act.

Children lack awareness on how and whom to approach in case of an abuse. This is compounded by the fact that in a majority of the cases, the abuse is perperated by the parents and/or close relatives of the child. The Union Ministry of Social Welfare has been taking efforts to improve self disclosure of child abuse through awareness creation by respective school teachers and Community organisations like NGO's, Self Help Groups etc. Inspite of all these measures, self reporting of abuse is significantly less. This study establishes the prevalence and determinants of child sexual and physical abuse among adolescent school going girls.

OBJECTIVE

The objectives of the study were to estimate the prevalence of child abuse among school going adolescent girls and to analyse the determinants of child abuse. The study also explores the reasons for nondisclosure of child abuse. Only physical and sexual abuses suffered by any of the participants were mainly focussed on.

METHODOLOGY

This study was conducted as a cross sectional study among adolescent girls studying in classes of 9th, 10th and 11th grades in a Government Higher Secondary school in Greater Chennai Corporation over a period of 2 months and data were conducted intermittently. Sampling frame was the list of all Girls Higher Secondary schools in Greater Chennai Corporation. The school for the study was drawn at

random using lot method. Sample size was calculated using the formula; $N = Z2 \times pq / d2$, where P was taken from the proportion of child who revealed about their abuse to an unknown person in a US based study done by Mary L. Paine et al. in the year 2000.[6] Considering an absolute precision of 5%, sample size was computed as 296. Hence the sample size was fixed as 300. Ethical approval for the study was obtained from Institutional Ethics Committee of Madras Medical College. Prior permission for the study was obtained from Education officer of Greater Chennai Corporation.

Participants who were willing to give consent were included in the study. Informed assent was obtained from each participant and informed written consents were obtained from their parents. Sensitization session on child abuse was done for all participants simultaneously. Primary data from the participants were obtained by in person interview using a semi structured questionnaire providing data on socio demographic details, level of awareness on child abuse, presence of child abuse, details of nature of abuse if present and its disclosure. The questionnaire was pretested in 10 school going adolescent girls who were not a part of this study and the structure and relevance of questions were validated. Participants were encouraged to fill the questionnaire by themselves. For participants who were unable to read or understand, the questions were read to them without probing and responses were recorded accordingly. The data obtained from the study participants were entered in Microsoft Excel and Master chart was generated. Data was cleaned for any double entry and errors. Cleaned data was exported to Statistical Package for Social Sciences (SPSS) version 16 software for analysis.

RESULTS

The mean age of the 300 children who were interviewed was 14.21±1.004 years. Table 1 shows the demographic details of the children. 94.66% of the children were living with their parents whereas 4% were living with any of their relatives. Rest of the children were living in either hostel or orphanage. 79% of the participants had a nuclear family, 12.66% had joint family and rest of them belonged to extended family.

For the questions related to basic awareness on child abuse before sensitization session, a vast majority of the responses indicated that the children knew what child abuse and the basic related aspects is thereof. About 86.33% children agreed in positive to the question if they knew what physical abuse is and how to identify it if it happens to them. About 93.66% children revealed that they were aware about what sexual abuse is and had been taught about good touch

and bad touch. More than 85% children stated that they have already identified the first person to whom they may reveal if they encounter an incident of child abuse. This indicates that most of the children knew the basics of child abuse.

Table 1 : Socio demographic details of participants

| Socio-demographic Characteristics	Categories	Frequency (N-300)	Percentage (%)
Age	13 years	93	31%
	14 years	118	39.33%
	15 years	81	27%
	16 years	8	2.66%
Mode of stay	With parents	284	94.66%
	With relatives	12	4%
	Hostel	3	1%
	Orphanage	1	0.33%
Family type	Nuclear	237	79%
	Joint	38	12.66%
	Three generation	24	8%
	Orphan	1	0.33%
Mother's Education	Illiterate	37	12.33%
	Literate	263	87.66%
Father's Education	Illiterate	14	4.66%
	Literate	286	95.33%
Mother's occupation	Unemployed	99	33%
	Unskilled	184	61.33%
	Skilled	17	5.66%
Father's occupation	Unemployed	23	7.66%
	Unskilled	178	59.33%
	Skilled	99	33%
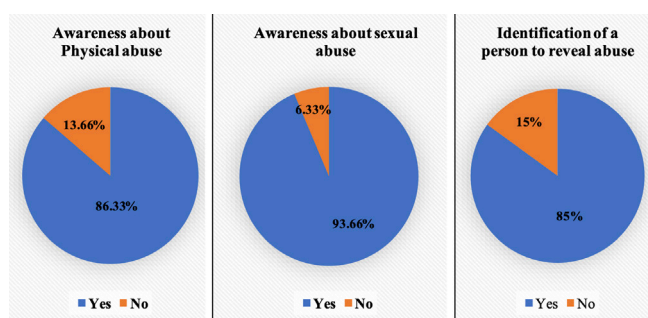
Figure 1 : Awareness level on child abuse

Among the total disclosures by 39 students (13%) on abuse, about 71.79% had suffered physical abuse, 43.58% had suffered sexual abuse and 17.94% children had suffered both sexual and physical abuse. Maltreatment in the form of physical abuse was experienced by 28 children which amounts to 9.3% of the sample studied. On elaboration of nature of physical abuse of these 28 children, 75% of children had suffered from multiple form of physical maltreatment. Slapping was found to be the most common type of physical abuse which was experienced by 82.14% of children. About

32.5% of children suffered abuse in the form of kicking. 17.85% of the children had faced serious physical abuse in the form of being locked up in a room, being tied up and suffering burns.
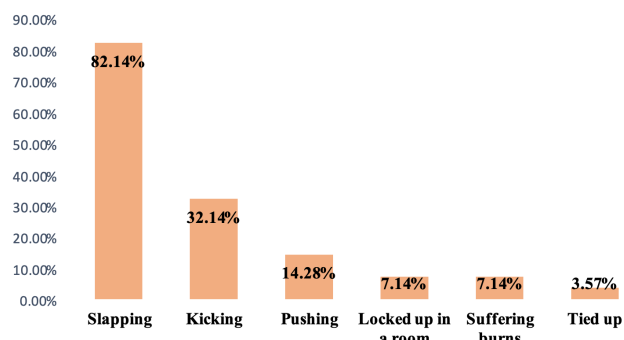

Figure 2 : Type of Physical abuse suffered by the participants

On probing about the periodicity of physical abuse, 1 child revealed that she suffered from some form of physical abuse at least once weekly. 25% of children had undergone such physical suffering at least once every month. About 42.85% children had been subjected to physical abuse once and rest 28.7% report to have suffered such maltreatment occasionally.

Table 2 : Periodicity of physical abuse suffered by the participants

Periodicity of physical abuse	Frequency (N - 28)	Percentage (%)
At least once in a week	1	3.57%
At least once in a month	7	25%
Occasionally	8	28.5%
Happened once	12	42.85%

17 children disclosed about sexual abuse amounting to 5.7% of the total sample studied. 3 children (17.64%) revealed being suffered from sexual abuse more than once while rest 14 children (82.35%) had been exploited once.

Table 3 : Periodicity of sexual abuse suffered by the participants

Periodicity of physical abuse	Frequency (N - 17)	Percentage (%)
More than once	3	17.64%
Once	14	82.35%

Regarding physical abuse, Father was the most common abuser accounting for 37.93% of children suffered followed by Brother who had been the abuser for 20.68% of children suffered. In case of sexual abuse, 3 children (17.64%) were abused by their father. 5 children had been abused by their friend or their sibling's friend. Neighbour had been the abuser for another 3 children and home guardian for 3 children left under the care of relatives or friends.
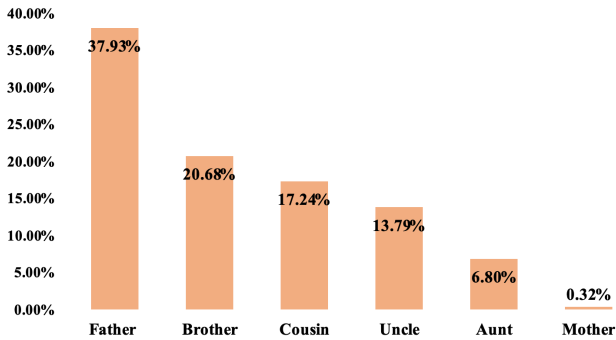
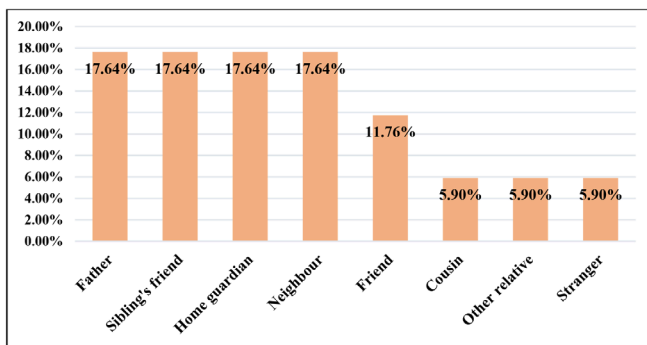*Figure 3 : Abusers of children suffered physical abuse*

Figure 4 : Abusers of children suffered sexual abuse

When asked about the disclosure of abuse suffered, 23 out of 28 children (82.14%) who suffered from physical abuse had disclosed their state to a third party. 10 children (43.47%) had disclosed to their mother whereas another 13 children (56.52%) had disclosed about their physical abuse to their friends. In case of sexual abuse, only 6 children (35.29%) had revealed about the incidence to others. Again, Mother and Friend were the persons to whom children had confided; with 5 children (29.41%) revealing to their mother and 1 child to her friend.

Children gave various reasons for nondisclosure which has been listed in table 4. About 37.5% of children feared about the consequences of such disclosure.

Table 4 : Reasons for nondisclosure of abuse

Reasons for nondisclosure of abuse	Frequency (N – 16)	Percentage (%)
Fear of consequences	6	37.5%
A sense that disclosing is futile	3	18.75%
Being told by their abuser not to tell	2	12.5%
Fear of not being believed	2	12.5%
Shame	2	12.5%
To protect family members	1	6.25%

On testing for association of child abuse with other independent factors, a statistically significant difference (p 0.00027) was found between children depending on their mode of stay. Children living with parents had lesser incidence of abuse (10.9%) when compared to others. The only child living in orphanage had suffered from abuse. 50% of the children living in relatives' home and 33.3% of those who resided in hostel had faced some sort of abuse.

Table 5 : Association between child abuse and mode of stay of the participants

Variable	Variable classification	Faced abuse	Did not face abuse	Chi square P value
Mode of stay	With parents	31 (10.9%)	253 (89.1%)	0.00027
	With relative	6 (50%)	6 (50%)	
	In Hostel	1 (33.3%)	2 (66.7%)	
	In Orphanage	1 (100%)	0	

DISCUSSION

The knowledge on child abuse, its effects and availability of child helpline was high among the children studied. 86.33% of the children were aware about physical abuse and 93.66% had good knowledge on sexual abuse and methods to prevent it. A cross sectional study done in Pondicherry to assess the knowledge of child abuse in children revealed that 95.3% of kids were aware about physical abuse and 85% knew what sexual abuse is and the presence of child help line.[7]

Of the 300 children interviewed, 13% of the children revealed that they were subjected to some form of abuse. 9.66% children had suffered from physical abuse and 5.66% had suffered sexual abuse. About 2.33% children had suffered both physical and sexual abuse.

Similar study done for establishing prevalence of child abuse in school environment by Kumar et al. in Kerala found experience of physical abuse in 61.7% of girls and sexual abuse in 6.2% girls.[8] Compared to the prevalence of abuse reported in other studies, the rate of abuse reported is less. Rather than taking this as low prevalence of child abuse, the lower rate reported might be due to lower disclosure of abuse by the children.

Out these 39 reported child abuses, maximum disclosure of the incidence had happened for physical abuse (82.14%) whereas only 35.29% of children had disclosed about sexual abuse. This shows the reluctance among the children for disclosing such bitter experiences even though they had no role in its causation. Children had also listed the reasons for such nondisclosure as having fear of not believing, fear of the consequences to be faced on such disclosure, a feeling of shame to have undergone such abuses, a feeling that they will not receive any futile solution and also threat from the abuser against disclosure. Similar reasons have been elicited for non-disclosure of abuse in a study done by Bhilwar et al on the

childhood experiences of abuse among college students in south India. In that study the reasons listed were fear that parents would get angry, sense of shame and passing the incidence as unimportant.[9] So further studies are required to explore the factors that prevent the affected children from disclosing the abuse at an earlier stage to an appropriate person.

Prevalence of child abuse has been found to be significantly associated with the mode of stay. No one can take care of a child better than their parents. This is proved by the result that incidence of abuse is found to be lesser when brought up under the direct care of parents. Stay in orphanage, hostel or any other's house make the children more vulnerable for being victim of such crimes. But it has to be noted that even people of first-degree relation to the children are found to be the abusers in few instances. Hence a stronger awareness on child abuse including knowledge of nature and types of abuses, methods to tackle it, persons to approach in case of abuse and finally change in attitude to remove the hesitancy in revealing an abuse are the need of the hour. Also, any attempt to safe guard children from such abuses should also include addressing the parents about the seriousness of the mental stress that the child will undergo being a victim of abuse and teaching them to create a friendly environment where the child will disclose immediately without any hesitation.

LIMITATION

This study was conducted in a particular set up of school which usually caters to children of certain socioeconomic class. Hence for generalizing the results to all school going adolescent girls, further studies in various categories of schools are required.

SERVICES PROVIDED

• A sensitization session on child abuse was provided to all students of that particular age group.
• Children who disclosed about abuse were counselled by an experienced counsellor. All the incidents of abuse were reported to the Inspector of local All Women Police station. An NGO with experience on tackling child abuses were involved to follow up the children

CONCLUSION

The present study underlines the fact that child abuses among school going adolescent girls are not uncommon and the gravity of the problem is big enough to structure proper solutions to address this with due importance. Just forming guidelines and passing strict laws will not reduce the

burden. Proper child friendly environment should be created in every school to encourage the children to talk about their problems including abuses. Further studies to find an effective influencer who might encourage the children to disclose abuse at earlier stage and to guide them to prevent from getting victimised are the need of the hour.

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ORIGINAL ARTICLE - PUBLIC HEALTH

EFFECTIVENESS OF COVID VACCINATION AGAINST FATALITY DUE TO COVID 19 IN KANYAKUMARI DISTRICT, TAMIL NADU - A MATCHED CASE CONTROL STUDY

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Abstract

INTRODUCTION : COVID vaccination was started in India on 16-01-21. Initially high risk groups were given priority. Since May, 2021, all adults above 18 years started receiving covid vaccination. Covishield (AZD1222) and Covaxin were used in Tamil Nadu. The study was conducted to determine the effectiveness of vaccine against fatality.

METHOD : We conducted a matched case control study based on secondary data of Kanyakumari District, Tamil Nadu. Case was any death in a COVID 19 positive individual of age more than 18 years which got documented as due to COVID illness. We selected two controls for each case matching age, sex and date of positivity. We had 94 cases and 188 controls. We calculated Odds ratio, adjusted odds ratio for protection by any COVID vaccine/ covishield.

RESULTS : Effectiveness against fatality due to covid 19 with two doses of any covid vaccine was 90% after adjusting for comorbidities; for covishield was 98%. Effectiveness against fatality of single dose of any covid vaccine was 77% and that of covishield 76%.

CONCLUSION : Two doses of any covid vaccine/ covishield could be protective against death due to covid illness for nearly all adults irrespective of their age, gender, common non communicable diseases and virulence of covid virus; even single dose could be protective for majority.

KEYWORDS : Covid vaccine, covishield, AZD1222, effectiveness against fatality, Covid 19

INTRODUCTION

COVID vaccination was started in India on 16-01-21. Initially high risk groups were given priority. Since May 20th 2021, all above 18 years were eligible to receive Covid vaccine free of cost in government health care institutions.[1]

Covishield (AZD1222) and Covaxin (BBV152) were the two vaccines widely used in Tamil Nadu. From the literature review, it was understood that efficacy/ effectiveness of AZD1222 (two doses) had been 85% to 100% against death/ severe disease, 65% to 100% against any infection and 22% against asymptomatic infection; for single dose, it was 80% to 96% against death, 75% to 92% against severe disease, 45% to 75% against symptomatic disease and 35% to 95% against any infection; regarding Delta variant, effectiveness was less by 10 to 15% after two doses & 20 to 30% after single dose.[2]

A Taiwan study suggested that a 10% increase in vaccine coverage had been associated with a 7.6% reduction in case fatality rate (3). We could find various studies eliciting vaccine efficacy/ effectiveness which fluctuated against different strains and spectrum of covid 19 virus infection. [(4), (5), (6), (7), (8)]

It was vital to arrive at the effectiveness of vaccine against fatality in field conditions because huge manpower was getting involved in vaccination programme which was having all potential to get extended for universal third dose. In a highly literate district like Kanyakumari, people had known that covid vaccination was not announced as 'mandatory' by the Government. Our field experience suggested that people were sceptical regarding covid vaccine effectiveness as they witnessed documented covid 19 infection even after vaccination. Under such circumstances, we felt that it was essential to ascertain the usefulness of Covid vaccination in preventing covid death in Kanyakumari district. Hence the study was conducted with the following objective: To evaluate the effectiveness of COVID vaccination (for single dose and two doses) in preventing death once COVID infection and illness happens.

METHODS

We conducted a matched case control study based on data available at Covid control room of Kanyakumari District. We defined a case as any death in a COVID 19 positive individual of age more than 18 years which got documented as happened due to COVID illness during the period 15th July 2021 to Feb 10th 2022. We defined a (matched) control as any individual of age more than 18 years, who had been reported to be RT PCR positive for COVID 19 during the same day/ nearest day as that of case, belonging to same sex with nearest age.

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We excluded death not satisfying above case definition from cases. We excluded data of individuals who had been vaccinated with vaccines other than covishield or covaxin from both cases and controls. Pregnancy was exclusion criteria for both cases and controls.

For both cases and controls, we extracted data regarding status of COVID vaccination, date of first dose, date of second dose, history of comorbid illnesses (Diabetes Mellitus and Hypertension). We collected missing details like comorbidity history, date of vaccination, mobile number used for vaccination by calling the mobile number in the line list. We verified the date of vaccination in cowin website.

Case : Death due to RT PCR positive covid illness

Control : Recovery from RT PCR positive covid illness

Exposed : H/o vaccination with one or two doses of covishield/ covaxin at least 18 days before day of positivity

Unexposed : Not vaccinated against covid or vaccinated with single dose less than 18 days before date of positivity

We used epi info 7.2.5.0 for analysis. We described baseline data of cases and controls such as age, sex, comorbidity, vaccination status as mean, median, quartile deviation and proportion / percentages. We did matched analysis. We calculated Odds ratio for protection by one dose and by two doses of any COVID vaccine. We calculated Adjusted odds ratio for the above by adjusting for comorbidities like Diabetes Mellitus, Hypertension and Both. We repeated the above analysis for covishield vaccine separately after excluding all cases and controls with history of covaxin administration. We could not perform such analysis for Covaxin separately due to the fact that number of cases / controls with covaxin administration was insufficient for such an exercise. We calculated effectiveness by the formula: Vaccine effectiveness = [1- (adjusted) odds ratio] *100

We obtained ethics clearance from Institutional Ethics Committee of Tamil Nadu Public Health Department beforehand. As the study was largely based on secondary data, there were not many risks to subjects. There could be some inconvenience to the respondent while being called by mobile phone to get missing details. To minimize this risk, we requested regarding their convenient time and called at time of their choice with oral consent. We asked only the necessary questions. In case of death patients, talking about vaccination details with their family member was expected to be little sensitive; we expressed our concern regarding ascertaining the vaccine effectiveness against death from Covid; we could see the respondents answering questions with the same concern. We did not use any personal identifiers; used only codes during data entry

RESULTS

During the study period, total number of Covid 19 deaths was 98. After excluding one pregnant woman and three persons whose vaccination status was not available in records and could not be ascertained as contact numbers were also not valid, we had 94 cases and selected 188 matched controls.

Table 1: Age description of cases(Covid Death) and controls (Recovery from Covid illness)

S. No	Descriptive statistic of age	Cases (94)	Controls (188)
1	Mean	66	66
2	Median	68	67
3	Minimum	37	37
4	Maximum	88	89
5	First quartile upper limit	58	57
6	Third quartile upper limit	75	74

Cases and controls were comparable with respect to descriptive statistics of age (Table 1); proportion of males and females were also similar in both groups (Table 2). Proportion with diabetes only & hypertension only had overlapping confidence intervals; proportion of cases with history of both comorbidity & at least anyone comorbidity were higher than that of controls. Proportion of controls having history of two doses of any covid vaccine was 41% (34 to 48%) and that of cases was 9% (4% to 16%); proportion of controls with two doses of covishield was 32% (26% to 40%) and that of cases happened to be 3% (1 to 9%); proportion of one dose of vaccine among cases and controls were similar with the percentage being small in both groups (Table 2).

Table 2 : Gender, comorbidity status and vaccination status of cases (Covid Death) and controls (Recovery from Covid illness)

S. No	characteristic	Cases (94)			Controls (188)		
		No	Percentage (%)	95% CI (%)	No	Percentage (%)	95% CI (%)
1	Male sex	58	62	51 to 72	116	62	54 to 69
	Female sex	36	38	28 to 49	72	38	31 to 46
2	Hypertension only	15	16	9 to 25	22	12	8 to 17
3	Diabetes only	19	20	13 to 30	20	11	7 to 16
4	Both HT and DM	44	47	36 to 57	39	21	15 to 27
5	HT and/ or DM	78	83	74 to 90	81	43	36 to 50
6	Had one dose of any vaccine	7	7	3 to 15	18	10	6 to 15
7	Had two doses of any vaccine	8	9	4 to 16	77	41	34 to 48
8	Had one dose of Covaxin	0	0	0 to 3	1	1	0 to 3
9	Had two doses of Covaxin	5	5	2 to 12	16	9	5 to 13
10	Had one dose of Covishield	7	7	3 to 15	17	9	5 to 14
11	Had two doses of Covishield	3	3	1 to 9	61	32	26 to 40

Cases were less likely [odds ratio 0.13(0.05 to 0.30)] to be vaccinated with two doses of any covid vaccine in comparison to controls; after adjusting for diabetes, hypertension and both, adjusted odds ratio was 0.1 (0.04 to 0.28); ie, effectiveness (against fatality due to covid 19) of two doses of any covid vaccine was 90% after adjusting for comorbidities (Table 3).

Table 3: Matched Odds Ratio and Adjusted Odds ratio (Adjusted for Diabetes and Hypertension) for vaccination with any covid vaccine as exposure and death due to Covid as outcome (94 cases and 188 controls) controls (Recovery from Covid illness)

Exposure	Matched Odds Ratio	(95% CI)	P value	Final 2* log likelihood	Adjusted Odds Ratio	(95% CI)	P value	Final 2* log likelihood
Had one dose of any Covid vaccine against zero dose	0.34	0.11 to 1.03	0.057	119.22	0.23	0.06 to 0.83	0.025	87.61
Had two doses of any Covid vaccine against zero dose	0.13	0.05 to 0.30	0.000	143.12	0.10	0.04 to 0.28	0.000	104.93
Had two doses of any Covid vaccine against one dose	0.13	0.01 to 1.08	0.058	15.45	Software could not analyse due to insufficient number of suitable records			

Same way, odds of having two doses of covishield vaccine among cases was 0.03 times [odds ratio 0.03(0.004 to 0.216) lesser than that among controls. Adjusted odds ratio was 0.02 (0.002 to 0.186). Hence effectiveness of two doses of covishield was 98% after adjusting for comorbidities (Table 4)

Table 4: Matched Odds Ratio and Adjusted Odds ratio (Adjusted for Diabetes and Hypertension) for vaccination with covishield vaccine as exposure and death due to Covid as outcome (73 cases and 146controls)

Exposure	Matched Odds Ratio	(95% CI)	P value	Final 2* log likelihood	Adjusted Odds Ratio	(95% CI)	P value	Final 2* log likelihood
Had one dose of Covishield vaccine against zero dose	0.41	0.13 to 1.25	0.116	104.09	0.24	0.06 to 0.86	0.028	98.22
Had two doses of Covishield vaccine against zero dose	0.03	0.004 to 0.216	0.0005	98.22	0.02	0.002 to 0.186	0.0006	63.16
Had two doses of Covishield vaccine against one dose	0.14	0.015 to 1.184	0.0707	6.198	Software could not analyse due to insufficient number of suitable records			

Odds ratio of having one dose of any covid vaccine was 0.34 and that of covishield was 0.41; p value was more than 0.05 in both occasions. But after adjusting for two comorbidities, adjusted odds ratio was 0.23 (P value 0.025) for one dose of any covid vaccine and 0.24(P value 0.028) for that of covishield. Thus effectiveness against fatality for single dose of any covid vaccine was 77% and that of covishield was 76% (Table 3 & 4)

DISCUSSION

Cases and controls were similar with respect to age, sex and time of occurrence. Regarding distribution of Hypertension and or Diabetes, cases had higher proportion. Controls had higher proportion of history of two doses of covid vaccine especially covishield in comparison to cases.

Patients who survived were more likely to be vaccinated with two doses in comparison to who died; above relationship persisted after adjusting for comorbidities. The above was true with covishield also. One dose had been found to be protective after adjustment for common comorbidities.

Inference was that two doses of any covid vaccine/ covishield vaccine were 97%/ 98% protective against death due to Covid 19 after being infected with Covid 19 virus; similar protection by single dose was 77% / 76% respectively.

Study design (matching) eliminated the confounding effects of age, gender and virulence level of circulating virus. As the study period comprised both second and third Covid waves, matching of cases and their respective controls as per date of positivity took care of the sceptical argument of lesser mortality during third wave being attributed for less virulence of virus. Two common comorbidities were adjusted during analysis and kept away from confounding the results. Hence the association between vaccination and protection against fatality could be inferred as causal.

In a Malaysian study, effectiveness against fatality was 49% for single dose and 88% for second dose(9). In Brazil, initially people with more than 75 years of age were vaccinated. A study based on secondary data revealed that attributable protection ratio for single dose was 95% and r two doses 99%.[10] In Scotland, a cohort study estimated effectiveness against death during Delta wave as 76% for one dose and 96% for second dose.[11] In a vaccine effectiveness study conducted among health care workers and front line workers by Armed Forces Medical College faculties, they had reported that corrected Incidence Rate ratio for death was 0.13 for one dose and 0.02 for two doses.[12] Our study finding of vaccine effectiveness against fatality of 97 % was comparable to the above. A hospital based cross sectional study conducted at Delhi revealed effectiveness against mortality was 70% for single dose and 87.5% for two doses.[13] In a prospective cohort study conducted at Himachal Pradesh, there was 86% protection by single dose and 99% by two doses against unfavourable outcomes.[14] In a study conducted using the data pertaining to police personnel of Tamil Nadu, vaccine effectiveness against death was 82% for first dose and 95% for two doses.[15] The findings of that study

were quite similar to that of our study.

We expected Information bias as already available information could be more complete and accurate for death ones (cases) than recovered ones (controls). To overcome that, we called recovered individuals and family members of deceased individuals via mobile to get missing data whenever necessary. We also ascertained the vaccination status in the Cowin website. We expected uneven distribution of comorbidity among two groups as comorbid individuals were hesitant to take vaccination during initial phases of vaccination. To overcome the confounding effect of comorbidities, diabetes and hypertension were adjusted during analysis. Hence the sceptical argument of 'healthy people got vaccinated and so did not die as they were healthy' had been sincerely answered.

CONCLUSION

We concluded that two doses of any covid vaccine/ covishield could be protective against death due to covid illness for nearly all adults irrespective of their age, gender, common non communicable diseases and virulence of covid virus; even single dose could be protective for majority people.

RECOMMENDATIONS

We recommended dissemination of the above information to enhance the vaccine acceptance among comorbid individuals and vaccine sceptics who are still hesitating to have Covid vaccination and to motivate the single dose vaccinated individuals to take the second dose without delay.

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ORIGINAL ARTICLE - PUBLIC HEALTH

QUALITY OF ANTENATAL CARE IN A SELECTED RURAL AND URBAN PRIMARY HEALTH CENTRE IN DHARMAPURI DISTRICT

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Abstract

Introduction: Eventhough the maternal health services has been scaled up in recent years adequate utilization of services has not been achieved yet and services provided varies from region to region. So this study has been planned to explore the differences in quality of service provision in rural and urban primary health centres .
Objectives : To assess the quality of services rendered to antenatal mothers in rural and urban primary health centres in Dharmapuri district.
Methodology : A community based cross-sectional study was done among 100 antenatal mothers in a selected rural and urban primary health centre area each, in Dharmapuri. A pre-validated semi-structured questionnaire was used to interview the Antenatal mothers. The data was entered in MS Excel and analyzed by SPSS 16.
Results : The mean age of Antenatal mothers in rural area was 23.3yrs with SD of 3.4yrs and in Urban area the mean age of AN mothers was 23.2 yrs with SD of 3.3yrs. 14% were teenage pregnancy both in Rural and Urban areas. Quality of the services was found to be better in rural areas compared to urban areas , with statistically significant rural-urban difference was seen in 1) Adequacy of antenatal visits with respect to their gestational age (p value < 0.01),2) Information about their weight status regularly(p value <0.05), 3) Receiving Td injection during first antenatal visit (p value <0.05), 4) counseling about referral hospital (p value < 0.05) and 5) Birth preparedness (p value < 0.05).
Key words : Quality of care, Antenatal, Rural, Urban, Primary health centre.

INTRODUCTION

Approximately 800 women die of pregnancy-related complications every day. Most maternal deaths can be prevented with high quality maternal health services.[1] It has been estimated that increased coverage and quality of antenatal care could avert 71% of neonatal deaths, 33% of stillbirths and 54% of maternal deaths in low-and-middle income countries.[2] It is necessary improve the quality of services to attain the SDGs. There are two interventions that can be done in reducing the mortality rate, namely Antenatal Care (ANC) and intrapartum services (labor and birth).[3] Inadequate ANC services, both coverage and quality will provide a poor pregnancy outcome. Within a country, ANC utilization also differs according to the mother's age, education, occupation, household income, parity, place of residence, cost and availability of services. However, it is unclear whether there are rural-urban differences in ANC utilization. According to NFHS-4 data adequate antenatal care in urban setting is 32.9% and in rural areas it is 19.5%.[4] The utilization percentage will be improved if quality of care is adequate. The purpose of this study is to find out the quality of antenatal care in terms of service provision in a rural and urban settings.

METHODOLOGY

This is a community based cross-sectional study done in Bairanatham rural primary health centre and Dharmapuri urban primary health centre of Dharmapuri district. The PHCs were selected by multi-stage simple random sampling, among the districts with MMR higher than the state(63), Dharmapuri district with MMR of 65[5] was selected by simple random sampling . Among the 9 blocks in Dharmapuri district, one urban primary health Centre is selected and one rural primary health centre were selected by simple random sampling. Antenatal mothers those who were registered in PHC and had atleast 2 antenatal visits were included in the study. Antenatal mothers registered in those PHCs were interviewed at their door steps using a semi-structured questionnaire.

After obtaining Institutional Ethical approval and permission from the District Health authority, study was carried out. Sample size was calculated based on NQAS/LAQSHYA criterion, for certification of primary health centre the quality of care should be 60% ,using the formula (n =Z2 X pq/d2) the sample size has been calculated to be 100 . 100 AN mothers registered in each PHC and who had atleast 2 AN visits were selected randomly from the AN

register of the Village Health nurses and Urban health nurse and the questionnaire was administered at their door steps after obtaining their consent.

First part of the questionnaire includes socio-demographic details, gravida and number of AN visits. Second part of the questionnaire includes service provision such as whether their height, weight, and blood pressure was measured, whether they had urine, blood tests, and whether they received Td vaccine, iron supplements, anti helminthics, counseling regarding referral hospital, birth preparedness identifying a trained birth attendant for delivery, identifying a health facility for emergency, arranging for transport for delivery and / or obstetric emergency, and reduction of OOPE, signs of pregnancy complication, nutritious diet were administered to AN mothers. The data was analysed using SPSS- 16.

RESULTS

The mean age of Antenatal mothers in rural area was 23.3 yrs with SD of 3.4 yrs and the average distance from PHC to their residence was 4.8 kms with SD of 2.5kms, with respect to Urban area the mean age of AN mothers was 23.2 yrs with SD of 3.3 yrs and the mean distance of PHC was 3.8 kms with SD of 2.4kms.

Table 1: Frequency Distribution of
Socio-demographic characteristics

Variables	Category	Rural (n=100)	Urban (n =100)
Age	< 20 yrs	14	86
	≥ 20 yrs	14	86
Occupation	Working	3	11
	House wife	97	89
Education	Primary	1	0
	Middle school	5	5
	High school	15	23
	Higher secondary	31	38
	Graduate	48	34
Socio –economic status	I – Upper class	12	9
	II – Upper middle class	17	32
	III - Middle class	32	28
	IV - Lower middle class	29	27
	V – Lower class	10	4
Distance of home from PHC	≤ 5 kms	68	75
	> 5kms	32	25

Table 1 depicts the socio-demographic characteristics of the study participants. Teenage pregnancy both in Rural and Urban areas remains the same 14% in both . Regarding employment status, 11% of AN mothers were employed in Urban area and in rural area 3% of them were employed. Almost all the AN mothers were literate in both areas. The highest percentage in each area i.e, one third of AN mothers in Rural area belongs to middle class and one third of urban

area mothers belong to Upper middle class more than two third of AN mothers residing in rural areas had their PHC within 5 kms distance whereas in Urban areas three fourth of AN mothers had their PHC within 5 kms.

Table 2: Difference in Quality of Antenatal Care variables received between Rural and Urban mothers

Variables	Category	Rural (n=100)	Urban (n =100)
Age	< 20 yrs	14	86
	≥ 20 yrs	14	86
Occupation	Working	3	11
	House wife	97	89
Education	Primary	1	0
	Middle school	5	5
	High school	15	23
	Higher secondary	31	38
	Graduate	48	34
Socio –economic status	I – Upper class	12	9
	II – Upper middle class	17	32
	III - Middle class	32	28
	IV - Lower middle class	29	27
	V – Lower class	10	4
Distance of home from PHC	≤ 5 kms	68	75
	> 5kms	32	25

Table 2 depicts bivariate analysis done to find out the difference in quality of Antenatal care in rural and urban PHCs. A statistically significant rural-urban difference was seen in adequacy of antenatal visits with respect to their gestational age, which shows that 91% of rural mothers were getting adequate antenatal visits compared to urban mothers (79%) with a p value of **0.017**. About 93% of mothers attending rural phc and 89% of mothers attending urban PHC had their weight measured. Among them 80% of rural mothers and 67% of urban mothers were informed about their weight status regularly with a significant rural-urban difference (p value = **0.037**).

Eventhough all of them were tested for blood pressure , urine and blood both in rural and urban PHCs only 76% rural mothers and 71% of urban mothers were informed about their BP status. Similarly 77% of rural mothers and 71% of urban were informed about urine test results. Blood test results had been informed to 68% of rural mothers and 69% of urban mothers, almost 97% of mothers in rural areas were given Td injection while in urban areas only 89% of mothers had received the injection during their first antenatal visit and this difference was statistically different (**p value = 0.027**)

Regarding toilet sanitation only 54% of rural mothers and 53% of urban mothers felt satisfied and 76% of rural mothers and 78% of urban mothers experienced waiting hours of more than 2hrs during each visit.

Table 3 : Difference in Quality of Antenatal Care variables received between Rural and Urban mothers

Health education	Rural (n=100)	Urban (n =100)	χ² value	P value
Informed about referral hospital	85	73	4.340	**0.037**
Informed about Birth preparedness	80	66	4.972	**0.026**
Informed about signs of pregnancy complication	56	53	2.677	0.102

Table 3 shows difference in quality of antenatal care variables received between Rural and Urban mothers with regards to health education activities. Significant rural-urban difference was seen in providing counseling about referral hospital and birth preparedness. Thus shows that 85% of rural women were aware of their referral hospital in case of emergencies when compared to 73% of urban mothers with a significant p value of **0.037**. Four Fifths of rural women were familiar with birth preparedness when compared only two third of urban mothers with a significant p value of **0.026**. Only 69% of mothers were informed about nutritious diet both in rural and urban areas.

DISCUSSION

This study results shows that provision quality of antenatal care services was better in rural areas when compared to urban areas. This may be due to poor awareness among public about availability of range of services, insufficient linkages between community health workers, community link leaders and public and most importantly easy accessibility to private clinics. As per NFHS -4 report 66.4% of mothers in urban areas had adequate antenatal visits whereas only 44.8% rural mothers had adequate visits[4] which is in contrast to our study which shows rural mothers had adequate antenatal visits compared to urban areas.

A study done by Nurul fauziah in Indonesia showed that based on weight measurement , rural health centres are better than urban health centers with significant difference (p = 0.038)[6] but our study shows no significance in weight measurement. Neverthless there is a significant difference among rural health centre and urban health centre in providing information on it.

Measuring blood pressure are similar to the study done on quality assessment of the practice of focused antenatal care (FANC) in rural and urban primary health centres in Ekiti State, Nigeria which showed no significant rural-urban difference[7] and the same study showed significant rural-urban difference in urine and blood analysis, rural health centres are doing better than urban health centres which is contrast to our study results as it showed no significant difference.

A study on quality of Antenatal Care at Rural and Urban Primary Health Centre in Jeneponto Regency, Indonesia showed no significant rural-urban difference regarding Td injection.[6] Another study done at Ekiti state showed significant rural-urban difference (p value = 0.001),[7] which is similar to our study with significant difference in the mothers receiving Td injection during their first visit.

A study done among urban slum mothers regarding birth preparedness in Indore showed 52.2% were less prepared and while in our study 34% of mothers in urban areas were less prepared and there is a significant rural-urban difference.[12] The study showed that 31% of mothers were less informed about nutritious diet both in rural and urban areas which similar to the study done in Kenya which showed 31.9% of mothers were lacking nutrition education.[7]

CONCLUSION

Rural health centre is performing better than urban primary health centre. As Tamil Nadu is one of the most urbanized states in the country, urban population growth has posed enormous challenges in meeting the people's health care. A strategic urban-specific approach is required in terms of human resources, infrastructure and regular outreach services to track missed out and new patients, since population is not static in urban areas compared to rural counterpart. Regular training to community health workers to insist on health education session for antenatal mothers.

ACKNOWLEDGEMENT

CONFLICT OF INTREST : Nil

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ORIGINAL ARTICLE - PUBLIC HEALTH

PREVALENCE AND TREND OF DENGUE VIRAL DISEASE IN TAMIL NADU DURING 2017 – 2021 – A RETROSPECTIVE STUDY

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Abstract

Background : Globally, Dengue is one of the most common vector borne disease. The actual burden of the disease is not quantified. Understanding the prevalence and trend of dengue can help to improve prevention and control strategies. Our study assessed the trend in prevalence of dengue in Tamil Nadu during 2017-2021.

Methodology : This study was conducted at Directorate of Public Health & Preventive Medicine (DPH&PM), Tamil Nadu using the data collected from January 2017 to December 2021. Patient data were received from all districts of Tamil Nadu utilizing the District Public Health Laboratory (DPHL) Network of DPH&PM. We analysed epidemiological trend, including age, gender and seasonal distribution.

Results : Among the 2,44,175 suspected cases, 29,096 confirmed Dengue cases (12%) were recorded during 2017 – 2021. Our results indicate males were affected slightly more than females by dengue viruses. The number of dengue cases incidence was found almost equal among 20 – 59 and 6-19 age groups. Our results report major proportion of positive cases in the post-monsoon period, more prominently between September and November. Higher incidence of dengue cases has been recorded in Northern and Southern TN zones. Central TN reported least number of dengue cases.

Conclusion : Our results highlight that dengue is an endemic disease and there is a necessity to increase dengue diagnosis among the population, especially in northern TN districts. Apart from enabling policy makers to implement effective interventional measures to reduce the case burden, early diagnosis of dengue among TN population will aid in treating them based on their needs ultimately reducing mortality and morbidity.

INTRODUCTION

Dengue Fever (DF) is caused by a virus belonging to Flaviviridae family and it is transmitted by Aedes mosquitoes particularly Aedes aegyptii. DF is an endemic disease frequently causing outbreaks in the Southeast Asia, Western Pacific, Latin America, Africa and Eastern Mediterranean regions.[1,2] According to the World Health Report (1996), the "re-emergence of infectious diseases is a warning that progress achieved so far towards global security in health and prosperity may be wasted".[3]

In India, the first confirmed Dengue outbreak was reported in 1963 in Kolkata.[4] A major outbreak was documented in 1996 involving areas around Delhi and Lucknow.[5] Dengue was considered as urban infection, but it has now penetrated into rural area as well due to population density.[6] Dengue occur throughout the year but the case numbers tend to reach the peak during monsoon and post monsoon season due to the high vector load.[7]

In India, the epidemiology of dengue has rapidly changed in the last few decades, which has led to a dramatic expansion.8 When compared to Japanese Encephalitis, upper respiratory tract infections and Hepatitis B, the burden of dengue is 17 times higher.[9] The state of Tamil Nadu comprises of total 38 districts and located at the latitude between 8°4' N to 13° 35' N and longitude between 76° 18' E to 80°20' E on the southern part of India. Weather of the state is highly influenced by Bay of Bengal Sea as it is a coastal state. Climate is tropical in nature resulting in very high environmental temperature ranging between 35 to 43°C during summer months of April and May and between 12 to 14 °C during the winter season. The state experiences South West Monsoon between June and September and North East Monsoon begins in October and lasts till December. An average rainfall of 987 mm is recorded in Tamil Nadu.

AIMS & OBJECTIVE

1. To estimate the trends in prevalence of Dengue in selected Districts of Tamil Nadu from 2017 to 2021..
2. To describe the characteristics of dengue trend in terms of Time, Place & Person.

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METHODOLOGY
STUDY DESIGN DURATION AND SOURCE OF THE DATA :

In this study the epidemiological trend of dengue from 2017 to 2021 in Tamil Nadu were analysed, with a focus on age, gender, district- and zone-wise dengue case burden.

This study was conducted at Directorate of Public Health & Preventive Medicine (DPH&PM), Tamil Nadu using the data collected from January 2017 to December 2021.

We included patient data received from all districts of Tamil Nadu utilizing the District Public Health Laboratory (DPHL) Network of DPH&PM. In each District Public Health Laboratory, detailed clinical history of the patients with travel history, if any, was collected in a predesigned questionnaire form. All the District Microbiologists were involved in testing the samples for dengue antigen and/ or antibody. A total of 244175 samples' data satisfying the inclusion criteria were incorporated in the study.

ETHICAL CONSIDERATIONS :

The study was approved by Institutional Ethical Committee, Directorate of Public Health & Preventive Medicine, Chennai (IEC No.:DPHPM/IEC/2022/004).

STATISTICAL ANALYSIS :

The epidemiological parameters were statistically analysed that included demography, clinical profile of the suspected patients and possible outcome. Data generated was analyzed using Microsoft Excel. The Chi-square test was used to compare the difference in gender distribution across different years.

RESULTS

Among the 2,44,175 suspected cases, 29,096 confirmed Dengue cases (12%) were recorded during the study period 2017 – 2021 (Table 1). 7% of the suspected cases were confirmed as Dengue cases during 2018 and 2021, whereas 2017 recorded the highest number of Dengue cases (19%) in the entire study period. On comparison, a sharp decline in the number of dengue cases was identified in 2018. In 2020 and 2021 there were reduced number of dengue cases on comparison with the previous years.

Of the total number of dengue cases, 16072 (55%) were males and 13024(45%) were females. There was no significant different in the male-to-female ratio across different years (Chi square =35.7509, p = 0.0000 (<0.001); Figure 1). There were more male cases than the female cases in all years. The highest number of dengue cases averaging 48% incidence was found in the age group of 20 – 59 as given in Table 1. A similar incidence was observed in age group of 6-19 years

(41%). Least number of dengue cases i.e. 3 – 4% average were reported in >=60 years age group. 0-5 years age group showed an average of 9% incidence of dengue cases.

Table 1. Distribution of Confirmed Dengue Cases for study period 2017 - 2021

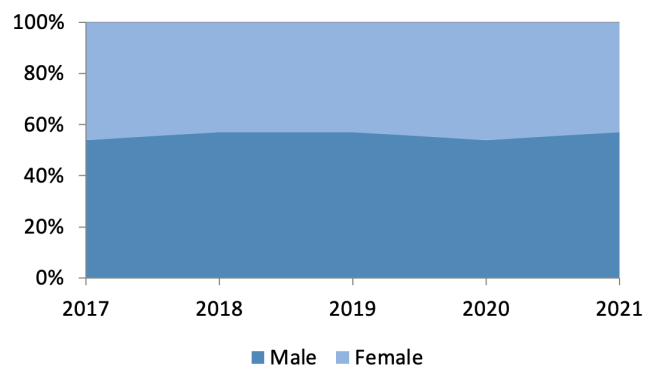| Year	No. of Suspected Cases	No. of Confirmed Cases (%)	Gender		Age Range (in years)									
			Male	Female	0-5		6-12		13-19		20-59		>=60	
					M	F	M	F	M	F	M	F	M	F
2017	74693	13934 (19%)	7474 (54%)	6460 (46%)	672 (9%)	663 (10%)	1524 (20%)	1498 (23%)	1647 (22%)	1189 (18%)	3457 (46%)	2892 (45%)	174 (2%)	218 (3%)
2018	34559	2261 (7%)	1292 (57%)	969 (43%)	106 (8%)	113 (12%)	201 (16%)	202 (21%)	216 (17%)	149 (15%)	732 (57%)	456 (47%)	37 (3%)	49 (5%)
2019	48300	6441 (13%)	3691 (57%)	2750 (43%)	287 (8%)	228 (8%)	624 (17%)	537 (20%)	734 (20%)	451 (16%)	1949 (53%)	1440 (52%)	97 (3%)	94 (3%)
2020	26100	1986 (8%)	1068 (54%)	918 (46%)	68 (6%)	75 (8%)	224 (21%)	231 (25%)	211 (20%)	139 (15%)	516 (48%)	434 (47%)	49 (5%)	39 (4%)
2021	60523	4474 (7%)	2547 (57%)	1927 (43%)	178 (7%)	137 (7%)	570 (22%)	445 (23%)	623 (24%)	377 (20%)	1089 (43%)	904 (47%)	87 (3%)	64 (3%)
Total			1311	1216	3143	2913	3431	2305	7743	6126	444	464		
Grand Total	244175	29096 (12%)	16072 (55%)	13024 (45%)	2527 (9%)		6056 (21%)		5736 (20%)		13869 (48%)		908 (3%)	

Figure 1. Gender Distribution of Dengue Cases in Tamil Nadu from 2017 – 2021

Dengue cases were reported nearly every month, but most dengue cases were reported between August and December, particularly in September and November (Figure 2).

Figure 3 displays zone-wise distribution of Dengue positive cases reported in TN between 2017 and 2021. Highest number of dengue cases (n = 9908) have been recorded from Northern Part of TN. Among the northern districts, Tiruvallur and Cuddalore contributed more than 65% of dengue cases in that region. The second highest dengue cases were found in Southern area of Tamil Nadu (n = 8279). Of the southern districts, four districts viz. Ramnathapuram, Tenkasi, Tirunelveli and Virudhunagar were the major regions with higher dengue cases.

More than 1000 positive dengue cases have been reported from Namakkal, Tiruppur and Erode districts of Western TN. However, Dharmapuri district was found to have least number of dengue cases (n=233). Central region reported least number of dengue cases (n = 3975).
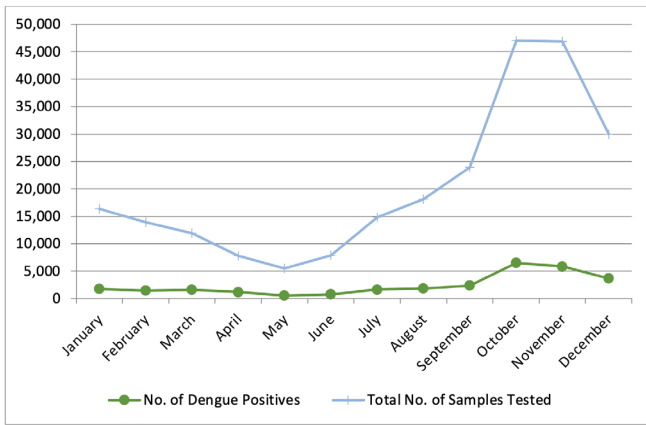
Figure 2 : .Seasonal Prevalence of Dengue in Tamil Nadu (2017 -2021)

Figure : . Cumulative Distribution of Dengue Cases detected in Top Seven Districts of Tamil Nadu (2017 -2021)
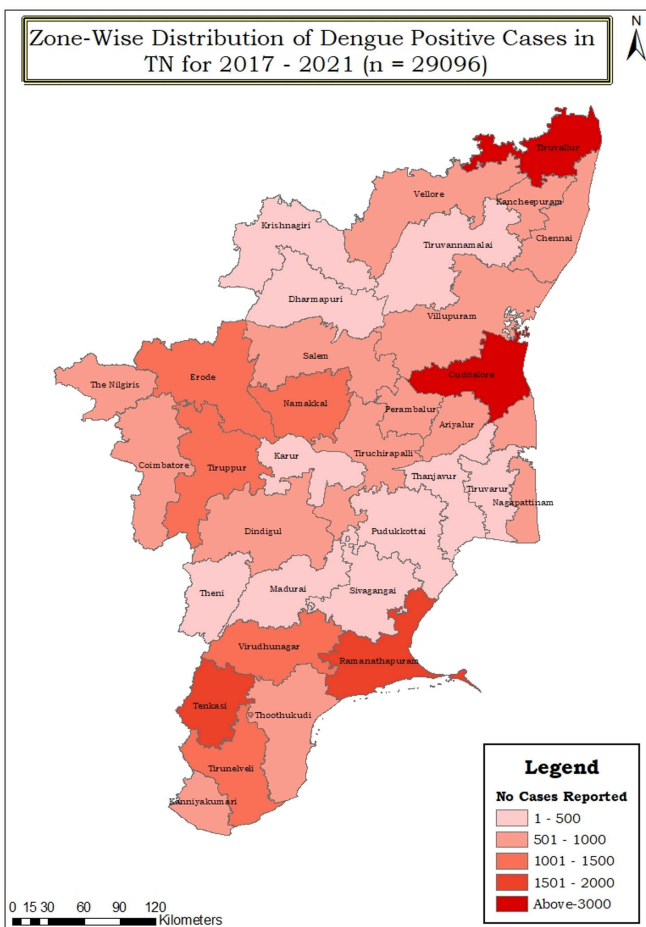

Figure 3 :Dengue positive cases distribution in Tamil Nadu (2017 -2021)

Distribution of dengue cases reported from top seven districts viz. Tiruvallur, Cuddalore, Ramnathapuram, Tenkasi, Namakkal, Tiruppur and Tirunelveli for the study period 2017 to 2021 clearly indicates high number of dengue cases occurred between September and December in all the years (Figure 4, Supplementary table 1). Tirunelveli had higher number of cases between February and May in each year.
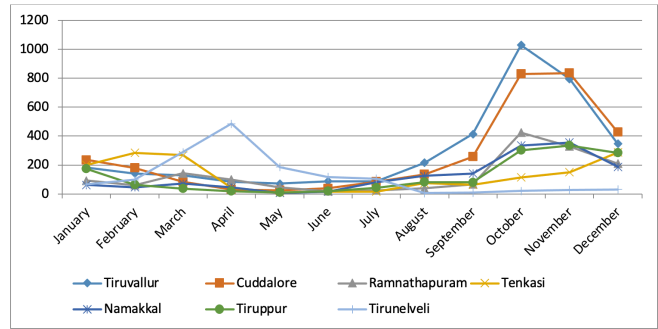
DISCUSSION

Dengue has emerged as a major health problem both nationally and internationally. India with its tropical climate and distributed with urban and semiurban areas is prone to have vector-borne diseases, especially dengue (WHO bulletin, 10th January 2022).

In this study we assessed the trend in prevalence of dengue in Tamil Nadu (2017-2021). The real number of dengue cases might be higher than that reported due to unreported asymptomatic infection.[10,11] Data on dengue prevalence and its longitudinal trend will provide necessary information to understand as well as review the existing prevention and control strategies if needed, may even recommend to include any changes/improvements/updates to the existing strategies. Even though, several factors would have contributed to the increase in dengue cases, climate change is a vital factor that would have increased mosquito density resulting in expansion of the geographical and seasonal distribution of vector.[12] The trend is that major proportion of positive cases occur in the post-monsoon period (Figure 2). Thus, correlation between incidence of dengue infection and monsoon season is clearly evident and it has been also supported in previous studies from India and many parts of the world.[13, 14] The north and south regions of the state had major numbers and this could be (Figure 3) probably due to varied climatic conditions apart from having coastal areas being suitable for vector breeding[15,16].

Over the years more attention has been given to diagnose dengue as evidenced by the number of samples tested in 2021 in comparison to 2017 and thus, capacity to diagnose dengue clinically has improved significantly (Table 1). This will in turn help to act swiftly in effectively treating the patients based on their needs eventually reducing their mortality and morbidity. Incidence of dengue is still a matter of concern in TN (~12%) even though diagnostic capacity of the state has increased. A total of 74693 suspected samples were tested

in 2017, whereas this number reduced to 34559 and 48300 in 2018 and 2019, respectively. In 2020, only 26100 samples were tested for dengue virus. Reduction in the number of samples tested can be due to emergence of COVID-19 disease as a global pandemic. Nevertheless, 60523 suspected samples were analyzed in 2021 so as to enable early diagnosis of dengue during the ongoing COVID-19 pandemic (Table 1).

The trend reveals that males were affected slightly more than females by dengue viruses (Figure 1). Similar results are reported by other studies carried out in dengue endemic areas.[14,17] Males are prone to mosquito bites might be because of their mostly outdoor nature of activity. Thus, it is clearly evident that both genders are susceptible to dengue viruses.

Nearly 50% of population in the 20 – 59 age group are susceptible to dengue infection. However, only approximately 20% of population in the lower age groups i.e. 6-12 and 13-19 tend to be affected by dengue (Table 1). The possible reason might be attributed to young children spending most of the day time in closed environments, therefore are less likely to be exposed to the mosquitoes. Similar results are also recorded by other investigators.[18,19] In all the years of the study, dengue among the 5 or lesser age group recorded not more than 9%, much lesser than the earlier reports.[14] Parent willingness to carry kids suffering from fever to hospital for screening could be the possible reason behind such under reported case numbers in this age group.

This study has few limitations. Trends of imported cases and indigenous cases were not analyzed separately. Secondly, bias in data might be possible as it was gathered from DPHL network database. Also, if dengue-infected patients fail to visit clinics or other medical institutions, their information would not have been captured in the database.

CONCLUSION

Dengue is still an endemic disease in Tamil Nadu and poses a health threat in almost all districts of tropical and sub-tropical territories. Continous monitoring of data & intensive surveillance is required in all districts despite variations in trend over years across all geographical areas in the state. Surveillance and control strategies should be implemented not only in outbreak locations, but also in zones where Aedes spp mosquitoes are present. The observation of dengue epidemiology highlights the need to strengthen control of emerging and management in outbreak.

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ORIGINAL ARTICLE - PUBLIC HEALTH

SELF-ESTEEM AMONG COLLEGE STUDENTS OF ALCOHOLIC AND NON-ALCOHOLIC PARENTS, IN DHARMAPURI DISTRICT, TAMILNADU - AN ANALYTICAL CROSS-SECTIONAL STUDY

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Abstract

Introduction : Alcohol being a psychoactive substance, its increasing trend of consumption in India poses threat to society in various forms including psychological ill-effects to the members of the family, Adolescent children who grew up in a chaotic environment are affected and are prone to get behavioral problems. Parental alcoholism can have a significant role in shaping them. Self-esteem is a feeling of one's own worth which could well be influenced by parental behavior. Hence this study was conducted with an objective to study the self-esteem among children of alcoholic and non-alcoholic parents among college-going students in a selected college in Dharmapuri district, Tamilnadu.

Methodology: An analytical cross-sectional study was conducted among the college students of Periyar University-affiliated Arts and Science College, Pappireddipatti, Dharmapuri district students were given a self-administered semi-structured questionnaire, (Part I- Socio-demographic details, Part II- Modified Children of Alcoholic Screening Test-CAST, Part III-Rosenberg Self Esteem scale-RSES). They were grouped based on the Modified CAST tool into Children Of Alcoholic (COA) and Children Of Non-Alcoholic (nCOA), 120 participants' responses from each group were taken up by simple random sampling and analyzed using SPSS version16.

Results: The mean age of the study participants was 19.7 + 1.33 years. There was no difference in demographic characteristics between the 2 groups. Mean Self-esteem scores are lower for the children of alcoholic parents (13.2) when compared to the children of non-alcoholic parents (17.5) and there was a statistically significant difference in the mean RSES scores between the 2 groups by independent 't' test with p=value<0.05. There was a statistically significant association between the Alcoholic status of parents(COA and nCOA) and the self-esteem of their children(Low and Normal) by chi-square test with a p-value <0.05.

Conclusion: The majority of the children of alcoholic parents had lower self-esteem than their counterparts. Alcohol, being a physical and behavioral teratogen can easily invade into an adolescent's behavioral pattern if not intervened timely. Self-esteem, as an important psychological drive during adolescence, has to be maintained high to make a productive future generation.

Keywords: Self-esteem, Children of Alcoholics, Adolescent student.

INTRODUCTION

Alcohol is a psychoactive substance with dependence-producing properties which is in use in human society since the beginning of recorded history and it is ubiquitous today.[1] Alcohol-related issues are swiftly becoming a major public health issue in India due to increased productivity, availability, and changing social values.[2]

India is the third-largest alcoholic beverage market in the world.[3] It is estimated that 20-40% of men between the ages of 15-60 years consume alcohol on a regular or intermittent basis.[2] The National Household Survey had reported alcohol use in 21% of adult men and <5% among women. The state-wise prevalence rate is highly variable, Gujarat with 7% and Arunachal Pradesh with 75% is at the lowest and highest, respectively. In South India, the prevalence rate of alcohol consumption has varied between 33% - 50%.[3]

India's per capita alcohol consumption doubled between 2005 and 2016, according to the World Health Organization's (WHO) Global Status Report on Alcohol and Health 2018. Too many people, their families, and communities are suffering from the consequences of harmful use of alcohol in the form of violence, injuries, mental health problems, and illnesses such as cancer and stroke.[4]

The per-capita alcohol consumption figures do not give a factual picture of consumption of alcohol, because the local alcoholic drinks, either legal or illegal, are not taken into account in the national statistics. There are now signs that alcohol drinking is being introduced at a progressively earlier age in India.[5]

Children of alcoholics (COAs) are the children who grow up in families where either one or both the parents are alcoholics. They grow up in an environment that lacks parental care and love, both of which are essential for the child's healthy development. Ideally, Parenting should be based on predefined rules and discipline, which, in alcoholic parents, are based on parents' alcohol consumption status and moods. This results in an inconsistent and erratic behavior of parents, leaving their children to feel unsafe and insecure.[6]

Children of alcoholic (COA) parents suffer from a variety of psycho-social problems. The psychological effects of alcoholism in parents were observed from infancy to adulthood. They are at a higher risk of adopting the habit of consuming alcohol, tobacco, and other illicit behavior frequently and at an early age.[7] They suffer from the deficiency of having a 'parental role model' for their life and they are denied a healthy home environment.[8]

The term "Self-esteem" is derived from a Greek word meaning "reverence for self." It pertains to the attitudes, values, and beliefs one holds about themselves. In short, self-esteem is the acceptance of an individual for whom and what they are at any given point of time in their lives. It is a positive or negative orientation towards an individual self.[9]

Morris Rosenberg (1965)defined self-esteem in terms of a specific type of attitude, one that is believed to be based on the insight of a sense, a feeling about one's "worth" or value as a person.[10]

Self-esteem embraces a person's beliefs and emotions like a triumph, pride, and shame. It refers to the extent to which the individuals value themselves and has long been recognized as a significant predictor of adjustment to stress. An appropriate level of self-esteem claims the individual to feel honorable, enjoy their efforts, and autonomously express their desires. Self-esteem is thought to be the single best predictor of success and it is the integrated sum of self-confidence and self-respect.[11]

The self-esteem of an individual can be influenced by a multitude of factors. But none is more noteworthy than the family. Parental involvement has a greater role in deciding the levels of self-esteem of their offspring.[10]

As adolescence has been globally acknowledged to be the period of turbulence parental alcoholism generates an unfavorable environment for the adjustment and character development of the adolescent.[11]

JUSTIFICATION :

Alcohol is a physical and behavioral teratogen.[12] It is often alleged that alcoholism is a family disease since the entire family and every individual who is a part of it suffers. Alcoholism takes a specifically high toll on adolescent children, who often carry the scars related to alcoholic parents into their adulthood.[13]

Self-esteem is an indicator of one's own worth subjectively, which has an influence over the individual's self-competence, which in turn has a linkage with the behavioral pattern in adolescents, all of which are influenced by alcoholism in parents. This study intends to compare and analyze this factor.

OBJECTIVES

To study the self-esteem among college students of alcoholic and non-alcoholic parents in the selected college of Dharmapuri district.

METHODOLOGY

After obtaining ethical approval from the Institutional Ethics Committee of Madras Medical College and Official Permission from the Principal, Periyar University-affiliated arts and science college, Pappireddipatti, Dharmapuri district, an analytical cross-sectional study was conducted among the college students during the month of October 2021- November 2021. The sample size was calculated using the formula $N=((Z\alpha+Z\beta)(P1Q1+P2Q2))/L^2$, with α error at 95% CI, β at 80% power, and taking the proportion of nCOA and COA with lower self-esteem from a study done at Coimbatore by Jabasaroon et al., which was 38% and 26% respectively.[11]

The sample size was arrived at 120 per group and a total of 240. All the final year students (400 students) who were present on the day of the visit were included in the sampling frame and they were given a self-administered semi-structured questionnaire which includes 3 parts,
Part I- Socio-demographic details,
Part II- Modified Children of Alcoholic Screening Tool[14](CAST)
Part III- Rosenberg Self Esteem scale[15](RSES)

After obtaining participants' consent, and ensuring strict confidentiality, responses were collected from 380 participants and they were grouped based on the Modified Children of Alcoholic Screening Tool (CAST) and 120 from each group is chosen by simple random sampling.

Collected data were entered in epicollect5 tool from which it is extracted as an excel document and imported into SPSS Version 16 and analyzed. Descriptive statistics are expressed in frequency and percentage and inferential statistics were done using 't' test and chi-square test and p-value <0.05 is

considered to be significant.

OPERATIONAL DEFINITION

• **Self-esteem** - It is simply one's attitude towards oneself, assessed by Rosenberg's self-esteem scale. Rosenberg's Self-Esteem Scale (RSES)ranges from 0-30. Scores between 15 to 25 are within the normal range and the scores <15 suggest low self-esteem.

• **Children of Alcoholics** - children who score > 3 in Modified Children of Alcoholic Screening Test (CAST tool)14

• **Children of non-alcoholics** - children who score <3 in Modified Children of Alcoholic Screening Test (CAST tool)14

RESULTS

The mean age of the study participants was 19.7 + 1.33 years, with a minimum age of 18 and a maximum of 25 years. The mean age in the COA group is 19.5 + 1.3 years and in nCOA group is 19.9 + 1.3 years.

Table 1 : Comparison of demographic characteristics between COAs and non-COAs

S.No	Variable	Categories	COA (n=120)		nCOA (n=120)		Chi-Square	p-Value
			Frequency	Percentage	Frequency	Percentage		
1	Sex	Male	60	50%	51	42.5%	1.36	0.24
		Female	60	50%	69	57.5%		
2	Religion	Hindu	118	98.3%	118	98.3%	2.34	0.5
		Christian	1	0.8%	2	1.7%		
		Muslim	1	0.8%	0	0.0%		
3	Education of the Father	Illiterate	36	30.0%	41	34.2%	4.16	0.53
		Primary	27	22.5%	18	15.0%		
		High School	29	24.2%	36	30.0%		
		Higher Secondary	19	15.8%	19	15.8%		
		Diploma	1	0.8%	0	0.0%		
		Degree	8	6.7%	6	5.0%		
4	Education of the Mother	Illiterate	51	42.5%	42	35.0%	2.59	0.76
		Primary	24	20.0%	22	18.3%		
		High School	30	25.0%	40	33.3%		
		Higher Secondary	12	10.0%	12	10.0%		
		Diploma	1	0.8%	1	0.8%		
		Degree	2	1.7%	3	2.5%		
5	Occupation of the Father	Unemployed	6	5.0%	7	5.8%	2.46	0.93
		Unskilled	34	28.3%	28	23.3%		
		Semi-skilled	3	2.5%	6	5%		
		Skilled	21	17.5%	23	19.2%		
		Clerical/Farmer/Shop keeper	39	32.5%	36	30.0%		
		Semi - Professional	3	2.5%	3	2.5%		
		Professional	14	11.7%	17	14.2%		
6	Occupation of the Mother	Unemployed	18	15.0%	38	31.7%	11.48	0.75
		Unskilled	35	29.2%	21	17.5%		
		Semi-skilled	4	3.3%	3	2.5%		
		Skilled	11	9.2%	8	6.7%		
		Clerical/Farmer/Shop keeper	39	32.5%	37	30.8%		
		Semi - Professional	4	3.3%	5	4.2%		
		Professional	9	7.5%	8	6.7%		
7	Type of Family	Nuclear	87	72.5%	94	78.3%	1.89	0.39
		Joint	32	26.7%	26	21.7%		
		Three Generation	1	0.8%				
8	SES	Upper Class	13	10.8%	12	10.0%	0.42	0.94
		Upper Middle class	13	10.8%	9	7.5%		
		Middle Class	26	21.7%	30	25.0%		
		Lower Middle class	42	35.0%	45	37.5%		
		Lower class	26	21.7%	24	20.0%		

Table 1 shows the descriptive details of the demographic characteristics of the study participants such as Gender, Education, and Occupation of the father and mother, Socio-

Economic status as classified by Modified B.G.Prasad scale (2021), and type of family in both the groups. It also shows that there is no significant difference in the demographic characteristics between COA and nCOA groups as evident by the chi-square test (p-Value >0.05) No statistical significance was observed with respect to Religion, Type of Family, Education & Occupation of the father and mother, and Self-esteem by chi-square analysis.
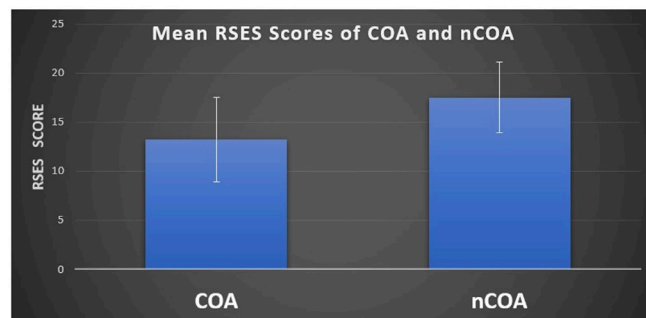
| Mean | 13.2 | 17.5 |
| Standard Deviation | 4.3 | 3.6 |

Figure 1 : Comparison of Rosenberg's self-esteem scores among children of alcoholic and non-alcoholic Parents

Figure1 shows the Comparision of the Mean and Standard deviation of the RSES scores between COA and nCOA parents. Mean RSES scores are higher for the children of non-alcoholic parents when compared to the children of alcoholic parents.

Table 2 : Mean difference of RSES scores among COA and nCOA parents:

Variable	COA(n=120)				nCOA(n=120)				p-Value
	Mean	SD	Minimum	Maximum	Mean	SD	Minimum	Maximum	
Rosenberg's Self-esteem score	13.2	4.3	3	25	17.5	3.6	9	17	0.000*

*p<0.05

Table 2 shows the statistically significant difference in the mean self-esteem scores of the participants in the COA and nCOA groups by the 't'-test. The mean self-esteem scores were statistically significant between COA and nCOA groups by independent 't' test with a p-Value < 0.05.

Table 2 : Mean difference of RSES scores among COA and nCOA parents:

Variable	Category	Score by RSES		Chi-square	p-Value	OR	95% CI
		Low SE	Normal SE				
Alcoholic status of Parents by CAST tool	COA (n=120)	83 (69.2%)	37 (30.8%)	33.75	0.000*	4.84	2.8-8.4
	nCOA (n=120)	38 (31.7%)	82 (68.3%)				

*p<0.05

There is statistically significant association between the Alcoholic status of parents and the self-esteem of their childrenare considered by chi-square test with a p-value <0.05. Children of Alcoholic parents are at 4.84 times higher odds of having low self-esteem when compared to the children of non-alcoholic parents, as shown in Table 3.

DISCUSSION

There is substantial evidence that adolescents who grew up in a home with discordant atmosphere are at increased risk of developing several problems and disorders once they reach adulthood.[16] A systematic review of research on children of alcoholics by Park and Schepp et al.,[17] shows that if the problems are identified at an earlier age and if appropriate rehabilitation services could be provided then the complication can be prevented and this study aims at the same.

This study assessed the level of self-esteem among college students in a selected college of Dharmapuri district. The majority of Children of Alcoholic parents had low self-esteem and it shows a statistically significant association between the alcoholic status of the parents and the self-esteem of their adolescent children, which is supported by the findings of Hussong et al.,[18] which shows a significant association between COAs and their emotional and behavioral aspects such as insecurity, shyness, and low self-esteem. Our results are also in accordance with the results of Omkarappa et al.,[7] which studied Anxiety, depression, self-esteem among children of alcoholic and non-alcoholic parents and concluded that there is a statistically significant difference between COA and non-COA groups with regard to depression, anxiety self-esteem, social phobia, obsessive-compulsive problems, and physical injury. Our results are also supported by the results of Stanley and Vanitha et al.,[19] which studied the psychosocial correlates in children of alcoholics and concluded that there is lower self-esteem and poor adjustment in all domains, in the COAs than the nCOA controls that could be attributed to the amplified stress and compromised alcohol complicated internal environment of the COAs.

CONCLUSION

This study has provided another substantial evidence for lower self-esteem among adolescent children of alcoholic parents and their statistically significant association. Since the adolescent age group is considered to be the age group with fluctuating moods and a variety of choices, parental care, and role model plays a major role in shaping their future. As the good old saying "Prevention is better than cure", early identification of psychologically derailing students can ensure a productive output. With that intention, an interactive session was coordinated in the college where this study was conducted, by joining hands with the Psychiatrist, District Mental Health Program(DMHP) for all the students to boost up their morale and to clear them about the ill effects of alcoholism and ways to counter the influence of parental alcoholism.

LIMITATIONS

• The results cannot be generalized to all college students of the Dharmapuri district as the study was conducted among students of one college only.
• As the entire questionnaire was based on self-reported data, bias could be there as some might have reported only socially acceptable responses.
• Factors related to alcohol consumption such as quantity, duration, and factors related to self-esteem such as academic performances, stress and other psycho-social factors were not included in the study.

RECOMMENDATIONS

• Periodical interactive sessions for adolescent students and individual counseling sessions for students who find themselves low.
• Educating parents through affective domain approach, periodically through parent-teachers interactions.
• Periodical Life skill awareness and training sessions for teachers to identify and counsel students who are in need of psychological support.

RECOMMENDATIONS : Nil

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ORIGINAL ARTICLE - PHYSICAL MEDICINE AND REHABILITATION

SMART PHONE USAGE IN UPPER LIMB MUSCULOSKELETAL PAIN – A CROSS SECTIONAL STUDY

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Abstract

Introduction : Musculoskeletal disorder is defined as damage to the musculoskeletal structures as a result of repetitive motions, forces, and postures adopted during the execution of certain activities. Smartphone forces an individual to look at their phone's small screen and perform repetitive movements in an awkward posture for a prolonged duration, which can cause musculoskeletal problems.

Methodology: 50 participants of age 18 to 40 attending OPD at Department of Physical Medicine and Rehabilitation, Thiruvannamalai Medical College with complaints of pain involving neck and upper limbs were taken as participants between March 2022 and June 2022.

Results: The mean duration of screentime was 4.98 hours per day in the study population who presented with upper limb and neck pain who were smart phone users. The mean(SD) duration of smart phone usage in the study population was 4.6(±1.04) years. The maximum screentime was on gaming, social media, watching videos, reading, browsing, work related. The mean(SD) duration of the complaint was 6.18(±3.03) weeks.

Conclusion: The study reported that the prevalence of pain in smartphone users is high with common sites being neck, thumb, wrist, shoulder and back region.

Keywords: Pain, risk, smartphone, musculoskeletal problems

INTRODUCTION

Mobile phones creates convenient platform for communication. Smart phones were invented in the year 1992. Since the invention there has been usage of smart phone. It is estimated that around 2.5 billion people use smart phones. It is being observed that the usage is steadily increasing among adolescents which might affect them psychologically and lead to cumulative trauma disorders. Following COVID-19, smart phone use drastically imcreased among the school going children as schools were closed to break the chain of transmission and classed were held online. This has led to various health problems among school and college students. Office goers were made to work from home increasing the duration of device usage among employees. This sudden change in ergonomics have led to various pain syndromes like neck pain, shoulder pain, carpal tunnel syndrome, de Quervain's disease,etc. This study aims to observe the association between musculoskeletal pain and smart phone usage.

Ergonomics is the technology of work design which is based on the human anatomy, physiology, and psychology. It is important to create awareness in the community regarding the hazards of prolonged smart phone usage with regards to musculoskeletal system and its long term impacts. Though there are many other aspects such as phone addiction, accidents due to use while driving, psychosocial issues that are not in the scope of this study.

Various studies observe that head posture adopted while using electronic devise has been identified as one of the risk factors for musculoskeletal pain. It is also indicated that increased neck flexion angle while using smart phones is one of the risk factors for musculoskeletal pain [1] Neck flexion for prolonged periods at varying degrees increased weight loads on cervical spine dramatically and this increased stress potentially leads degenerative changes in the spine.[2] The pattern of phone usage and the posture adapted while holding the phone seems to be having an important role in determining the evolution of musculoskeletal pain. [3]

METHODOLOGY

STUDY POPULATION :

50 participants of age 18 to 40 attending OPD at thiruvannamalai medical college with complaints of pain involving neck and upper limbs.

STUDY PERIOD : March 2022 to June 2022

STUDY CENTRE : Department of Physical Medicine

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and Rehabilitation, Thiruvannamalai Medical College, Thiruvannamalai.

PROCEDURE : Patients within the age group 18-40 with complaints of neck and upper limb pain who attended OPD at Department of Physical Medicine and Rehabilitation at Thiruvannamalai Medical College Hospital were included in the study. Both sexes were included. The participants were given a customized questionnaire in both English and tamil to the study participants who consented to participate in the study. Demographic details like age, sex, occupation, education status, pattern and duration of smart phone usage were collected. The questionnaire also had a picture so that the participants can point out the site of pain. The duration of such complaint and was recorded. Statistical analysis was done.

INCLUSION CRITERIA :

- Both males and females
- Pain in neck and upper limb
- last 6 months of smart phone usage
- Consent to participate in the study

EXCLUSION CRITERIA :

- Racket sports
- Inflammatory joint disease
- Continuous electronic device use by occupation (computer job)
- Previous surgery/injury at pain site

DATA COLLECTION

Demographic details such as age, sex, education status, employment status were collected. The details of pattern of phone usage, duration of phone use and site of pain were collected.

RESULTS

64% of the participants were males and 36% were females. Among males 43% were belonging to 18 to 30 years age group and 57% were in the 31 to 40 years age group. Among females 57% belonged to 18 to 30 years age group and 43% were in 31 to 40 years age group. 60% of the study participants were employed, 30% unemployed and 10% were students. Education status of the population as follows 50% were graduates, 6% high school, 8% completed 10th class and 36% 12th class.

Mean(SD) duration of smart phone usage in the study population was 4.6(±1.04) years. Mean(SD) duration of smart phone usage among the population was 4.40(±0.95) years among males and 4(±1.88) years among females.

Mean(SD) duration of smart phone usage per day over

last week was 4.98(±1.67) hours per day. Mean(SD) duration of smart phone usage per day was (4.93±1.54) hours per day among males was and 4.98(±1.67) among females.

Table 1 : Demographic details

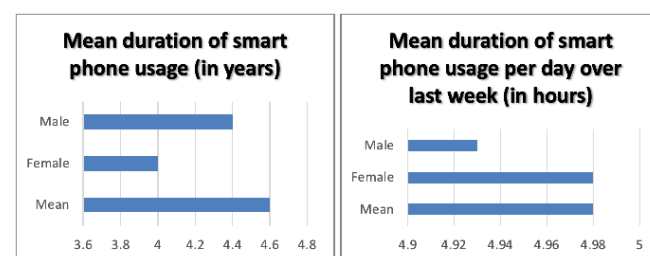| Demographic details			
Sex		male	64%(32)
		female	36%(18)
Age	Males	18-30 years	43%
		31-40 years	57%
	Females	18-30 years	57%
		31-40 years	43%
Employment status		Employed	60%
		Unemployed	30%
		Student	10%
Education status		Graduate	50%
		12th	36%
		10th	8%
		High school	6%

Figure 1 : Mean duration of smart phone usage

44% of the population had neck pain, 8% had shoulder pain, 12% had wrist pain, 8% had hand pain, 12% had upper back pain, 8% had thumb pain, 8% had shoulder pain, 10% had elbow pain, 2% had lowback pain and 2% had mid back pain.
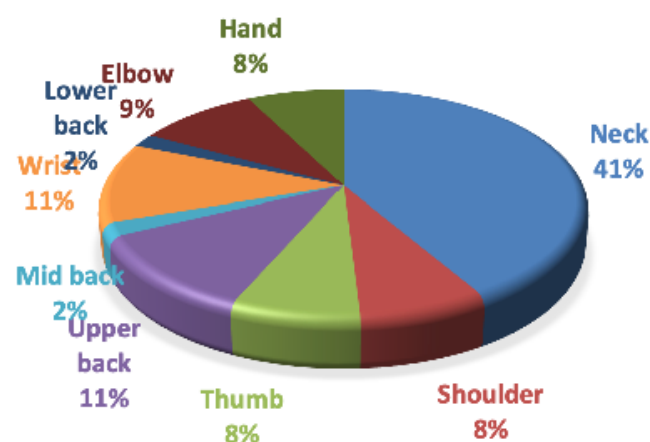

Figure 2 : Site of Pain

The maximum screentime was on gaming, social media, watching videos, reading, browsing, work related. The mean(SD) duration of the complaint was 6.18(±3.03) weeks. All the participants reported to use the smart phone by placing the phone below the chest level during screentime.

DISCUSSION

The mean duration of screentime was 4.98 hours per day in the study population who presented with upper limb and neck pain who were smart phone users. The aim of the study was to study the association between duration of phone usage and upper limb musculoskeletal pain. This study was conceptualized with the hypothesis that constant use of electronic gadget is associated with increase in risk of upper limb musculoskeletal pain and neck pain. This has been supported by limited number of studies in India. [5,6] This study was conducted at the Outpatient Department, Department of Physical Medicine and Rehabilitation, Government Thiruvannamalai Medical College, Tamil Nadu.

Musculoskeletal pain is associated with usage of other electronic devices that may be used occupationally with altered ergonomics (7), (8). The knowledge of ergonomics is not that widespread so as the usage of such devices.

In our study it was found that all the participants used the phone below the chest level while using indicating there was variable amount of neck flexion while usage. This may lead to pain on prolonged hours of usage of smart phone while used in positions that may cause increased load on the cervical spine (9) which can even lead to early degenerative changes. The mean(SD) duration of smart phone usage in the study population was 4.6(±1.04) years. As there is an increasing trend towards usage of smart phone from school time, prolonged phone use in neck flexed posture may even lead to kyphosis, early degenerative spine changes.

CONCLUSION

Our study shows that there is an association between prolonged smart phone usage and upper limb musculoskeletal pain. The most common complaint was neck pain.

LIMITATIONS

Small sample size. The effect of other environmental and occupational factors were not considered. There was no control group.

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6. Musculoskeletal disorder and pain associated with smartphone use: A systematic review of biomechanical evidence Aitthanatt Chachris Eitivipart 1 2, Sirinya Viriyarojanakul 3, Lucy Redhead 4

7. Low back pain in adolescents and association with sociodemographic factors, electronic devices, physical activity and mental health Thiago Paulo Frascareli Bento 1, Guilherme Porfirio Cornelio 2, Priscila de Oliveira Perrucini 3, Sandra Fiorelli Almeida Penteado Simeão 4, Marta Helena Souza de Conti 5, Alberto de Vitta 3

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9. The effect of static neck flexion on mechanical and neuromuscular behaviors of the cervical spine Roghayeh Mousavi-Khatir 1, Saeed Talebian 2, Nima Toosizadeh 3, Gholam Reaza Olyaei 4, Nader Maroufi 5

CASE REPORTS
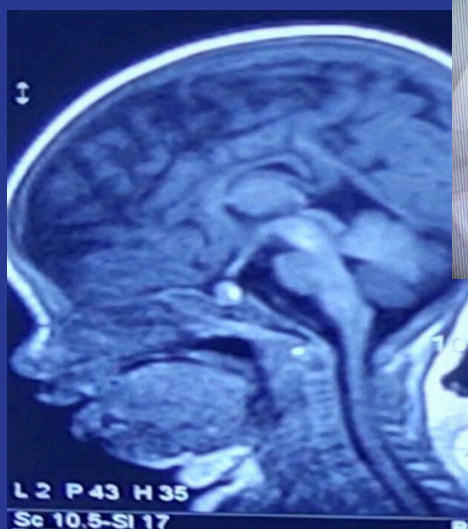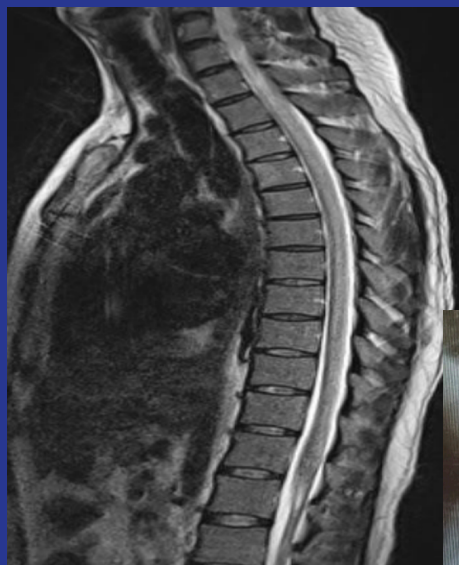
FOR MOST DIAGNOSES ALL THAT IS NEEDED IS AN OUNCE OF KNOWLEDGE, AN OUNCE OF INTELLIGENCE, AND A POUND OF THOROUGHNESS

CASE REPORT - PEDIATRICS

"THE BABY HOUDINI" – A CASE OF CENTRAL CONGENITAL HYPOTHYROIDISM

N. Vidhu Varsha [1], S. Srinivasan [1], Luke Ravi Chelliah [1]

(1) Institute of Child Health and Hospital for Children, Egmore

Abstract

Introduction : Central Congenital Hypothyroidism (CCH) is defined as an inadequate stimulation of the thyroid gland by the pituitary, at birth. 1 in 13000 children get affected by CCH. Although majority of CCH occur as a part of combined pituitary hormone deficiencies (CPHD), it can also occur rarely as an isolated condition. Upto 90% of isolated central CH cases have identifiable genetic causes (IGSF1, TBL1X, IRS4). This case report provides information on a practical approach to diagnosis and management of this alluring condition.
Conclusion : Due to the severity of the condition, early detection and treatment leads to good neurodevelopmental outcome.
Keywords : Congenital Central Hypothyroidism (CCH), New-born Screening, Combined Pituitary Hormone Deficiency (CPHD)

INTRODUCTION

Central congenital hypothyroidism (CCH) is a rare disorder at birth due to defective stimulation of a normal thyroid gland by thyroid stimulating hormone (TSH) with deficiency in thyroid hormone biosynthesis.[1,2] Thyroid hormone (TH) deficiency may be either due to defective development of thyroid gland or its function (primary or thyroidal CH), or due to inadequate stimulation of a normal thyroid gland by the pituitary (central CH). Although rarely an isolated condition, CCH often occurs as a part of combined pituitary hormone deficiencies (CPHD).[3,4] TH deficiency is difficult to recognize immediately after birth and it impedes the growth and development of brain.[5]

CASE REPORT

Figure 1 : Clinical Findings

A 2 month old male infant, first born of 3rd degree consanguineous marriage, was delivered at 38 week of gestation by Normal Vaginal Delivery with birth weight 2.45 kg, length 50cm , Head Circumference 35 cm falling between 10th-25th percentile, 25th-50th percentile and 50th-75th percentile respectively.

The child presented with history of yellowish discolouration of eyes noticed by the mother for 15 days, progressive in nature now involving whole body including palms and soles, history of high coloured urine 15 days, history of feeding difficulties and history of somnolence. No history of clay coloured stools

Antenatal History: uneventful

CLINICAL EXAMINATION

HEAD TO TOE EXAMINATION

Anterior Fontanelle (AF) - 5.5* 5 cms

Posterior Fontanelle (PF) - 6.5* 5 cms

Head Circumference (HC) - 37 cm

Eyes - icteric

Depressed nasal bridge

Small mouth

Protruding tongue

Dry skin

Abdomen - N

Genitalia - N

QUEBAC SCORING: 8/13

Other system examination: normal.

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INVESTIGATIONS

Complete Blood Count (CBC) : Mean corpuscular volume (MCV) - 104.9fl (elevated)

Total Biirubin (T.B) -**15.8**

Direct Bilirubin (D.B) - 0.8

Indirect Bilirubin (I.B)-**15**

Serum Glutamic-Oxalacetic Transaminase (SGOT) -50

Serum Glutamate Pyruvate Transaminase (SGPT) - 43

Random Blood Sugar (RBS) - 84

Thyroid Stimulating Hormone (TSH) - **0.094 mcg U/ml** (0.7-8.3)

Free Thyroxine (Ft4) - **0.02 mcgU/ml** (0.89-2.20)

USG (Neck): normally located thyroid gland.

Figure 2 : X-ray B/L knee

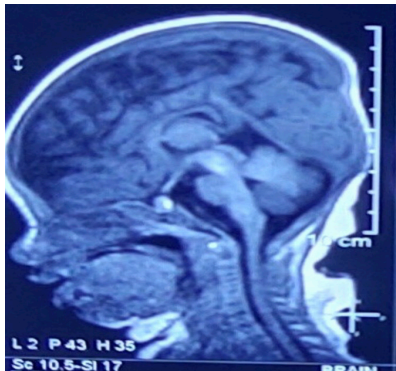X-ray both knee: Absence of epiphysis of both ends of femur.

Figure 3 : Magnetic Resonance Imaging (MRI) brain

MRI brain : Pituitary visualized.

HORMONAL EVALUATION

S. Cortisol - 5.01 (2.8 – 23)

Testosterone - 91.7(60-400)

Growth Hormone (GH) - 5.06 (2- 10)

Follicle Stimulating Hormone (FSH) - 2.3(<3)

Luteinizing Hormone (LH) - 0.2(<0.3)

Prolactin - **103 ng/ml (4.05-15.2)**

Based on the above investigation, the diagnosis is confirmed to be isolated central hypothyroidism by detection of elevated prolactin levels.

TREATMENT

The child was started on T.thyroxine 10 mcg/kg/day. After 3 days of Thyroxine administration, icterus reduced, feeding improved.

Repeat **T. Bilirubin is 5.6 and D. Bilirubin is 0.4.**

CONCLUSION

Due to nonspecific signs such as feeding difficulty, hypoglycaemia and prolonged jaundice, clinical diagnosis is often missed despite early hospital admission. Since TSH levels are low, TSH based newborn screening cannot detect central hypothyroidism. As early diagnosis is missed, children are at risk of developmental delay and growth failure. Both isolated and CPHD, if diagnosed and treated early has an excellent neurodevelopmental prognosis.

LIMITATION

Thyrotropin-releasing hormone (TRH) stimulation test and genetic analysis is not done for this child.

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CASE REPORT - PHYSICAL MEDICINE AND REHABILITATION

REHABILITATION OUTCOME OF SUBACUTE COMBINED DEGENERATION – A CASE REPORT

K. Sathish [1], K. Uma [1], K. Premalatha [1], B. Jayanthi [1], T. Jayakumar [1], C. Ramesh [1]

(1) Department of Physical Medicine and Rehabilitation Government & Institute of Rehabilitation Medicine, Madras Medical College, Chennai

Abstract

Background : Progressive degenerative condition of the spinal cord, due to vitamin B12 deficiency, is known as Subacute Combined Degeneration (SCD). SCD usually affects people older than 40. Frequently, it is due to the body's inability to absorb vitamin B12 and rarely due to dietary deficiency. The faster rate of nerve signal transmission is mainly due to a fatty layer known as Myelin sheath, that surrounds nerves. The formation and maintenance of this fatty sheath requires vitamin B12. Damage to this myelin sheath in SCD, cause sensory and motor nerve fibres from the spinal cord to degenerate. Damage to brain, nerves of the eyes, and peripheral nerves are also not uncommon.
Conclusion : The Physiotherapy interventions aimed at Rehabilitation and Restoration of a healthy lifestyle had a good result as anticipated.
Keywords : Physiotherapy, Subacute Combined Degeneration (SCD), Vitamin B12 replacement.

INTRODUCTION

Subacute combined degeneration (SCD) is a medical condition resulting from cobalamin deficiency. SCD is a posterolateral demyelination syndrome that manifests as rapidly progressive myelopathy with neurological deficits. Common presentations include progressive vibratory and proprioceptive abnormalities like ascending paraesthesia, gait ataxia, hyper or hyporeflexia. Motor weakness and bowel/bladder abnormalities occur infrequently.

CASE STUDY

A 34 years male with no comorbidities, non Alcoholic and vegetarian diet had difficulty in walking for 1month and pain while walking. He also gave a history of numbness of bilateral lower limbs which was gradual in onset and progressive in nature.

CLINICAL FINDINGS

Figure 1 : Clinical Findings

NEUROLOGICAL ASSESSMENT

Normal mental status

Extra Occular Muscles - Full No nystagmus

Muscle power 5/5 in both upper limbs

Muscle power 3/5 in both lower limbs

Stance ataxia

Wide based gait

Sensation- Fine touch and pin prick bilaterally decreased below hip

Bilateral loss of joint position and vibration sense

Deep Tendon Reflexes : Upper Limb – Normal (++) Lower limb – (+++) Bilaterally

Plantar – Bilateral Flexors

Positive Romberg's sign

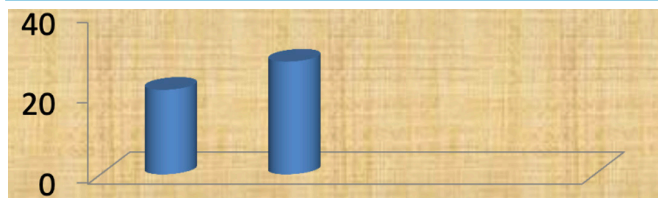Tinetti Balance Assessment tool improved from 21/28 to 28/28.

Figure 2 : Tinetti Balance Assessment tool

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Corresponding Author : S.K.Karl Marx
e-mail : karlmarxpt03@gmail.com

INVESTIGATIONS

Vitamin B12 - Improved from 112 pg/ml to 256 pg/ml (187-883 pg/ml)

Folic Acid - 598.1ng/ml (280-791 ng/ml)

Homocystine – 12.14 μmol/L (5.9-16 μmol/L)

NCS Lower limb - Sensory Neuropathy of lower limbs

Peripheral smear – Macrocytic Anaemia

MRI Brain with whole Spine Screening – **Symmetrical hyperintensity in dorsal cord from D3-D12 level predominantly involving the posterior column** (? Subacute combined degeneration of the cord)

Figure 3 : MRI Dorsal Spine

Figure 4 : Follow up

TREATMENT GIVEN

Inj. Cyanocobalamin 1000 mcg intramuscularly on alternate days for 4 weeks was given. He was also on T. Folvite 5 mg ,once daily, PO. He was provided with Intensive Neuro Rehabilitation Therapy, Gait training, Proprioceptive Neuromuscular facilitation, Sensory and motor re-education and Strengthening exercise

RESULTS

The patient regained muscle power from 3/5 to 5/5 in both lower limbs, regained full sensory perception in both lower limbs and achieved normal gait pattern.

DISCUSSION

The challenges in the treatment were Positive Romberg's sign with Ataxia and MRI showing Lesion involving > 7 segments. In such cases only 14% Recover completely. However, due to early initiation of rehabilitation and management led to a good recovery.

CONCLUSION

The extent of neurological damage can be minimized by early initiation of and tailoring rehabilitation program to the patient's functional needs. Early intensive rehabilitation facilitates complete recovery.

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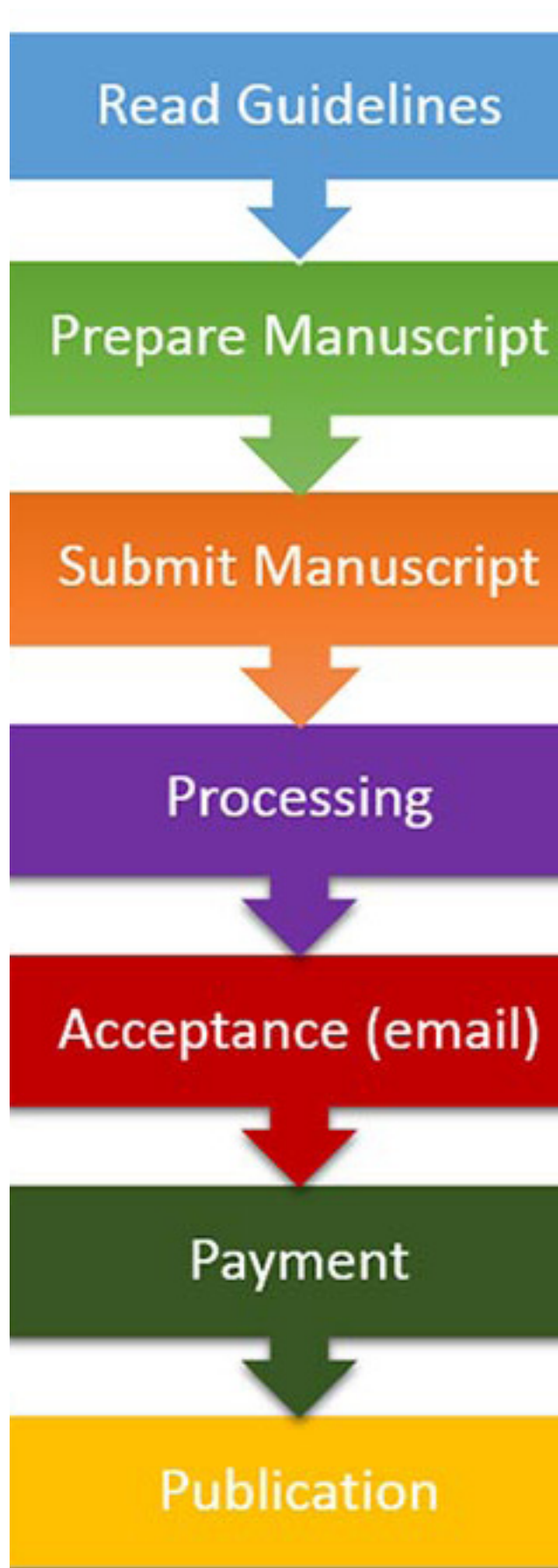
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