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Letter from the Editor's Desk

It is with great pleasure; I write this editorial message for the 3rd issue of the Tamil Nadu Journal of Public Health and Medical Research. The journal has achieved one more milestone, as it has been indexed with Google Scholar and Indian Citation Index. This is a critical step mutually benefiting the authors and the journal, as it increases the visibility of the articles published and enrich discussion. The editorial team is also working towards indexing with other agencies like Index Copernicus, Directory of Open Access Journals, Open J-Gate etc. which I assure will be completed soon.

This issue is unique as it has included a section focusing on specific health programs of Tamil Nadu which will be continued henceforth. This is introduced to have a scientific documentation of the health programs planned and its implementation in the state. This will benefit the readers to understand the comprehensive overview of the public health program.

Best wishes.

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

Director of Public Health & Preventive Medicine

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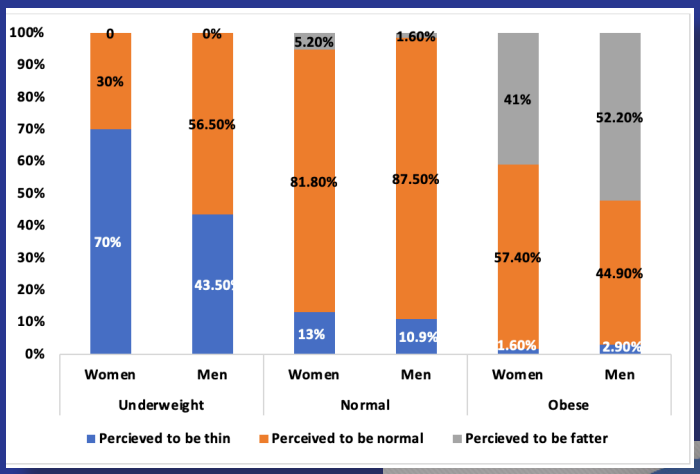

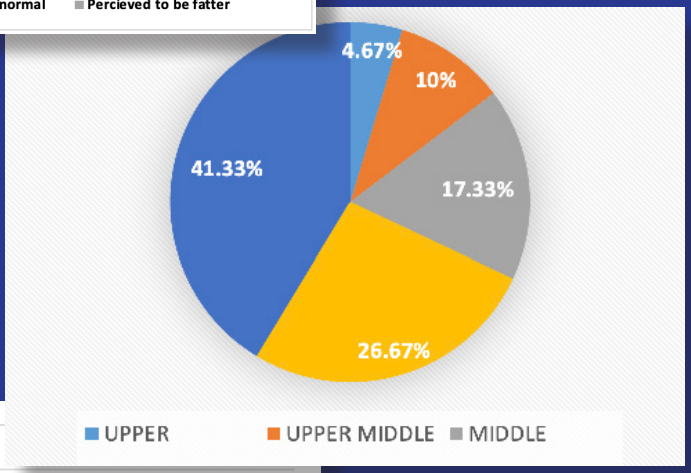

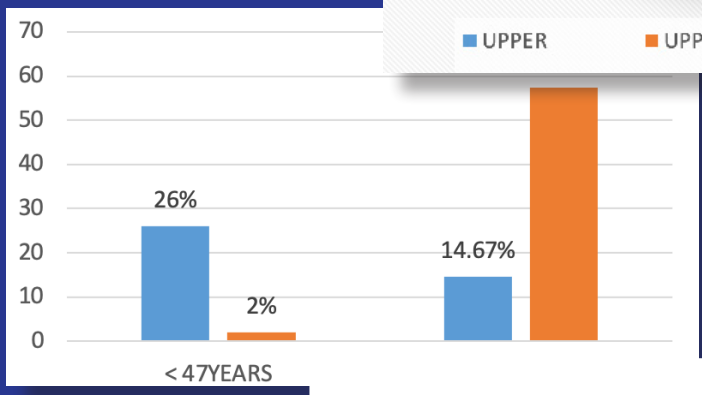

RESEARCH IS TO SEE WHAT EVERYBODY ELSE HAS SEEN, AND TO THINK WHAT NOBODY ELSE HAS THOUGHT.

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ORIGINAL ARTICLE - PUBLIC HEALTH

VACCINE HESITANCY TOWARDS COVID-19 VACCINE IN TAMIL NADU – A CROSS SECTIONAL STUDY

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Abstract

CONTEXT : Government of Tamil Nadu introduced the COVID-19 vaccination in a phased manner. Until 16th July 2021, 4.7 million and 19.8 million people have been fully and partially vaccinated. Despite vaccine availability and vaccination centre strategically spread across the state, the vaccination coverage continues to be low.

AIM : This study is planned to assess the prevalence of vaccine hesitancy and to understand the factors leading to vaccine hesitancy among the public of Tamil Nadu.

SETTINGS AND DESIGN : A cross-sectional study was conducted in all the health unit districts of Tamil Nadu. With a cluster size of 30 in each, total sample size covered was 2855 in 95 clusters. In each cluster, adults aged ≥18 years were surveyed using interviewer-administered questionnaire which had a section on demography, vaccination information, and perception towards vaccination. Data analysis was done using SPSS version 16. Chi square was used for inferential statistics with p value <0.05 considered as statistically significant.

RESULTS : Overall prevalence of vaccine hesitancy and refusal i.e. not willing to get vaccinated in the future was 51.2% and 12% respectively. Among non-vaccinated, unawareness of where to get vaccine was the most common reason quoted. Among vaccine refusers, complacency that they will not get Covid infection is the most common reason quoted. There was a significant gender, urban rural locality and age wise difference on the factors determining vaccine hesitancy.

CONCLUSION : A targeted approach should be followed to fight hesitation and further increase acceptance among people.

KEY WORDS : Vaccine hesitancy, vaccine refusal.

KEY MESSAGES : Among non-vaccinated, unawareness of where to get vaccinated was the most common reason for not getting vaccinated. Proximity to vaccination centres is a key determinant for improving the vaccination coverage among women. Larger proportion of adult population aged >60 years reported 'fear of death' as the reason for vaccine hesitancy.

INTRODUCTION

Government of Tamil Nadu introduced COVID-19 vaccination in a phased manner, offering 'Covaxin' and 'Covishield' free of cost to all adults aged ≥18years in 632 fixed vaccination centres across the state.[1] Until 16th July 2021, 4.7 million people and 19.8 million had been fully and partially vaccinated respectively.[2] Despite vaccine availability and vaccination centres strategically spread across the state, there is a delay in the acceptance or refusal of vaccines which is defined as vaccine hesitancy.[3] This study was conducted to assess the prevalence of vaccine hesitancy and the factors leading to vaccine hesitancy among the people of Tamil Nadu.

SUBJECTS AND METHODS

A cross-sectional study was done in all health unit districts of Tamil Nadu. The number of the sample size required to be included in the sample with 95% confidence with an assumed prevalence of 50%, and 5% margin of error was calculated using the following formula = $\frac{Z\alpha^2 pq}{d^2}$.

Corrected sample size = (estimated sample size x Design effect x age group estimate) / anticipated response rate. With design effect of two, age group to be estimated three (18-44 years, 45-60years,>60years) and anticipated response rate of 80%, minimum sample size required was 2880. With a cluster size of 30 in each, to cover 2880 sample size the total number of clusters required is 96. The Public Health Department of Tamil Nadu has stratified the state into 45 Health Unit Districts (HUD) for the better implementation and management of health-related programs. Within each HUD, the number of clusters was chosen based on population proportion to size. Habitation in rural areas and streets in urban areas were taken as clusters. The list of the habitation and streets in each HUD was obtained from the Epidemic Section of the Directorate of Public Health and Preventive Medicine. Clusters in each HUD were selected by a simple random sampling method. Each habitation and street in the rural areas and urban areas respectively were assigned a unique number for each HUD. In the second stage, in each of the selected clusters, one GPS coordinate was randomly selected, which was considered as the central point. From this central point, the survey team moved to their left to reach at least 30 households. In the selected household, one adult member of all the available household members was randomly selected

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by the KISH method. The survey was conducted during July 2021. All adult persons living in the household aged ≥18 years of age who gave informed written consent were included. The sample size covered was 2855. Two survey team comprising 2 field health workers (one male and one female) was formed in each HUD. Each survey team covered one cluster /day/team. The survey teams were supervised by a Medical Officer. To ensure quality and standardisation of data collection, all the survey team members were trained by the investigators on the sampling method and the questionnaire. Participants were surveyed using the interviewer-administered questionnaire. The questionnaire had a section on demography, vaccination information, and perception towards vaccination. For this study, factors for vaccine hesitancy were grouped as convenience, confidence, complacence, service provider-related challenges, awareness issues, and history of prior Covid 19 infection. An android based handheld mobile phone was used to collect survey data making the process easy, quick, flexible. 'Commcare' app which was pre-tested on handheld devices was used to collect the data with quality check on data collected. Data entered in the 'Commcare' app were downloadable in excel format which was checked for data quality and consistency. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 16.0. Operational definition used for defining vaccine hesitancy in this study is anyone who has not vaccinated yet despite their willingness to get vaccinated. Willingness to vaccination is considered if the individuals give an affirmative reply to the question, "Are you willing to get vaccinated in the future?". If the individuals had given answered 'no' to the above question, they were considered as 'vaccine refusal'. Institutional ethics clearance was obtained for the conduct of the study.

RESULTS

The total sample size covered was 2855. The mean age of the study population was 44.6years with standard deviation of 15.7 years. There was almost equal distribution in terms of gender and locality. (Table1).

Ninety-two percent of people were aware of the Covid-19 vaccination with Television being the major source of information. (Table 2)

Excluding 5 members for whom data on vaccination status was missing, among 2850 individuals, 36.8% had got vaccinated of whom 8.7% had completed two doses. (Table 3) The most common reason quoted by those who got vaccinated was 'to prevent disease'. (Table.5) Among the study population, 1802(63.2%) were non-vaccinated. Among vaccinated,

Table 1: Demographic characteristics of the study population

Demographic variable		Frequency (%)
Age Group	18-45 years	1596 (55.9)
	45-60 years	771 (27)
	>60 years	488 (17.1)
Gender	Men	1401 (49.1)
	Women	1453 (50.9)
	Others	1 (0.1)
Locality	Urban	1498 (52.5)
	Rural	1357 (47.5)
Among women(n-1453)	Pregnant	20 (1.4)
	Lactating	58 (4)
Marital status	Married	2376 (83.2)
	Divorced	3 (0.1)
	Separated	7 (0.2)
	Unmarried	322 (11.3)
	Widowed	147 (5.1)
Education	Illiterate	583 (20.4)
	Primary	583 (20.4)
	High School	718 (25.1)
	Higher Secondary	299 (10.5)
	Graduate	514 (18)
	Professional	45 (1.6)
Occupation	Government	150 (5.3)
	Homemaker	644 (22.6)
	Private	639 (22.4)
	Retired	100 (3.5)
	Self Employed	723 (25.3)
	Student	85 (3)
	Unemployed	414 (14.5)

Overall vaccine hesitancy and vaccine refusal was reported by 51.2% and 12% respectively. (Figure.1)

Table 2: Awareness towards Covid-19 vaccine among study population (n- 2855)

Knowledge of vaccine availability	2630 (92.1%)
Source of Information	
Relatives	611 (23.2%)
Friends	406 (15.4%)
Colleagues	188 (7.1%)
Television	**1267 (48.2%)**
Newspaper	436 (16.6%)
Social Media	542 (20.6%)
Health staff	764 (29%)
Other sources	79 (3%)

Table 3: Vaccination Status among study population (n-2855)

Vaccination status	**Frequency (%)**
Vaccinated	1048 (36.7)
Only 1 dose	802 (28.1)
Completed 2 doses	246 (8.6)
Not Vaccinated	1802 (63.1)
Missing	5 (0.2)

The most common reason quoted for initial hesitancy among vaccinated was 'fear of injection', 'fear of complications', 'difficulty in registering in Cowin app' and 'unaware of vaccine'. (Table 6) Among people who did not get vaccinated, the most common reasons quoted for hesitancy was 'fear of injection', 'fear of complications', 'complacence-that they would not get Covid' 'was told that there is a shortage of vaccine' and 'unaware of place of vaccination'. (Table 6)

Table 4: Place of Vaccination among vaccinated

Place of vaccination	**1st dose (n- 1048)**	**2nd dose (n-246)**
Government	968 (92.4%)	225 (91.4%)
Private	43 (4.1%)	14 (5.6%)
Workplace	37 (3.5%)	7 (2.8%)

Table 5 :Reason for getting vaccinated#(n-1048)

Reason for getting vaccinated	**Frequency# (%)**
Prevents disease	868 (82.8)
Prevents Spread	248 (23.7)
Mandate at workplace	125 (11.9)
Compulsion from family friends	45 (4.3)
Requirement for travel	35 (3.3)

(#- multiple options were selected)

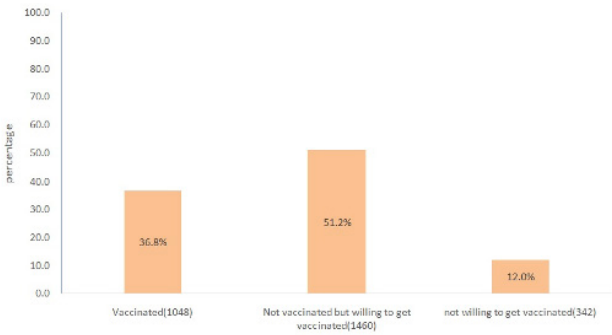
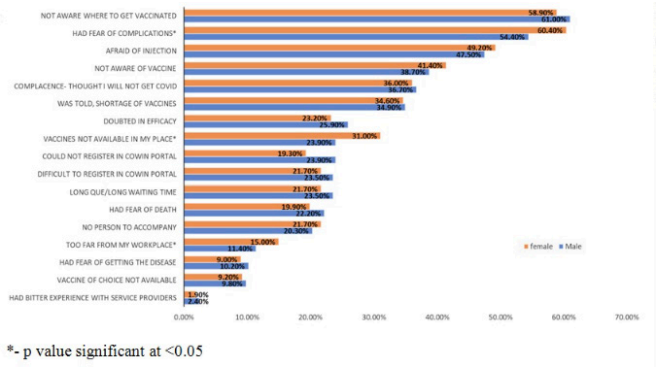


Figure 1: Covid-19 vaccination status among study participants (n=2850)



*- p value significant at <0.05

Figure 2: Gender differences in factors determinig vaccine hesitancy

Table 6: Factors determining vaccine hesitancy#

Presence of initial vaccine hesitancy among vaccinated (n-1048)	238 (22.7%)	
Reason for vaccine hesitancy	**Among vaccinated (n-238)**	**Among non-vaccinated (n-1802)**
Convenience		
No person to accompany	53 (23.3%)	379 (21%)
Too far from my workplace	26 (10.9%)	240 (13.3%)
Long que/long waiting time	28 (11.8%)	406 (22.5%)
The vaccine of choice is not available	21 (8.8%)	172 (9.5%)
Afraid of injection	**129 (54.2%)**	**872 (48.4%)**
Confidence		
Doubted in efficacy	63 (26.5%)	441 (24.5%)
Had fear of complications	**131 (55%)**	**1038 (57.6%)**
Had fear of death	47 (19.7%)	377 (20.9%)
Had fear of getting the disease	24 (10.1%)	172 (9.5%)
Complacence- thought I will not get COVID	**64 (26.9%)**	**655 (36.3%)**
Service provider challenges		
Difficult to register	**86 (36.1%)**	406 (22.5%)
Could not register in Cowin portal	49 (20.6%)	387 (21.5%)
Vaccines not available in my place	26 (10.9%)	499 (27.7%)
Was told, shortage of vaccines	42 (17.6%)	**626 (34.7%)**
Thought not a priority group	24 (10.1%)	-
Had bitter experience with service providers	14 (5.9%)	38 (2.1%)
Awareness issues		
Not aware of vaccine	**113 (47.5%)**	724 (40.2%)
Not aware where to get vaccinated	100 (42%)	**1079 (59.9%)**
Had got covid infection previously	**28 (11.8%)**	**117 (6.5%)**

(#- multiple options were selected)

Among people who are not willing to get vaccinated at all, the most common reason quoted was complacency that 'I will not get Covid infection' followed by 'fear of injection', 'fear of complications', 'no person to accompany' and registering in 'Co-win app a complicated process. (Table.7)

Cross tabulation showed that a higher proportion of men, living in urban localities and belonging to the age group 45-60 years got vaccinated compared to their counterparts. (p-value <0.005) (Table. 8) However, among non-vaccinated, there was no statistically significant difference between gender and locality based on willingness to get vaccinated. People aged >60 years reported a higher proportion of non-willingness compared to other age-group which was statistically significant. (p-value <0.001) (Table .9)

Table 7 : Reason for Vaccine refusal# (n-342)

Complacency	
I will not get the Covid disease	**275 (80.4%)**
Covid is not a big disease	65 (19%)
I got infected with Covid	11 (3.2%)
Confidence	
Afraid of injection	**163 (47.7%)**
Fear of complications	**146 (42.7%)**
Fear of death	94 (27.5%)
Fear of getting Covid	12 (3.5%)
Doubt in efficacy	23 (6.7%)
Convenience	
Too far from my place	61 (17.8%)
No person to accompany	**88 (25.7%)**
Long queue	45 (13.2%)
Long waiting time	32 (9.4%)
The vaccine of choice is not available	20 (5.8%)
Loss of wages	74 (21.6%)
Timing not suitable	57 (16.7%)
Not available on holidays	3 (0.9%)
Service provider gaps	
Cowin app complicated process	**158 (46.2%)**
Irregular supply	80 (23.4%)
Vaccine shortage	100 (29.2%)

Table 8 : Cross tabulations between demographic factors and vaccination status

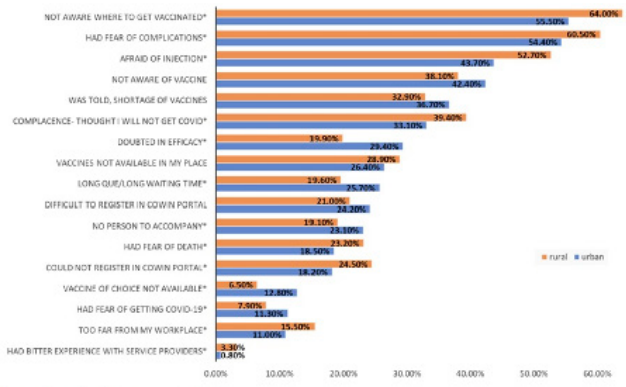
Demographic factor	Vaccinated	Non -vaccinated	Chi-square	p-value
Gender				
Male	566 (40.4%)	834 (59.6%)	15.716	**<0.001***
Female	482 (33.3%)	967 (66.7%)		
Locality				
Urban	629 (42%)	867 (58%)	37.665	**<0.001***
Rural	419 (30.9%)	935 (69.1%)		
Age Group				
18-44 years	543 (34.1%)	1050 (65.9%)	12.545	**0.002***
45-60 years	319 (41.4%)	451 (58.6%)		
>60 years	186 (38.2%)	301 (61.8%)		

*p value significant at <0.05

Table 9 : Cross tabulations between demographic factors and willingness to get vaccinated

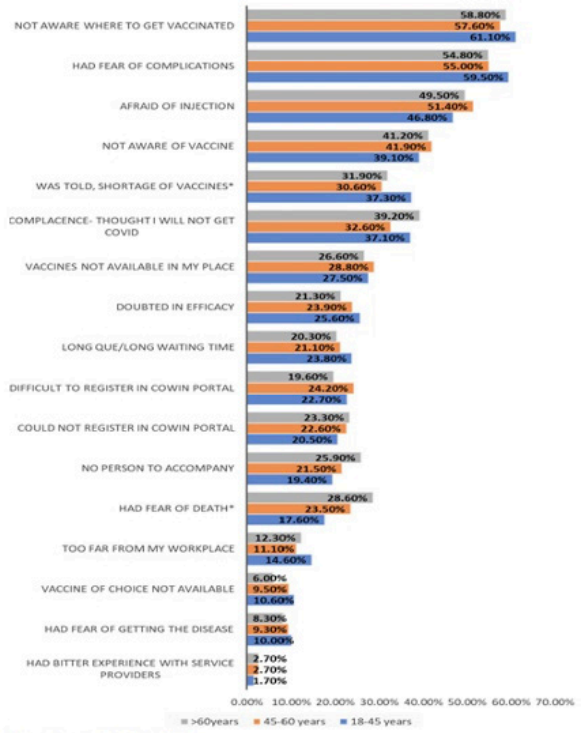
Demographic factor	Vaccinated	Non -vaccinated	Chi-square	p-value
Gender				
Male	566 (40.4%)	834 (59.6%)	15.716	**<0.001***
Female	482 (33.3%)	967 (66.7%)		
Locality				
Urban	629 (42%)	867 (58%)	37.665	**<0.001***
Rural	419 (30.9%)	935 (69.1%)		
Age Group				
18-44 years	543 (34.1%)	1050 (65.9%)	12.545	**0.002***
45-60 years	319 (41.4%)	451 (58.6%)		
>60 years	186 (38.2%)	301 (61.8%)		

*p value significant at <0.05



*- p value significant at <0.05

Figure 3 : Urban Rural difference in factors determining vaccine hesitancy



*- p value significant at <0.05

Figure 4 : Age difference in factors determining vaccine hesitancy

DISCUSSION

Vaccine coverage among this study population is 36.7%. This study reported vaccine hesitancy of 51.2%, which includes people who have not been vaccinated yet. Overall, 12% of the study population were not willing to get vaccinated (vaccine refusers). The results are comparable to the study conducted among Egyptian medical students which showed 35% acceptance among students, 46% were hesitant, and 19% refused.4Among Indian Medical students, vaccine hesitancy was found among 10.6%.[5] A study which was published in the Nature journal examined vaccine acceptance and hesitancy rates in low and middle countries from Asia, Africa, and South America. This study revealed that willingness to get vaccines was considerably high in developing countries compared to that of developed countries.[6]

This study also reported that almost 92% of the study participants were aware of the Covid vaccine. Television was the most common source of information which is similar to the finding in a study conducted in the United States.[7]

There was a significant difference between vaccinated and non-vaccinated based on gender, locality of residence, and age group. However, there was no significant difference based on gender and locality of residence on willingness to get vaccinated. The finding is like the findings from other studies

which reported that men were more willing to get vaccinated compared to women. A study done in the general public of the UK found that 21.0% of women were vaccine-hesitant compared to 14.7% of male participants.[8] Similarly in an online survey conducted by Maria CORDINA et al, found that males were more willing to take the vaccine.[9]

The age-wise difference in vaccine acceptance was observed in this study, with a higher proportion of people in 45-60 years got vaccinated compared to other age groups. However, a larger proportion of adults aged >60 years were refusing to get vaccinated compared to other age groups. Mixed evidence is seen across studies concerning the relationship between age group and vaccine hesitancy. In the study done by Maria Cordina et al, people of 40 to 49 years were hesitant to take vaccine while those >60 years were intending to take the vaccine[9].In the comparison study between Low Middle Income Countries (LMIC)and High Income Countries(HIC), showed a mixed response between countries. In India and Nigeria, respondents younger than 25 years of age are significantly less willing to take the vaccine compared to adults who are 25–54 years old, while in Mozambique and Rwanda, respondents under 25 years are significantly more accepting compared to those 55 years and over. In the United States and Russia, older respondents have consistently more acceptance than younger respondents.[10]

Among the study participants, 36.7% had received at least one dose of vaccine. The most common reason quoted by the study participants for accepting vaccines was it prevents disease followed by prevention of the spread of infection. This finding is in line with the finding from the study conducted in LMIC wherein the most given reason for vaccine acceptance was personal protection against COVID-19 infection followed by protecting the family.[10] This is very similar to the most common reason quoted by the Egyptian medical students 'Fear of being infected or infecting family with, especially parents who were willing to get vaccinated.[4]

In this study, 22.7% of participants who got vaccinated reported initial hesitancy. The most common reason for such hesitancy was fear of complications followed by fear of injection and lack of awareness of the vaccine. Among non-vaccinated, unawareness of where to get vaccinated was the most common reason quoted for not getting vaccinated, followed by fear of complications and fear of injection. This finding is unique to this study, as the most common reason stated for low uptake of Covid vaccines among the public in other studies were concerns about long term effects, side effects, and unknown future effects on health.[4,9-11]

Stratified analysis based on gender, urban-rural locality, and age group disclosed key nuances which were otherwise not considered. There was a significant difference between gender for the factors, 'fear of complications', 'vaccine not available in my place, 'too far away from my workplace'. All these factors were significantly high among women, pointing to the fact that proximity to vaccination centres is a key determinant for improving the vaccination coverage among women. More women reported fear of complications compared to men, which needs to be addressed. The IEC campaigns with contents targeting complications and adverse effects following vaccination should be publicized. Media platforms which is largely seen by the women population should be chosen to create awareness.

The urban-rural difference was observed in the reasons quoted for vaccine hesitancy. Compared to the urban population, a significantly higher proportion of rural people had reported confidence-related issues like 'fear of complications', 'fear of death, 'afraid of injection'. Similarly, a significantly higher proportion of rural people had reported 'unawareness on where to get vaccinated, 'inability to register in Cowin portal' and 'too far off from workplace'. A larger number of the rural population have had a bad experience with service providers which prevented them from getting vaccinated. All these are pointing to the fact that sufficient information regarding the vaccine is yet to reach rural population and its adverse effects overshadowing benefits. Information on place of vaccination which is very crucial was also found lacking. COWIN portal, which is the national portal used for registering for vaccination doesn't mandate prior registration as people can walk in and do on-spot registration. However, registering in the COWIN portal was considered a potential barrier as people lacked information regarding 'walk-in sessions.'

On the other hand, a significantly larger proportion of the urban population 'doubted the efficacy of the vaccine and feared Covid infection following injection as the reason for non-vaccination. Also 'non-availability of vaccine of their choice ' was reported significantly higher among urban population compared to their rural counterparts. These findings point out that the urban population's access to information is high compared to rural.

Age group difference disclosed that a larger proportion of the adult population aged >60 years reported 'fear of death' as the reason for vaccine hesitancy. In contrast, the younger age group reported 'information on shortage of vaccines' as the reason for vaccine hesitancy.

Among vaccine refusers, (ie who are not willing to get vaccinated) complacency that they will not get Covid infection is the most common reason quoted followed by fear of injection and complications following vaccination. A similar finding was found in a developed country like the USA, where some hesitant respondents cite lack of concern about COVID-19 infection as a reason not to be vaccinated.[10]

'One size fits all strategy will not work as this study pointed out that there are differences in the reasons quoted for non-vaccination based on gender, locality, and age-group. Hence interventions that are customized to address these differences should be made to ensure that the right information is disseminated to a larger population using different media platforms.

The strength of this study is a sample taken in all the districts making the results generalizable to the entire state. Stratum-specific analysis on reasons quoted for non-vaccination enables further framing specific strategies to increase the uptake.

CONCLUSION

Unvaccinated people not only put themselves at risk but also the people around them. In the absence of large-scale vaccination, the coronavirus will remain a challenge. A targeted approach should be followed to combat hesitation and further increase acceptance among people.

REFERENCES

1. WHO. Getting the COVID-19 Vaccine [Internet]. WHO.int. 2021 [cited 2021 Aug 17]. Available from: https://www.who.int/news-room/feature-stories/detail/getting-the-covid-19-vaccine

2. Kumar V. Report on the COVID 19 Vaccination Coverage across Health Unit district wise in Tamil Nadu as on 22.07.2021 [Internet]. 2021 [cited 2021 Aug 18]. Available from: https://tn.data.gov.in/catalog/report-covid-19-vaccination-coverage-across-health-unit-district-wise-tamil-nadu-15082021#web_catalog_tabs_block_10

3. Aranda S. Ten threats to global health in 2019 [Internet]. World Health Organisation (WHO). 2019 [cited 2021 Aug 17]. p. 1–18. Available from: https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019

4. Saied SM, Saied EM, Kabbash IA, Abdo SAEF. Vaccine hesitancy: Beliefs and barriers associated with COVID-19 vaccination among Egyptian medical students. J Med Virol. 2021;93(7):4280–91.

5. Jain J, Saurabh S, Kumar P, Verma MK, Goel AD, Gupta MK, et al. COVID-19 vaccine hesitancy among medical students in India. Epidemiol Infect [Internet]. 2021 [cited 2021 Aug 17]; Available from: https://doi.org/10.1017/S0950268821001205

6. Solís Arce JS, Warren SS, Meriggi NF, Scacco A, McMurry N, Voors M, et al. COVID-19 vaccine acceptance and hesitancy in low- and middle-income countries. Nat Med [Internet]. 2021;27(August). Available from: http://dx.doi.org/10.1038/s41591-021-01454-y

7. Vaccine Hesitancy towards COVID-19 Vaccination Investigating the Role of Information Sources through aMediation Analysis.pdf.

8. Robertson E, Reeve KS, Niedzwiedz CL, Moore J, Blake M, Green M, et al. Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study. Brain Behav Immun [Internet]. 2021;94(January):41–50. Available from: https://doi.org/10.1016/j.bbi.2021.03.008

9. Cordina M, Lauri MA, Lauri J. Attitudes towards covid-19 vaccination, vaccine hesitancy and intention to take the vaccine. Pharm Pract (Granada). 2021;19(1):1–9.

10. Mina S, Balhara YPS, Verma R, Mathur S. Anxiety and Depression amongst the urban females of Delhi in Ante-partum and Post-partum period. Delhi Psychiatry J. 2012;15(2):347–51.

11. Razai MS, Chaudhry UAR, Doerholt K, Bauld L, Majeed A. Covid-19 vaccination hesitancy [Internet]. Vol. 373, The BMJ. 2021. Available from: http://dx.doi.org/10.1136/bmj.n1138

ORIGINAL ARTICLE - PUBLIC HEALTH

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A CROSS-SECTIONAL STUDY TO DETERMINE THE AVERAGE MENOPAUSAL AGE AND ITS ASSOCIATED FACTORS IN ALAMADHI, REDHILLS

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Abstract

INTRODUCTION : Menopause is the permanent cessation of menstruation at the end of fertile reproductive life due to loss of follicular function of ovary. It is the point of time when last and final menstruation occurs. Clinically confirmed by stoppage of menstruation(amenorrhea) for 12months without any other pathology.

OBJECTIVES : To determine the average age at which women attain natural menopause and to assess the factors influencing the onset of menopause among women in Alamadhi, Redhills.

METHODLOGY : A cross sectional study was conducted in Alamadhi, Redhills. 150 postmenopausal women were included in the study during the period between July 13 2021 and October 13 2021. After obtaining informed consent from the participants, details were collected by face-to face interview using semi structured questionnaire designed for the study.

RESULTS: Average age of menopause is 47.33 years. Consumption of carrot and green leafy vegetables, mother's menopausal age, age of puberty, age of marriage, number of conceptions affected menopausal age.

CONCLUSION: This study illustrated that menstrual and fertility factors have influence on menopausal age while socioeconomic factors were not effective. Identifying menopausal age and its determining factors may modify the menopausal status of women and the management of perimenopausal period.

INTRODUCTION

Menopause is the permanent cessation of menstruation at the end of fertile reproductive life due to loss of follicular function of ovaries. It is the point of time when last and final menstruation occurs. Clinically confirmed by stoppage of menstruation (amenorrhea) for 12months without any other pathology. Artificial menopause is the cessation of menstruation following either surgical removal of both ovaries or iatrogenic cessation of ovarian function (e.g. chemotherapy or radiation). Pre-menopause refers to period prior to menopause, post-menopause refers to period after menopause and perimenopause refers to period around menopause (40-55 years). Climacteric period is the period of time during which a woman passes from the reproductive to the non-reproductive stage and this phase covers 5-10 years on either side of menopause. The major consequences of menopause are related primarily to estrogen deficiency. Principle health concerns of menopausal women include vasomotor symptoms, vaginal dryness, urogenital atrophy, osteoporosis, cardiovascular diseases, cancer, cognitive decline and sexual problems.

A women's age at menopause may affect the type and severity of her menopausal symptoms. Early menopause is associated with increased risk of cardiovascular and osteoporosis. Delayed menopause is associated with increased risk of breast and endometrial cancer. Smoking, nulliparity and low socioeconomic status is associated with early menopause, whereas higher socioeconomic status, higher number of total pregnancies, prolonged breast feeding and use of oral contraceptive pills is associated with delayed menopause.

The age of menopause ranges between 45-55 years all over the world, average age being 50 years. Factors determining the age of attainment of natural menopause vary between different populations and even among different ethnic groups. Detection of the average age at menopause is of great importance in planning health services for postmenopausal women.

OBJECTIVES

1. To determine the average age at which women attain natural menopause.
2. To assess the factors influencing the onset of menopause among women in Alamadhi, Redhills.

METHODOLOGY

STUDY DESIGN : Cross sectional study

STUDY PLACE : Alamadhi, Redhills

STUDY PERIOD : 4 months (From July 13 2021 to October 13 2021)

STUDY POPULATION : Postmenopausal women

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INCLUSION CRITERIA :

1. Women who have attained menopause within past 5 years.
2. Women who have given consent for the study.

EXCLUSION CRITERIA :

1. Artificial menopause were excluded.

SAMPLE SIZE :

According to the study done by Ozdemir, O., & Cöl, M. (2004). The age at menopause and associated factors at the health center area in Ankara, Turkey. Maturitas, 49(3), 211–219 , prevalence of natural menopause was 72.8%. Sample size was calculated with p- 72.8%, q- 27.2% with relative precision of 11%, sample required for the study was calculated as Sample size n =4pq/d2, n= 139 (with non- response rate of 10%). But 150 participants were interviewed in our study.

SAMPLING METHOD : Purposive sampling

STUDY TOOL:

Questionnaire was developed in English with the help of 6 members who were well-versed in menopausal study. Questionnaire contains parameters of name, age, address, weight, socioeconomic status, intake of carrot and green leafy vegetables, diet type, menopausal age, mothers menopausal age, age of puberty, age of marriage, consanguinity of marriage, number of conceptions, duration of breast feeding, family planning, socio-economic status and other health problems like PCOD, thyroid & fibroid uterus.

DATA COLLECTION METHOD:

After obtaining written and informed consent from the women who have attained menopause within past 5 years in Alamadhi, Redhills. At the start of interview, the purpose of the study was explained to the women under study. All information was collected from the study participants by One to One Interview method using Closed ended questionnaires. Questions were read out to the study subjects in exactly the same order as listed in the questionnaire and sufficient time was given to the subject to respond. If the respondent did not understand the questions, it was repeated in the same manner without probing for the answer. If the respondent was still doubtful about the answer, it was recorded as 'No'. At the end of the interview, postmenopausal women under study was aware of the average menopausal age and factors influencing the onset of menopause.

DATA ANALYSIS :

After collecting, the data was compiled and entered in Microsoft Excel Sheet. Analysis was done using SPSS software version 16. All continuous variables were expressed as Mean and Standard Deviation. All categorical variables were expressed as Percentages and Proportions. The test considered significant if p value <0.05, at 95% confidence interval.

DATA ANALYSIS AND INTERPRETATION

MENOPAUSAL AGE FREQUENCY

Mean menopausal age among the study population is approximately 47.33 years, 95% confidence interval = 46.646 to 48.034. The study showed that, out of the 150 women interviewed, 88 women attained menopause at normal menopausal age i.e. between 47 and 53 years constituting 58.7%; 61 women attained menopause < 47 years constituting 40.7% which is earlier than the normal menopausal age; 1 woman attained menopause after 53 years constituting 0.7% of the total women under study.

Table 1: Frequency of menopausal age

Menopausal Age	Frequency	Percent
< 47 years	61	40.7%
47-53 years	88	58.7%
> 53 years	1	0.7%
Total	**150**	**100.0%**

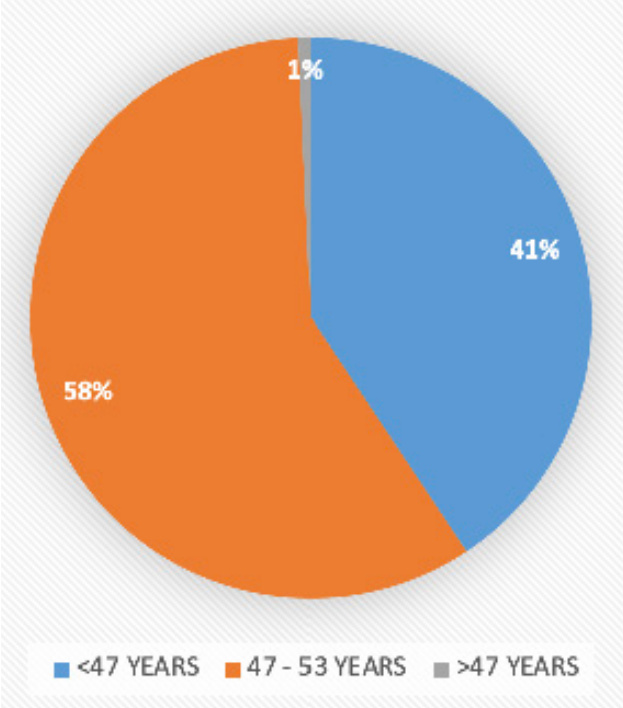

Figure 1 : Frequency of menopausal age

Table 2 : Distribution of menstrual, fertility and socio economic factors

Parameters		Frequency	Percent
Intake of Carrot & Vegetables	Yes	127	84.66%
	No	23	15.34%
Diet Type	Veg	6	4%
	Non-Veg	144	96%
Mothers Menopausal Age	< 47 Years	42	28%
	> 47 Years	108	72%
Age of Puberty	< 14 Years	63	42%
	> 14 Years	87	58%
Age of Marriage	< 20 Years	122	81.34%
	> 20 Years	28	18.66%
Consanguinity of Marriage	Yes	86	57.3%
	No	64	42.7%
Number of Conceptions	≤ 3	61	40.66%
	> 3	89	59.33%
Duration of Breast Feeding in Single Pregnancy	< 6 Months	30	20%
	> 6 Months	120	80%
Family Planning (Tubectomy)	Yes	81	54%
	No	69	46%
Socio Economic Status (Pareek's Classification)	Upper	7	4.66%
	Upper Middle	15	10%
	Middle	26	17.33%
	Lower Middle	40	26.67%
	Lower	62	41.33%
Other Health Problems	Pcod	6	4%
	Thyroid Disorder	10	6.66%
	Fibroid Uterus	16	10.66%
	No Problem	118	78.66%

CARROT AND GREEN VEGETABLES INTAKE FREQUENCY

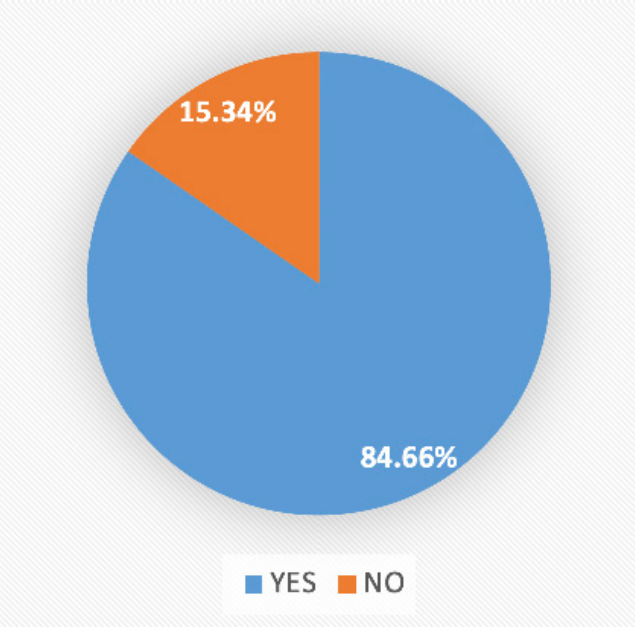

Figure 2 : Intake of carrot and green leafy vegetables

Out of 150 subjects, 127(84.66%) consumed carrot and green leafy vegetables more than twice a week and 23(15.34%) did not consume carrot and green leafy vegetables more than twice a week.

FREQUENCY OF VEG AND NON-VEG

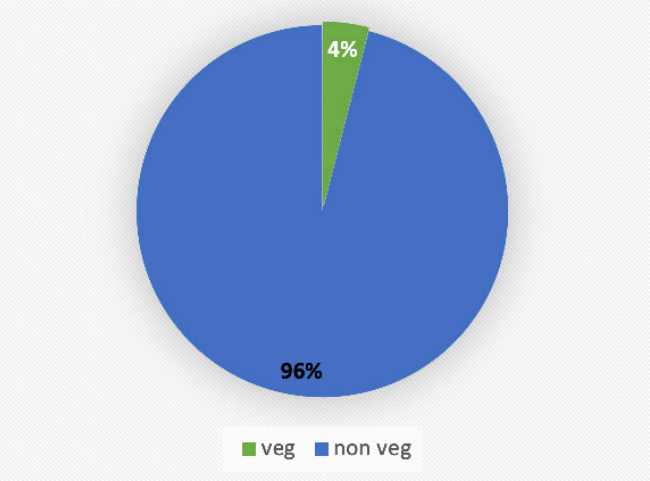

Figure 3 : Frequency of veg and non veg

Out of 150 subjects, 144(96%) were non vegetarians and 6(4%) were vegetarians.

MOTHER'S MENOPAUSAL AGE FREQUENCY

Out of 150 subjects, 108(72%) mothers of women under study attained menopause ≥47 years of age and 42(28%) mothers of women under study attained menopause <47 years of age.

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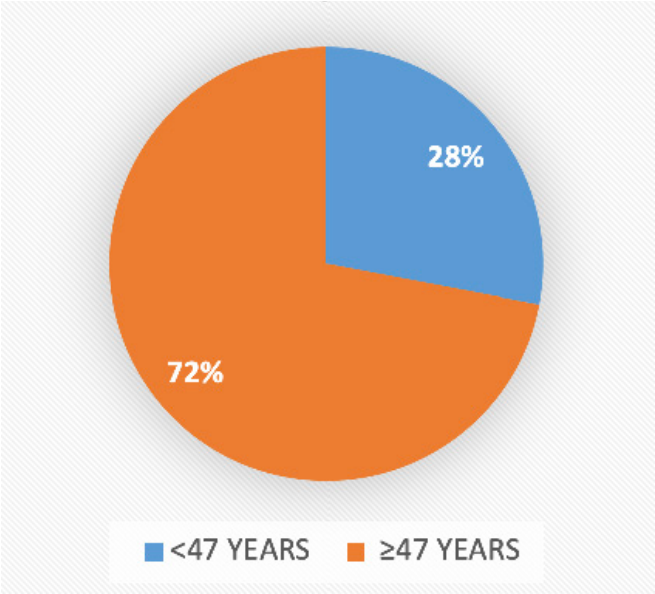

Figure 4 : Frequency of menopausal age

FREQUENCY OF AGE OF PUBERTY

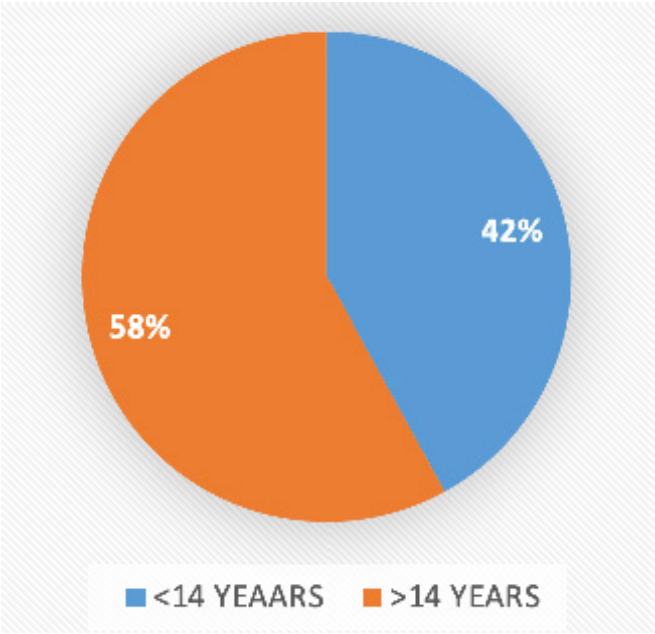

Figure 5 :Frequency of age of puberty

Out of 150 subjects, 87(58%) attained puberty more than 14 years of age and 63(42%) attained puberty less than 14 years of age.

MARITAL AGE FREQUENCY

Out of 150 subjects, 122(81.34%) were married below 20 years of age and 28(18.66%) were married above 20 years of age.

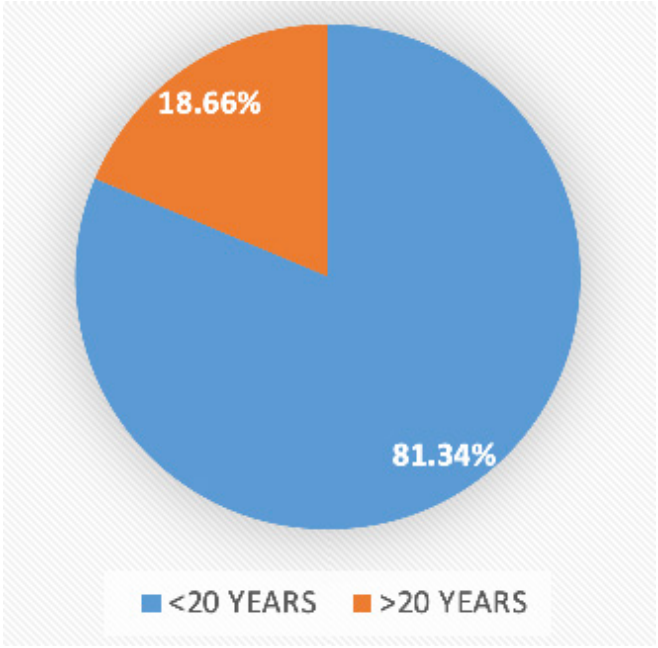

Figure 6 : Frequency of marital age

CONSANGUINITY FREQUENCY

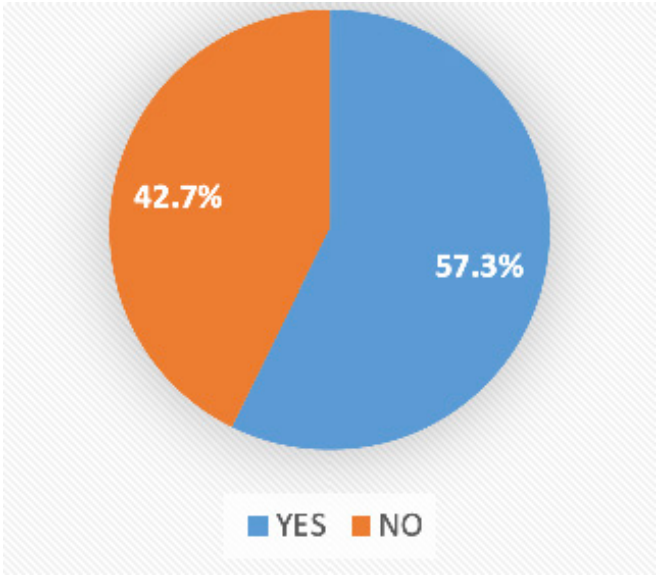

Figure 7 : Frequency of consanguinity

Out of 150 subjects, 86(57.3%) had consanguineous type of marriage and 64(42.7%) had non consanguineous type of marriage.

CONCEPTION FREQUENCY

Out of 150 subjects, 89(59.33%) had more than 3 conceptions and 61(40.67%) had ≤3 conceptions.

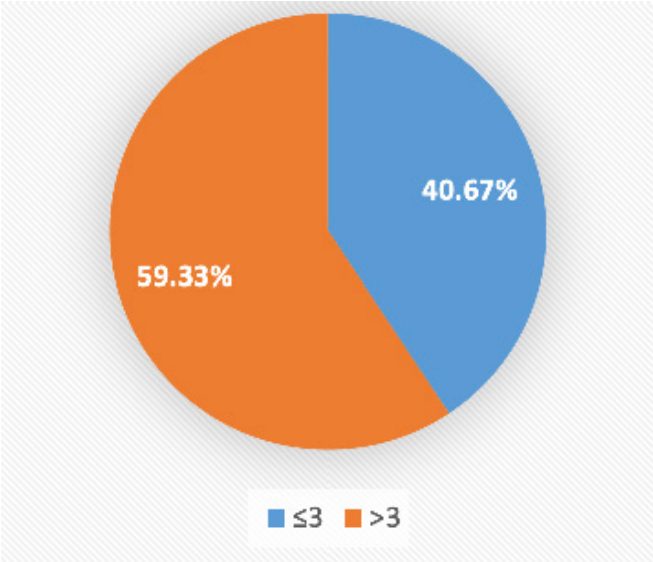

Figure 8 : Frequency of conception

DURATION OF BREAST FEEDING FREQUENCY IN EACH CHILD

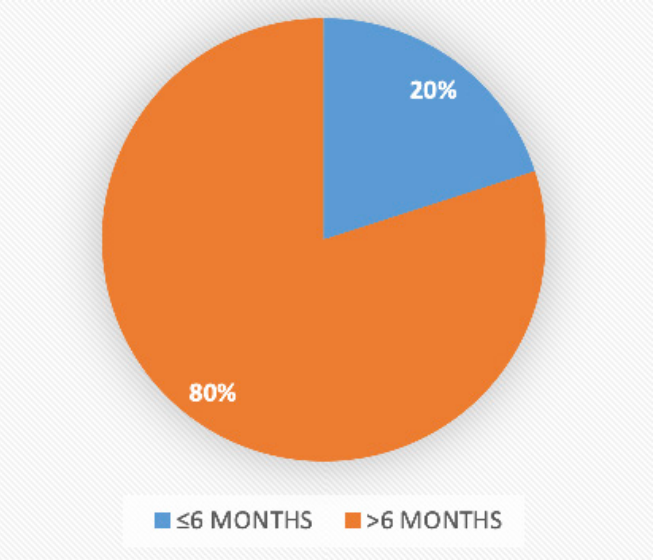

Figure 9 : Frequency of duration of breast feeding

Out of 150 subjects, 120(80%) had breastfed the baby for more than 6 months and 30(20%) had breast the baby for less than 6 months.

FAMILY PLANNING (TUBECTOMY) FREQUENCY

Out of 150 subjects, 81(54%) had done tubectomy and 69(46%) hadn't done tubectomy.

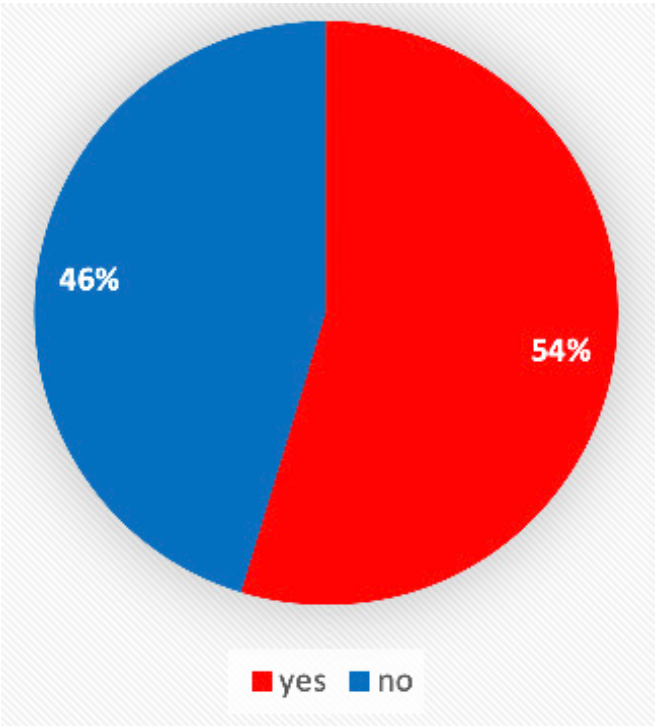

Figure 10 : Frequency of tubectomy

SOCIO-ECONOMIC STATUS FREQUENCY

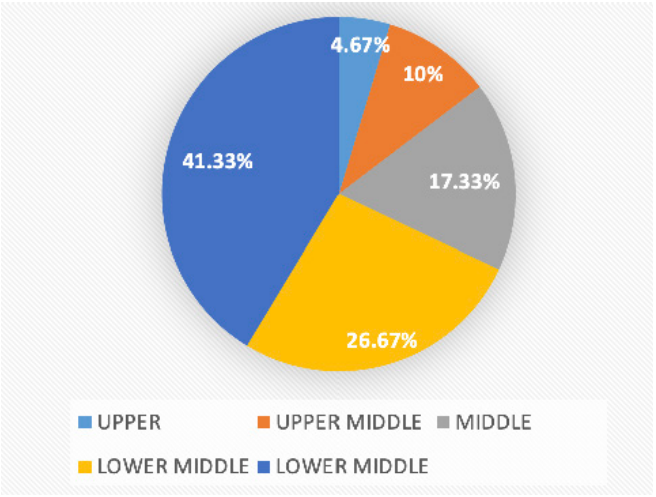

Figure 11 : Frequency of tubectomy

Out of 150 subjects, 7(4.67%) were in upper class, 15(10%) were in upper middle class, 26(17.33%) were in middle class, 40(26.67%) were in lower middle class, 62(41.33%) were in lower class of Pareeks's classification of socioeconomic status.

FREQUENCY OF OTHER HEALTH PROBLEMS

Out of 150 subjects, 118(78.66%) had no other health problems, 16(10.66%) had fibroid uterus, 10(6.66%) had thyroid disorder and 6 (4%) had PCOD.

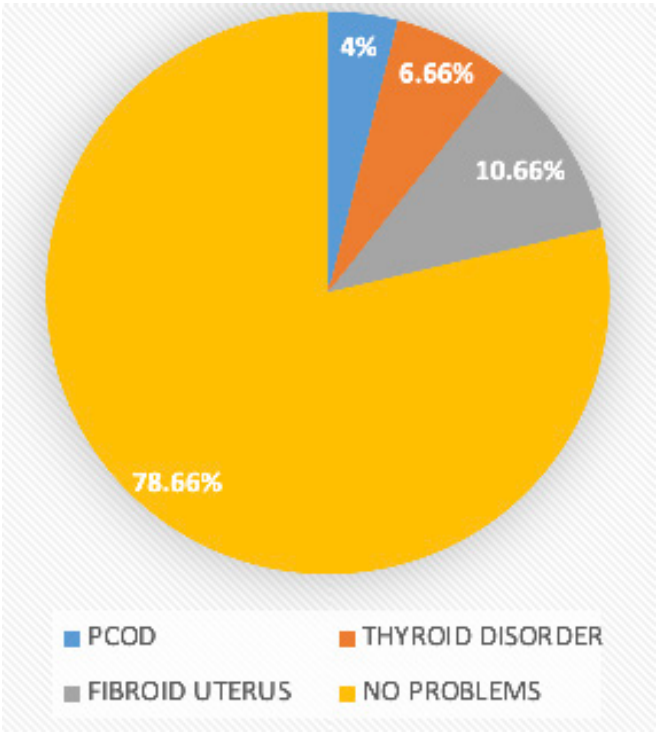

Figure 12 : Frequency of other health problems

ASSOCIATION OF MENSTRUAL, FERTILITY AND SOCIO ECONOMIC FACTORS WITH MENOPAUSAL AGE

Table 3 : Association of menstrual, fertility and socio economic factors with menopausal age

Parameters		Menopausal Age		Chi Square Value	P Value
		<47	≥47		
Intake of carrot and green leafy vegetables	Yes	45 (30%)	82 (54.66%)	9.39	0.002167
	No	16 (10.66%)	7 (4.66%)		
Diet type	Veg	1 (0.67%)	5 (3.33%)	1.49	0.221908
	Non Veg	60 (40%)	84 (56%)		
Mothers menopausal age	< 47 Years	39 (26%)	3 (2%)	65.84	<0.00001
	≥ 47 Years	22 (14.67%)	86 (57.33%)		
Age of puberty	< 14 Years	54 (36%)	9 (6%)	91.35	<0.00001
	≥ 14 Years	7 (4.67%)	80 (53.33%)		
Age of marriage	< 20 Years	58 (38.66%)	64 (42.66%)	12.8	0.000347
	≥ 20 Years	3 (2%)	25 (16.66%)		
Consanguinity	Yes	35 (23.33%)	51(34%)	0.000102	0.992849
	No	26 (17.33%)	38 (25.33%)		
Duration of breast feeding for each child.	≤ 6 Months	15 (10%)	15 (10%)	1.35	0.244608
	> 6 Months	46 (30.67%)	74 (49.33%)		
Parameters		Menopausal Age		Chi Square Value	P Value
		<47	≥47		
No of conceptions	≤ 3	37 (24.67%)	24 (16%)	17.02	0.000037
	> 3	24 (16%)	65 (43.33%)		
Family planning (tubectomy)	Yes	37 (24.66%)	44 (29.33%)	1.83	0.175719
	No	24 (16%)	45 (30%)		
Socioeconomic status (Pareek's classification)	Upper	3 (2%)	4 (2.66%)	1.77	0.4134
	Upper Middle	6 (4%)	9 (6%)		
	Middle	9 (6%)	17 (11.33%)		
	Lower Middle	14 (9.33%)	26 (17.33%)		
	Lower	29 (19.33%)	33 (22%)		
Other health problems	PCOD	3 (2%)	3 (2%)	2.45	0.486772
	Thyroid	3 (2%)	7 (4.66%)		
	Fibroid Uterus	9 (2%)	7 (4.66%)		
	No Problem	46 (30.66%)	72 (48%)		

ASSOCIATION BETWEEN INTAKE OF GREEN AND YELLOW VEGETABLES AND MENOPAUSAL AGE

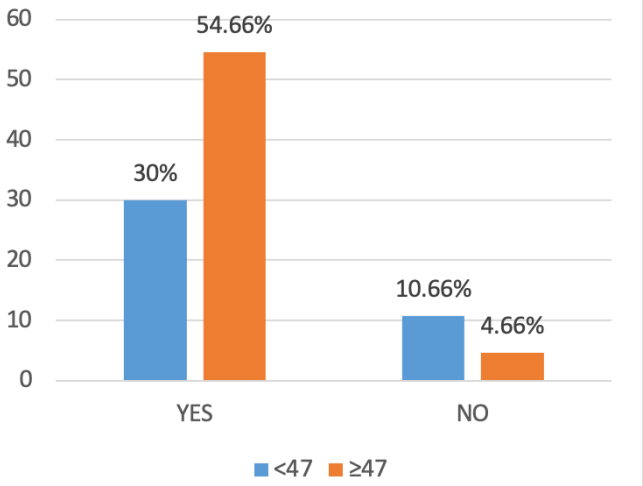

Figure 13 : Association between intake of green and yellow vegetables and menopausal age

Chi square = 9.39 p-value = 0.002167

There is significant association between consumption of carrot and green leafy vegetables and menopausal age.

Among the women who attained menopause ≥47 years, 54.66% consumed carrot and green leafy vegetables more than twice a week when compared to 4.66% who did not consume carrot and green leafy vegetables more than twice a week.

ASSOCIATION BETWEEN SUBJECTS MOTHER MENOPAUSAL AGE AND SUBJECTS MENOPAUSAL AGE

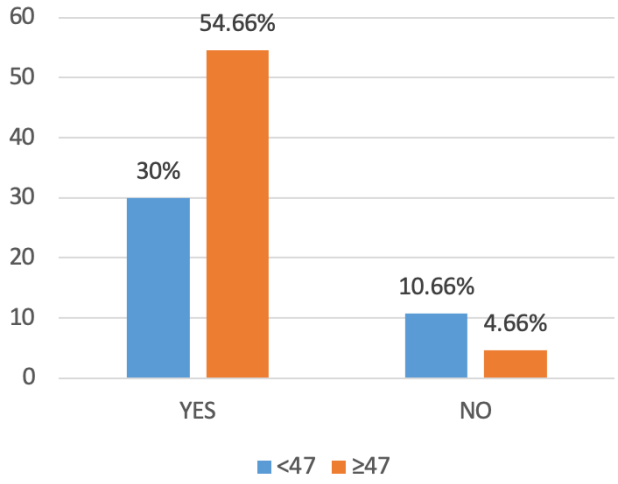

Figure 14 : Association between subject's mother menopausal age and subjects menopausal age

Chi-square = 65.84 p-value = <0.00001

There is significant association between subject's mother menopausal age and menopausal age of women under study.

Among the women who attained menopause ≥47 years, 57.33% subjects mother menopausal age is ≥47 years when compared to 2% whose subjects mother menopausal age <47years.

ASSOCIATION BETWEEN PUBERTAL AGE AND MENOPAUSAL AGE

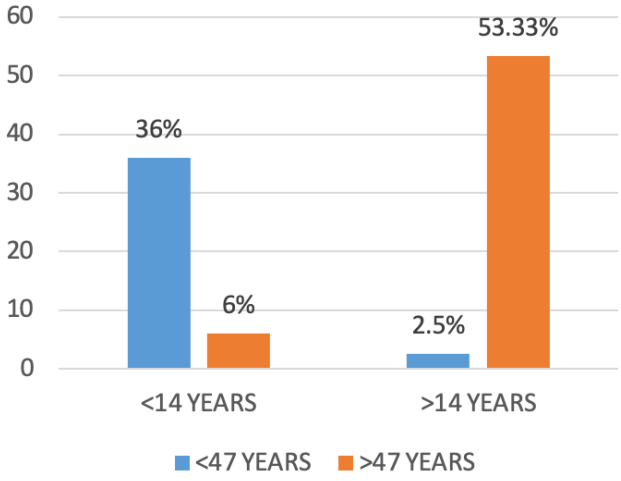

Figure 15 : Association between pubertal age and menopausal age

Chi-square = 91.35 p-value = <0.00001

There is significant association between age at puberty and menopausal age.

Among the women who attained menopause ≥47 years, 53.33% attained puberty ≥14 years when compared to 6% who attained puberty <14 years.

ASSOCIATION BETWEEN AGE OF MARRIAGE AND MENOPAUSAL AGE

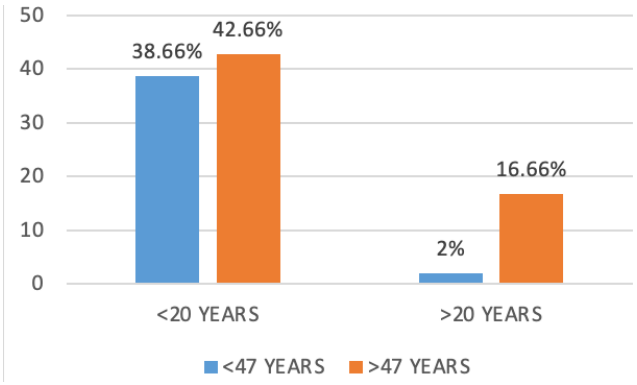

Figure 16 : Association between marital age and menopausal age

Chi-square = 12.8 p-value = 0.000347

There is significant association between age of marriage and menopausal age.

Among the women who attained menopause ≥47 years, 42.66% married within 20 years of age when compared to 16.66% who married after 20 years of age.

ASSOCIATION BETWEEN NUMBER OF CONCEPTIONS AND MENOPAUSAL AGE

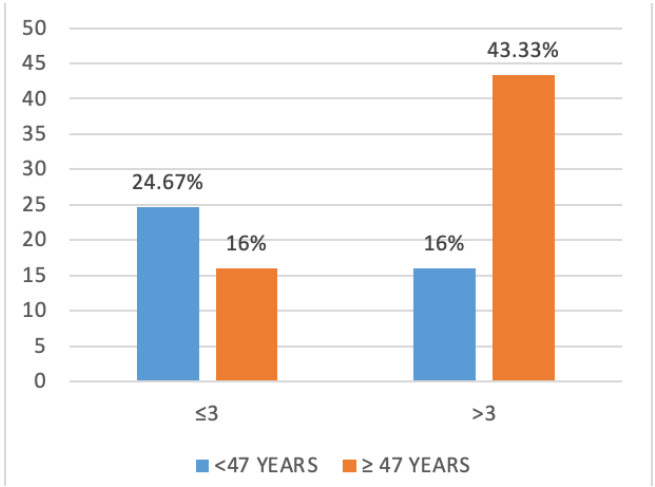

Figure 17 : Association between number of conceptions and menopausal age

Chi-square = 17.02 p-value = 0.000037

There is significant association between number of conceptions and menopausal age.

Among the women who attained menopause ≥47 years, 43.33% had history of conceptions >3 when compared to 16% who had ≤3 conceptions.

DISCUSSION

The study was successfully carried out for a period of 4 months covering 150 women who have attained menopause within past 5 years and the following results were interpreted.

i) Mean menopausal age is found to be approximately 47years. In most of studies average age of menopause is between 47 to 52years. Average age of menopause in turkey is 47.4.[1] Average age of menopause in Iran is 47.6 years.[11] Average age of menopause in Puerto Rican women is 51.4years.[3] Average age of menopause in Greene county, New York is 50.1years.[9] Average age of menopause in UAE is 48 years.[12]

ii) 58.7% of women attained menopause at the normal menopausal age i.e. 47 to 53years.

iii) 54.66% of women consuming carrot and green leafy vegetables more than twice a week, attained menopause ≥47years.

iv) 71.33% of women who attained menopause ≥47 years was very similar to their mother's menopausal age. The studies (Oya Ozdemir et al, 2004, Rizk et al, 1998, Princci et al, 2016) indicated the presence of a positive correlation between the mothers' and the subjects' age at menopause.

v) 53.33% of women who attained puberty above 14 years, attained menopause ≥47 years. The study report by Oya Ozdemir et al, 2004 and Lin Li et al, 2012 also showed association between age of puberty and onset of menopause similar to our study.

vi) 42.66% of women who married before 20 years, attained menopause ≥47 years. Association between age of marriage and onset of menopause was not supported by any studies.

vii) 43.33% of women who had >3 conceptions, attained menopause ≥47 years. Association between number of conceptions and onset of menopause was also seen significant in Lin Li et al, 2012; Rizk et al, 1998; Sievert et al, 2001and Abdollahi et al, 2013.

From the study conducted, it is seen that fertility, menstrual and nutritional factors affect the age of onset of menopause; association of socio-economic factors with menopausal age is not significant.

CONCLUSION

- Consumption of carrot and green leafy vegetables prevents earlier menopause
- Mother's menopausal age equals the daughter's menopausal age.
- Later the age of puberty, later is the onset of menopause.
- Marriage between 18 and 20 years of age delays the onset of menopause.
- More the number of conceptions, later is the onset of menopause.

RECOMMENDATIONS

- Take carrot and green leafy vegetables more than twice a week.
- Efforts should be made to provide education about the menopause to all women in their respective communities, especially to those who are approaching their fifth decade to better prepare them for this change of life.
- Identifying menopausal age and its determining factors may modify the menopausal status of women and the management of peri-menopausal period
- Health problems should be detected and treated at an early stage. So regular health check-up is necessary.

LIMITATIONS

- The women, during their interview, were unable to recall their mother's menopausal age appropriately. So there is a recall bias.
- 150 women who were interviewed had not taken OCPs, which was coincidental, so the significance of OCPs over the menopausal age was not assessed.

REFERENCES

1. O O, M C. The age at menopause and associated factors at the health center area in Ankara, Turkey. Maturitas [Internet]. 2004 Nov 15 [cited 2022 Apr 1];49(3).

2. Van der Schouw YT, van der Graaf Y, Steyerberg EW, Eijkemans JC, Banga JD. Age at menopause as a risk factor for cardiovascular mortality. Lancet. 1996 Mar 16;347(9003):714–8.

3. Ortiz AP, Harlow S, Sowers M, Romaguera J. Age at natural menopause in a sample of Puerto Rican women. P R Health Sci J. 2003 Dec;22(4):337–42.

4. Nagata C, Wada K, Nakamura K, Tamai Y, Tsuji M, Shimizu H. Associations of physical activity and diet with the onset of menopause in Japanese women. Menopause. 2012 Jan;19(1):75–81.

5. Pokoradi AJ, Iversen L, Hannaford PC. Factors associated with age of onset and type of menopause in a cohort of UK women. Am J Obstet Gynecol. 2011 Jul;205(1):34.e1-13.

6. Li L, Wu J, Pu D, Zhao Y, Wan C, Sun L, et al. Factors associated with the age of natural menopause and menopausal symptoms in Chinese women. Maturitas. 2012 Dec;73(4):354–60.

7. Gold EB, Crawford SL, Avis NE, Crandall CJ, Matthews KA, Waetjen LE, et al. Factors related to age at natural menopause: longitudinal analyses from SWAN. Am J Epidemiol. 2013 Jul 1;178(1):70–83.

8. Snowdon DA, Kane RL, Beeson WL, Burke GL, Sprafka JM,

Potter J, et al. Is early natural menopause a biologic marker of health and aging? Am J Public Health. 1989 Jun;79(6):709–14.

9. Sievert LL, Waddle D, Canali K. Marital status and age at natural menopause: considering pheromonal influence. Am J Hum Biol. 2001 Aug;13(4):479–85.

10. Li C, Samsioe G, Borgfeldt C, Lidfeldt J, Agardh CD, Nerbrand C. Menopause-related symptoms: what are the background factors? A prospective population-based cohort study of Swedish women (The Women's Health in Lund Area study). Am J Obstet Gynecol. 2003 Dec;189(6):1646–53.

11. Ayatollahi SMT, Ghaem H, Ayatollahi S a. R. Sociodemographic factors and age at natural menopause in Shiraz, Islamic Republic of Iran. East Mediterr Health J. 2005 Mar;11(1–2):146–54.

12. Rizk DE, Bener A, Ezimokhai M, Hassan MY, Micallef R. The age and symptomatology of natural menopause among United Arab Emirates women. Maturitas. 1998 Jun 17;29(3):197–202.

13. Abdollahi AA, Qorbani M, Asayesh H, Rezapour A, Noroozi M, Mansourian M, et al. The menopausal age and associated factors in Gorgan, Iran. Med J Islam Repub Iran. 2013 May;27(2):50–6.

14. Pirincci E, Oguzoncul AF, Tasdemir R. Age at the onset of menopause and its influencing factors in Turkish women in a rural area. Journal of Women & Aging. 2016 May 3;28(3):238–46.

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ORIGINAL ARTICLE - PUBLIC HEALTH

BODY IMAGE DISSATISFACTION AND MISPERCEPTION AMONG MEDICAL STUDENTS IN CHENNAI – A CROSS-SECTIONAL STUDY

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Abstract

Introduction: Body image dissatisfaction (BID) is defined as the negative perceptions and feelings a person has about their body. BID has been proven to have an impact on physical health as well as psychological well-being. The objective of this study is to find the prevalence of body image dissatisfaction among medical students in Chennai.

Methods: A cross-sectional study was done among 314 medical students studying in a medical college in Chennai. Informed written consent was obtained from study participants. A semi-structured self-administered questionnaire was used. Body image discrepancy was assessed using the Contour Drawing Rating Scale. The participants were asked to choose the figure that most accurately reflects their actual figure (FELT BODY IMAGE) and the figure that they would like to look like (IDEAL BODY IMAGE). The feel-ideal discrepancy is used as an index of body image dissatisfaction. Any coping habits adopted for changing body image were also obtained. Misperception is defined as a mismatch between the BMI category and felt body image.

Results: Among the students, 75.8% were dissatisfied with their body image, of whom, 33.6% had a desire to be thin and 66.3% had a desire to be fat. Among students who were overweight /obese, 93.9% were dissatisfied with their body image($p<0.001$). Among students who had dissatisfaction, 46.6% had adopted coping strategies. However, on comparing with Body mass index, 51.6% had a misperception about their body image.

Conclusion: The study highlights the high prevalence of body image dissatisfaction as well as misperception among medical students.

INTRODUCTION

According to National Eating Disorders Collaboration, body image is defined as a person's perception of their physical self and the thoughts and feelings, positive, negative, or both, which result from that perception.[1] It has different aspects to it. Body image perception is how one sees his/her own body, which is always not a correct representation of how one looks. For example, a person may perceive themselves as overweight when they are under-weight which is called Body Image misperception (BIM) Another aspect is how one wants to be, which is called ideal body image. When there is a discrepancy between the perceived and ideal body image, it may lead to body image dissatisfaction (BID). BID is how one feels about their body, which relates to the amount of satisfaction or dissatisfaction a person has towards their body.[1] A positive feel towards ones' body leads to increased self-esteem, self-acceptance and enables adopting a balanced lifestyle. A negative feel towards ones' body leads to BID. While BID is largely an internal process, it is influenced by various external factors. One of the most common and important external factors which influence body image perception and satisfaction is media, most recently social media. Ideal body images promoted by media, make people constantly fight to meet these standards, and in the process, they end up in BID, which can impact both physically and psychologically. BID has been largely associated with eating disorders, social isolation, depression, etc.

Though BID is a problem of all ages, it is one of the top-ranked issues among young people. Once considered to be a problem among young women, it has been stated in developed countries, that the prevalence among men is now fast approaching closer to that of women. 2,3 Medical students, with fair knowledge of human biology, are expected to have a correct perception and a positive feel towards their body image. Studies conducted among women medical students in India and elsewhere have shown that there is a substantiate proportion of this population is dissatisfied with their body image. 4–6 Very sparse literature is available on BID among male medical students.[7] However there is a dearth of evidence on body image misperception and its relationship with BID among medical students. Hence, this study was conducted to find the prevalence of Body image misperception and Body image dissatisfaction and to further find the relationship

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between BIM and BID among medical students.

METHODOLOGY

A cross-sectional study was conducted among medical students of a medical college in Chennai. The sample size was calculated assuming a prevalence of 52% body image dissatisfaction among female medical students in India 6, with 5% alpha error and 10% relative precision the required sample size was 354. The list of medical students from 1st year to final year was obtained. Using a computer-generated random number, the required sample size was selected. The selected participants were approached and informed of the purpose of the study. Among 354 participants approached, 314 agreed to participate in the study. Informed written consent was obtained from all the study participants. Institutional Ethics Committee clearance was obtained. A semi-structured self-administered questionnaire was used, which collected information on the demographic profile of the participants.

While there are numerous assessment tools available to measure body image, figural drawing scales are the most commonly used as they are proven to be both valid and reliable.[8] For this study, Contour Drawing Rating Scale was used, as it has been validated for use in both adolescents and adults.[8-10] This scale consists of nine 9 silhouette figure drawings of females and males with varying sizes, ranging from underweight (1) to overweight (9). Participants were asked to circle the body figure that best matches their current and their ideal body shape from 1 to 9. Figures 1-3 denote lean images, figures 4-6 denote normal images, figures 7-9 denote obese images. Then the difference "ideal—current" is calculated. Any difference was considered as BID. Zero, positive and negative scores indicate contentment with body shape, desire to be thinner, and desire to be fatter respectively.

The height and weight of the participants were measured using a stadiometer standardized to the nearest of 0.1cm and weight was measured using a digital weighing machine to the nearest to 0.1 kg respectively. Body mass index levels were calculated according to the revised guidelines for Asians (especially Southeast Asian adults including Indians) {Underweight: BMI < 18.5; Normal Weight: BMI 18.5-22.9; Overweight: BMI 23.0 – 27.5; Obese: BMI > 27.5}. The selected silhouette for the current body image in the CDRS was compared with the actual BMI. If there is any discrepancy, it was categorized as Body Image Misperception. Data was entered in excel and analysed using SPSS 16. The Chi-square test was used to measure the association between categorical variables. P-value was considered statistically significant when it is less than 0.05.

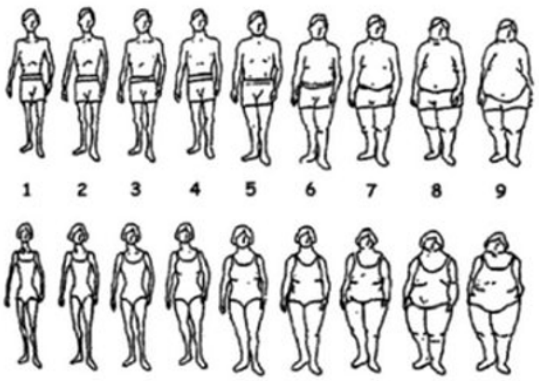

Figure 1: Contour Drawing Rating Scale [10]

RESULTS

Among the study participants, 158(50.3%) were women and 156 (49.7%) were men. The mean age of the study participants was 19.8years (SD -1.7 years).

Table 1: Perceived and actual Body image among study participants

	Men	Women	Total
Actual Body Image			
Underweight	23(14.7%)	21(13.3%)	44(14%)
Normal	64(48.7%)	77(41%)	141(49.9%)
Overweight/Obese	69(44.2%)	60(38.2%)	129(41.1%)
Perceived Felt Body Image			
Underweight	19(12.2%)	25(15.8%)	44(14%)
Normal	100(64.1%)	104(65.8%)	204(65%)
Overweight/Obese	37(23.7%)	29(18.4%)	66(21%)
Perceived Ideal Body Image			
Underweight	2(1.3%)	42(26.6%)	44(14%)
Normal	149(95.5%)	116(73.4%)	249(84.4%)
Overweight/Obese	5(3.2%)	0(0%)	5(1.5%)

Body image dissatisfaction is the discrepancy between what they think they are (felt) and what they want to be(ideal). Among the study participants, 75.8% were dissatisfied with their body image and 34.7% had a misperception about their body image.

Table 2: Body image satisfaction among study population

Body Image satisfaction	**Men n-156(%)**	**Women n- 158(%)**	**Total**
Desire to be thinner	62 (39.7%)	96 (60.8%)	158 (50.3%)
Content	35 (22.4%)	41 (25.9%)	76 (24.2%)
Desire to be fatter	59 (37.8%)	21 (13.3%)	80 (25.5%)

Chi -square – 25.828, p value - <0.001

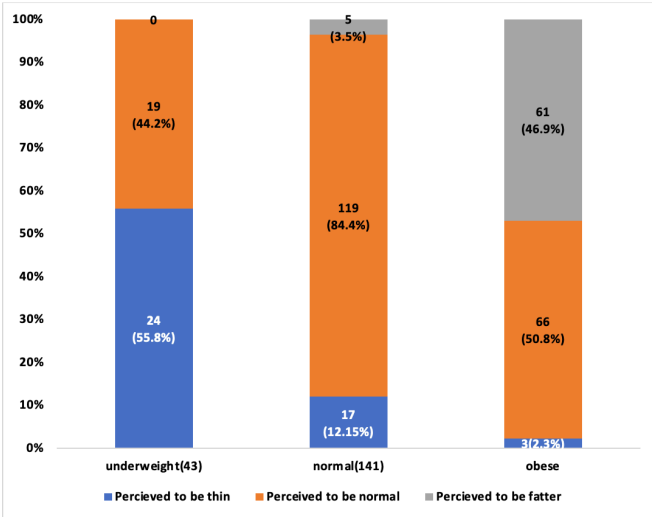

Figure 2: Body Image Misperception among Medical Students

As shown in Figure 2, 44.2% of the underweight students misperceived themselves to have a normal body image. Among medical students who had a normal BMI, 12.5% perceived themselves to have a thin body image, and 3.5% perceived to have a fat body. Among medical students who were either obese or overweight, 2.3% and 50.8% perceived themselves to have a thin and normal body image respectively.

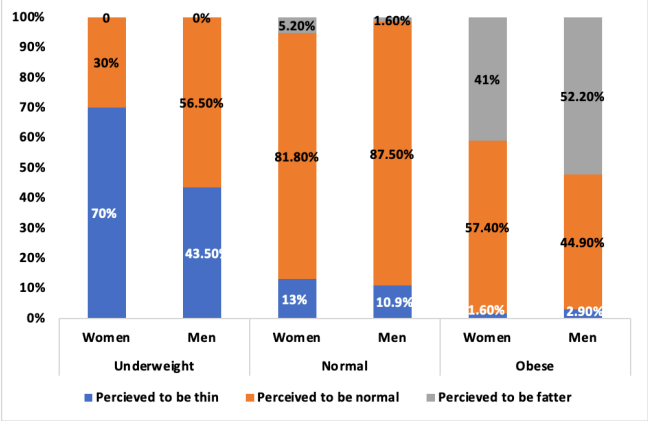

Figure 3: Body Image Misperception based on gender among Medical Students

Gender wise there was no significant difference in the Body image misperception, with 53.7% of the women and 46.3% of men reported misperception. BMI-wise misperception among men and women is shown in Fig. (3).

DISCUSSION

Among the study participants, 75.8% were dissatisfied with their body image and 34.7% had a misperception about their body image. Only 1/4th of both men and women were content with their body image. Almost 2/3rd of women desired to be thinner, whereas almost equal proportion of men desired to be either thin or fat. More than 50% of men who were underweight, perceived them to be normal. Among women, 57% of those who were overweight, perceived them to be normal.

The body image dissatisfaction seems to be higher among the study participants compared to other studies done elsewhere. In a study conducted among Brazilian students aged 12-17 years found that 45% to be dissatisfied with their body image.11 Similarly, the body image dissatisfaction among new entrant girl medical students in Punjab was 54% which was also higher than the higher rate reported in this study.6 In our study it was found that lesser proportion of male medical students had body image satisfaction compared to women, which was statistically significant. Similar finding was observed in a study conducted among medical students in Pune, which also showed that male medical students had higher dissatisfaction compared to women.[7]

Body image misperception among medical students was 34.7% , which was similar to a 35% reported misperception among undergraduate medical students in New Delhi.12 There was no gender difference in the misperception, which was also seen in the study conducted in New Delhi. 12

Though body image dissatisfaction by itself is not a mental health concern, it is a potential risk factor for mental health issues like psychological distress, eating disorders etc. The disparity between actual body image and desired ideal body image drives students to have changes in their eating attitudes. Misperception about their body image further complicates this process as they land up in taking unwanted lifestyle modifications and distress them further. Hence it is very essential that body image dissatisfaction and misperception is addressed appropriately at the earliest to prevent its consequences.

This study is limited by the fact that it has not looked at the determinants of body image dissatisfaction and misperception, which could throw more light on the understanding of the problem and enables taking appropriate measures.

CONCLUSION

The study highlights the high prevalence of body image dissatisfaction as well as misperception among medical students.

REFERENCES

1. National Eating DIsorder Collaboration. The four aspects of body image [Internet]. [cited 2020 Feb 21]. Available from: www.nedc.com.au/helplines.

2. (PDF) Body Dissatisfaction among Male and Female Adolescents [Internet]. [cited 2020 Feb 21]. Available from: https://www.researchgate.net/publication/324586528_Body_Dissatisfaction_among_Male_and_Female_Adolescents

3. Leonhard ML, Barry NJ. Body image and obesity: Effects of gender and weight on perceptual measures of body image. Addict Behav. 1998 Jan;23(1):31–4.

4. Priya D, Prasanna KS, Sucharitha S, Vaz NC. Body image perception and attempts to change weight among female medical students at Mangalore. Indian J Community Med [Internet]. 2010 [cited 2020 Feb 21];35(2):316–20. Available from: http://www.ijcm.org.in

5. Vijayalakshmi P, Thimmaiah R, Reddy SSN, Kathyayani B V., Gandhi S, BadaMath S. Gender differences in body mass index, body weight perception, weight satisfaction, disordered eating and Weight control strategies among Indian Medical and Nursing Undergraduates. Investig y Educ en Enferm [Internet]. 2017 [cited 2020 Feb 21];35(3):276–84. Available from: http://aprendeenlinea.udea.edu.co/revistas/index.php/iee/article/view/329201/20785721

6. Sihag R, Joshi H. A study on body image satisfaction, BMI status and dietary patterns among newly entrant girl students of Punjab Institute of Medical Sciences, Jalandhar. Int J Community Med Public Heal [Internet]. 2017 Jun 23 [cited 2020 Feb 21];4(7):2531. Available from: https://www.ijcmph.com/index.php/ijcmph/article/view/1476/1289

7. Chaudhari B. The Relationship of Eating Disorders Risk with Body Mass Index, Body Image and Self-Esteem among Medical Students. 2017.

8. Zitzmann J, Warschburger P. Psychometric Properties of Figure Rating Scales in Children: The Impact of Figure Ordering. J Pers Assess [Internet]. 2020 Mar 3 [cited 2020 Feb 21];102(2):259–68. Available from: https://www.tandfonline.com/doi/full/10.1080/00223891.2018.1505731

9. Wertheim EH, Paxton SJ, Tilgner L. Test-retest reliability and construct validity of Contour Drawing Rating Scale scores in a sample of early adolescent girls. Body Image. 2004 May 1;1(2):199–205.

10. Thompson MA, Gray JJ. Development and Validation of a New Body-Image Assessment Scale. J Pers Assess. 1995;64(2):258–69.

11. Moehlecke M, Blume CA, Cureau FV, Kieling C, Schaan BD. Self-perceived body image, dissatisfaction with body weight and nutritional status of Brazilian adolescents: a nationwide study. J Pediatr (Rio J) [Internet]. 2020;96(1):76–83. Available from: https://doi.org/10.1016/j.jped.2018.07.006

12. Sharma M, Singh SK, Tiwari P, Chauhan N. Body image perception, eating attitude and influence of media among undergraduate students of medical college in Delhi: a cross sectional study. Int J Res Med Sci. 2019 Nov 27;7(12):4627.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A CROSS SECTIONAL STUDY TO ESTIMATE THE POSTNATAL PROBLEMS AMONG POSTNATAL MOTHERS OF NORTH CHENNAI

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Abstract

Introduction : The puerperal period is a continuum with changes taking place, both physically and emotionally, following the period of pregnancy and eventual delivery. Postpartum problems are one of the leading causes of mortality and morbidity after delivery. There could be a range of problems such as backpain, leg pain, tiredness, postpartum depression, puerperal sepsis, sleep disturbances etc. This study aimed to study the prevalence rate of postnatal problems among postnatal mothers of North Chennai.

Methodology: This cross-sectional study was carried out in Naravarikuppam PHC, Padianallur PHC, RSRM Hospital, a tertiary lying in health centre working in co-ordination with Government Stanley Medical College, Chennai using the data collected from 150 mothers which was conducted during the study period of August to November 2021. The data were collected using pre-tested semi- structured questionnaire designed for the study. Data was entered in Microsoft Excel and analysed in SPSS 16 version. Univariate analysis (Chi Square test) was used to find out association between independent and dependent variable. Odd's ratio was calculated with 95% confidence interval to find strength of association. P<0.005 was considered as statistically significant.

Results: Among 150 mothers 104(69%) had vaginal delivery and 46(31%) had caesarean delivery. Among various postpartum problems fever is the most common among postnatal mothers and is statistically significant. No significant difference was found to exist between mode of delivery and prevalence of postpartum problems except for leg pain which was found to have higher association with caesarean section (56.5%). The prevalence of tension, lack of concentration, irritation was found to be 13% in mothers who had caesarean delivery whereas the prevalence of above problems was found to be lesser in vaginal delivery.

Conclusion: This study illustrated that fever was the most common postnatal problems among postnatal mothers and leg pain was found to be higher in caesarean section. At the end of the study, the mothers were made aware of postpartum problems and were educated about the importance of postpartum care that should be given after delivery.

Keywords: Postnatal problems, mode of delivery, North Chennai.

INTRODUCTION

The puerperal period is a continuum with changes taking place both physically and mentally, following period of pregnancy and eventual delivery. The care of pregnant women does not end with delivery of child. In order to escape from immediate risks, remote gynaecological problems associated due to neglect during puerperium adequate care is needed during postnatal period.[1] But the coverage at global level ranges from 5-35%[2] only which needs a lot of attention to prevent immediate and remote problems associated with pregnancy. Postnatal period is defined here as the first six weeks after birth. During this period, a woman is adapting to multiple physical, social, psychological changes. She is recovering from childbirth, adjusting to changing hormones and learning to feed and care for her new born.[3] Fourth trimester can present considerable changes for women including lack of sleep, fatigue, pain, breastfeeding difficulties, stress, depression, psychosis, lack of sexual desire, sexual incontinence (4,5, 6), substance dependence, intimate partner violence and other concerns.

In India, promotion of maternal and child health has been one of the most important objectives of Family Health programme. This had given importance in five-year plans. In minimum needs programme (1974-1979), Child Survival and Safe Motherhood(CSSM 1992-1993), Reproductive and Child Health(RCH programme 1997), Reproductive and Child Health(RCH phase 2 2005), Reproductive, Maternal, New-born, Child and Adolescent Health(RMNCH+A 2013) continuum of care, the integration of maternal health, child health, nutrient services, family planning services were made. According to American College Of Obstetricians and Gynaecologists(ACOG), postnatal care

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should become an ongoing process rather than a single encounter with services and support tailored to each woman's individual needs. The American College Of Obstetricians and Gynaecologists (ACOG) recommends that timing of postnatal visit be individualized and woman centred. Care would ideally include an initial assessment, either in person or phone within the first 3 weeks postpartum to address acute postpartum issues. The initial assessment should be followed up with ongoing care as needed concluding with comprehensive woman visit no later than 12 weeks after birth.[7] Insurance coverage policies should be aligned to support this tailored approach to fourth trimester care policy and postpartum care.

OBJECTIVES

- To estimate the postpartum problems in mothers within four months of delivery residing at Naravarikuppam, Padianallur, Chennai.
- To estimate the association between mode of delivery and postpartum problems.

METHODS

The study was performed after obtaining the institute permission.

STUDY DESIGN : A Cross sectional study

STUDY PLACE :

RSRM is a tertiary lying in health centre working in co-ordination with Stanley Medical College. Padianallur PHC is one of the primary health centres near Chennai city. It is a semi urban area with four subcentres having population of 22894 (in 2020). It has 15 ICDS centres each covering 2000-3500 population.

STUDY PERIOD : 4 months (July to November 2021)

STUDY POPULATION :

All postnatal mothers residing at Naravarikuppam, Padianallur, RSRM Hospital, Chennai.

INCLUSION CRITERIA :

1. Those mothers who have given consent to the study.
2. All postnatal mothers within four months after delivery.

EXCLUSION CRITERIA :

All postnatal mothers who are not within four months after delivery.

SAMPLE SIZE : From 150 mothers data will be collected.

SAMPLING METHOD : Purposive sampling method.

QUESTIONNAIRE USED:

After obtaining written and informed consent from the subjects, information will be collected using pre-tested, semi-structured questionnaire. The questionnaire consists of basic demographic details of the study group such as name, age, sex, education, socio economic status, mode of delivery, difficulty in micturition, back ache, leg ache, fever, lack of concentration, irritation, tiredness, sleep disturbances.

DATA COLLECTION METHOD:

- The mothers who are within four months after delivery will attend the immunization clinic to immunise their children. These mothers will be selected and data will be collected.
- At the start of the study, the purpose of the study will be explained to each mother.
- Postpartum mothers will be educated about the importance of postpartum care that should be given after delivery.

DATA ANALYSIS:

After collecting, the data will be compiled in Microsoft Excel sheet. Analysis will be done using Statistical software SPSS version.[16] All continuous variables will be expressed as Mean and Standard deviation. All categorical variables will be expressed as percentages and proportions. Univariate analysis (Chi Square test) was used to find out the association between independent and dependent variable. Odd's ratio was calculated with 95% confidence interval to find strength of association. The test will be considered significant if $P<0.05$ at 95% confidence interval.

RESULTS

Total no of postnatal mothers enrolled in the study was 150.

Table 1: Demographic profile of study population

Variable		Number (n=150)	%
Age of women	15-24	32	21.3
	25-34	72	48.0
	35-49	46	31.0
Family Type	Nuclear	81	54.0
	Extended	69	46.0
Religion	Hindu	122	81.33
	Christian	17	11.33
	Muslim	11	7.33
Age at time of marriage	<18 years	67	45.0
	>18 years	83	55.3
Age at the time of first child	<18 years	48	32.0
	>18 years	102	68.0

The demographic profile of the participants is shown in table 1. Majority of the participants were in the age group of 25-34 years. 54 % of them belong to nuclear family. Majority (81.33%) of them were Hindu, 45% of them were married

before 18 years, 32% of them are having a first child before completion of 18 years.

Table 2: Education status and socio-economic class of study participants

Variable		Number(n=150)	Percentage
Educational status of women	Illiterate	10	7.0
	Primary	36	24.0
	Middle	38	25.3
	High school	26	17.3
	Higher secondary	25	16.7
	Graduate	15	10.0
Socio economic status (Modified Prateek Scale)	Class I	15	10.0
	Class II	22	14.7
	Class III	21	14.0
	Class IV	72	48.0
	Class V	20	13.3

Table 2 shows that postnatal mothers 25% of them were studied up to middle class. Higher proportion (48%) belonged to Class 1V socio economic class.

Table 3: Postnatal mothers and their mode of delivery

Age of mothers	Mode of delivery	
	Vaginal	Caesarean
15-24	42(28%)	8(5.3%)
25-34	46(30.66%)	23(15.33%)
34-49	16(10.66%)	15(32.6%)
Total	104	46
Percentage	69%	31%

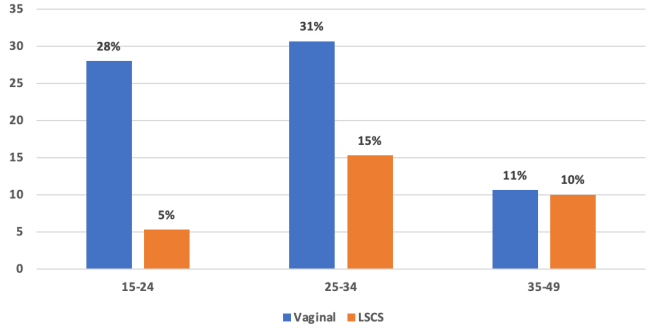

Figure 1: Age of mothers and mode of delivery

In a study population 104(69%) mothers delivered through vaginal delivery; majority belonged to 25-34 years. Remaining 46(31%) mothers had caesarean delivery.23% of them belonged to 25-34 years.

Table 4: Postnatal mothers and their problems

Mode of delivery	Vaginal	Caesarean
Difficulty in micturition	16 (15.4%)	3 (6.5%)
Back pain	58 (55.7%)	32 (69%)
Leg pain	39 (37.5%)	26 (56.5%)
Fever	15 (14.42%)	16 (34.78%)
Tension	12 (11.5%)	6 (13%)
Lack of concentration	6 (6%)	6 (14%)
Irritation	13 (12.6%)	6 (13%)
Sleep disturbances	41 (27.33%)	21 (14%)

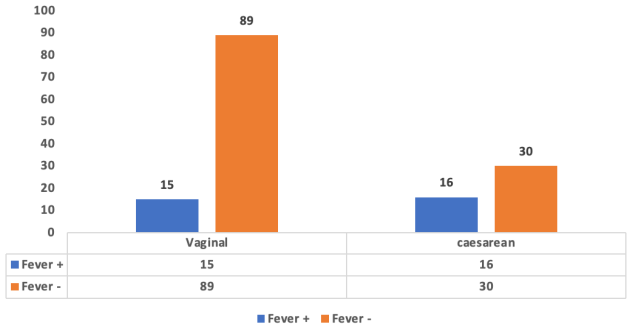

Figure 2: Mode of delivery and fever

Table 5: Association of mode of delivery with postnatal problems

Mode of delivery	Vaginal n=104	Caesarean N=46	Chi square value	p value
Difficulty in micturition	16 (15.4%)	3 (6.5%)	2.2566	0.132
Back pain	58 (55.7%)	32 (69%)	2.52	0.111
Leg pain	39 (37.5%)	26 (56.5%)	4.688	0.301
Fever	15 (14.42%)	16 (34.78%)	8.05	0.004*
Tension	12 (11.5%)	6 (13%)	0.0684	0.793
Lack of concentration	6 (6.3%)	6 (14%)	2.2293	0.129
Irritation	13 (12.6%)	6 (13%)	0.0085	0.926
Sleep disturbances	41 (39.4%)	21 (45.6%)	0.51	0.474

DISCUSSION

• Among 150 mothers studied, 19(12.7%) had difficulty in micturition while the remaining 131 mothers had not experienced such difficulty. Among 104 mothers who had vaginal delivery 16(15.4%) had difficulty in micturition. Out of 46 mothers who had caesarean delivery, 3(6.5%) had difficulty in micturition.

• Out of 150 mothers studied, 90(60%) mothers had complaints of back pain. Among 104 mothers who had normal vaginal delivery, 58(55.7%) mothers had back pain. Of the 46 mothers who had caesarean delivery 32(69%) had back pain. In our study postnatal back pain is not associated with elective or emergency caesarean section nor with assisted or spontaneous vaginal delivery. A cohort study conducted by Patel RR et al indicated that back pain was very common with a prevalence of 80% at 32 weeks antenatally. Postnatally, back pain affected 68% of women at 8 weeks and 60% at 8 months. Very similar patterns were observed at 8 months.

• Among 104 mothers who had normal vaginal delivery, 39 (37.5%) mothers experienced leg pain. Among 46 mothers who had caesarean delivery, 26 (56.5%) mothers were found to have similar complaints. In a population-based cohort study by Nelson Piercy C. The first 6 weeks postpartum was found to be associated with a 22-fold increase in risk, with the peak occurring in the first 3 postpartum. Increased age was found to be associated with venous thromboembolism during postpartum and outside of pregnancy, but not during antepartum.

• In a cohort study conducted in 600 Finnish speaking women, it was found that persistent pain one year after delivery was significantly more common after caesarean section than after vaginal birth. The persistent pain was mild in 55% of the patients in both groups, and intense or unbearable for four caesarean sections and six vaginal births. Persistent pain was significantly more common in women with previous pain (P=0.013), previous back pain (P=0.016), and any chronic disease (P=0.016). The women with persistent pain recalled significantly more pain on the day after caesarean section (P=0.004) and vaginal birth (P=0.001) than those who did not report persistent pain.

• In the study population, 31 (20.6%) mothers had fever in the early postpartum period. Among 104 mothers who had delivered through vaginal delivery, 15 (14.42%) experienced fever. Among 46 mothers who had caesarean delivery16(34.78%) had fever.

• In the study group of 150 mothers, only 19 (12.7%) were found to get irritated often. And only 18 (12.7%) complained of becoming tensed easily. In a qualitative study of depressive symptoms and well-being among first-time mothers conducted by Lynne A et al, ten to 15% of women experience postpartum depression. First-time mothers are particularly at risk. The qualitative study aimed to gain insight in terms of why some women find the transition of becoming a mother to be so emotionally taxing that they feel some level of depressed mood, while others feel mostly content after having a baby. Two approaches to motherhood emerged, which we refer to as 'relaxed' and 'controlled'. These approaches influenced how the mothers had envisioned the postpartum period, their need for mastery and how they experienced it emotionally. Social support and managing breastfeeding stood out as important with regard to well-being and depressive symptoms.

• In the study population, out of 46 mothers who had caesarean delivery, the prevalence of tension, lack of concentration, irritation was found to be 13%. Among 104 mothers who had vaginal delivery, the prevalence of above problems was found to be lesser.

• Out of mothers 62 (41.3%) reported that they had disturbances during sleep. Among 104 mothers who had vaginal delivery, 41 (39.4%) were found to have sleep disturbance. Among 46 mothers who had caesarean delivery, 21 (45.6%) had experienced sleep disturbance. It is found that no significant relation exists between mode of delivery and sleep disturbances

CONCLUSION

Fever was the most common postnatal problems among postnatal mothers and was statistically significant (p=0.004) and leg pain was found to be higher in caesarean section(56.5%). At the end of the study, the mothers were made aware of postpartum problems and were educated about the importance of postpartum care that should be given after delivery. The postpartum check-up and counselling regarding family planning, child care, breast feeding has to be improved for effective services and reduction of problems during postpartum period.

SUMMARY

This study was a cross sectional study done in RSRM Hospital and 2 Primary Health Centers (Naravarikuppam, Padianallur) near Chennai city with the objective of studying the postpartum problems among nursing mothers within 4 months of delivery. In the study population, 104(69%) mothers delivered through Normal vaginal delivery. Remaining 46(31%) mothers had Caesarean delivery.

• Of the 150 mothers, 19 (12.7%) had difficulty in micturition

while 131 mothers had not experienced any such difficulty. Of the 19 mothers who had difficulty in micturition, 16 had given birth through vaginal delivery and three had given birth through caesarean section. In the study population, 31(20.6%) mothers had fever in the early postpartum period. Other 119 (79.3%) mothers had not experienced fever.

- Among 150 mothers, 55(36.7%) mothers had experienced tiredness.
- Out of 150 mothers studied, 90 (60%) mothers had experienced backpain. Among 104 mothers who had normal vaginal delivery, 58 (55.7%) mothers had backpain. Among 46 mothers who had caesarean delivery, 32 (69.5%) mothers had backpain.
- Out of 150 mothers, 57(38%) and 32(21.3%) reported that they had complaints of leg pain and pelvic pain respectively. Among 104 mothers who had normal vaginal delivery, 39 (37.5%) mothers had leg pain. Among 46 mothers who had caesarean delivery, 26 (56.5%) of them had leg pain.
- Only 19(12.7%) were found to get irritated often and Only 18(12.7%) complained of becoming tensed easily.
- Out of 46 mothers who had caesarean delivery, the prevalence of tension, lack of concentration, irritation was found to be 13%. Among 104 mothers who had vaginal delivery, the prevalence of above problems was found to be lesser.
- Out of 150 mothers,62(41.3%) reported that they had disturbances during sleep.
- Among 104 mothers who had vaginal delivery, 41(39.4%) were found to have sleep disturbance and 21(45.6%) mothers had experienced sleep disturbance among 46 who had caesarean delivery.

LIMITATIONS

- The postpartum problems within four months after delivery were studied but the intensity of the problems was not studied extensively. This may need further studies. Various problems such as puerperal sepsis, postpartum depression, fatigue, sleep disturbances, deep vein thrombosis were studied. Other problems like breast soreness, postpartum haemorrhage was not studied.
- The study population is not representative of the entire population because it comprised people from low socio-economic class.
- Some confidential data was not available.
- As this is purposive sampling done at immunisation session, mothers with problems may not be turned out to the session who may be mixed. Hence underestimation of problem is present.

RECOMMENDATIONS

- The mothers should be made aware of the possible problems during the postpartum period. They should be advised to report immediately on developing any symptoms suggestive of these problems.
- The health personnel should be motivated and proper training should be given to make recommended postpartum visits after delivery inorder to reduce the high prevalence of these problems and to improve the postpartum services.
- Education about nutrition, Family planning, immunization and child care should be given to all mothers during their antenatal and postpartum period.

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REFERENCES

1. Int.J Gynae Col Obset 2011 Nov 17 (epub ahead of print) Perinatal complications and caesarean delivery among foreign born and Australian born women in Western Australia.
2. 22% of new mothers in India suffer from postpartum depression: WHO by Medha Baranwal
3. Postnatal care- Charlotte Warren, Pat Dally, Lalla Toure, Pyande Mongi
4. Aber C, Weiss M, Fawcett Contemporary women's adaptation to motherhood: the first 6 to 8 weeks postpartum. Nurs Sci Q 2013; 26: 344-51.
5. Burgio KL, Zyczynski H, Lacher JL, Richter HE, Redden DT, Wright KC, Urinary incontinence in the 12-month postpartum period. Obset Gynecol 2003; 102:1291-8
6. DeClercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. Major surveY findings of listening to mothers: new mothers speak out: report of national surveys of women's childbearing experiences conducted October- December 2012 and January- April 2013. J Perinat Edu 2014; 23:17-24.
7. Haran C, VanDriel M, Mitchell BL, Brodribb WE. Clinical guidelines for postpartum women and infants in primary care- a systematic review.
8. Acta Obstet Gynecol Scand 2007: 86(II): 1322-7 Epub 2007 Sep 4 Is operative delivery associated with postnatal backpain at 8 weeks and 8 months? A cohort study. Patel RR, Peters TJ, Murphy P.

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REVIEW ARTICLE - PUBLIC HEALTH

SCHOOL HEALTH PROGRAMS IN TAMIL NADU

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Abstract

The global net enrolment rate for primary education is around 89% in the year 2020 and that of Lower middle-income countries and India is 87% and 92%respectively. The gross enrolment ratio in primary education for India has increased from 96.8% in 2019 to 99.9% in 2020 and hence schools can be the best platform to render the primary health care services to children with maximum coverage. School based health care services aim to meet the needs of disadvantaged populations, address the health-related obstacles to educational achievement, and address the cultural, financial, and privacy and transportation related barriers to clinical, preventive health care services.

Comprehensive health care programmes addressing the indispensable health needs of children are still missing in many low- and middle-income countries. WHO has published its first-ever guideline on school health services in 2021, providing a menu of 87 specific interventions for improving child health. In this article, we would like to document school health care services provided at different periods of time in Tamil Nadu, a southern state in India. Beginning from the year 1962, different initiatives of school health care services focussing on specific health issue like Rheumatic Heart diseases, dental problems, refractive errors, menstrual hygiene, anemia correction etc. in addition to general medical screening were implemented based on the needs. After 2014, many of the above components were brought under one roof Rashtriya Bal Swasthya Karyakram (RBSK) with expanded resources of exclusive health team with vehicle support functioning on all days a week. The referral and treatment services were strengthened availing the existing state health insurance scheme and integrating with other programmes and voluntary organizations. Like implementation of any other public health intervention, school health services also have a remarkable history, evolving with the changing needs, and has set trajectory to recreate in similar settings. Few areas of concern like covering non-school going and juvenile homes need to be addressed.

Keywords: School health services, Tamil Nadu Public Health, RBSK

INTRODUCTION

The global net enrolment rate for primary education is around 89% in the year 2020[1] and that of Lower middle-income countries and India is 87% and 92%respectively. The gross enrolment ratio in primary education for India has increased from 96.8% in 2019 to 99.9% in 2020[1,2]. Schools can be the best platform to render the primary health care services to children with maximum coverage and the same is underscored by the recent attainment during the COVID-19 pandemic, of 72% of first dose coverage of COVID-19 vaccination among 12-14 years children in a period of one month and 87% coverage among 15-18 years in a period of 3 months in Tamil Nadu[3]. School health services may be the only institutional way to meet the health-care needs of most school age children and adolescents on a regular basis and at scale [4]. Adolescents will often only contact health services if they are ill or injured, and with delay, when they are severely ill. Furthermore, adolescence is a key period for the onset of many health concerns, such as mental health or visual acuity disorders and is also when different kinds of risk behaviours that have major impacts on future adult mortality and morbidity are either initiated or consolidated, such as the use of alcohol, tobacco and other substances, risky sexual behaviours and the adoption of healthy or unhealthy dietary and exercise habits.

School based health care services aim to meet the needs of disadvantaged populations, address the health-related obstacles to educational achievement, and address the cultural, financial, and privacy and transportation related barriers to clinical, preventive health care services and have the potential to promote social mobility and improve health equity and are cost effective in improving an array of educational and health-related outcomes[5]. Furthermore, when implemented with reasonable quality, school health services are highly valued by students, parents and communities[6].

In spite of the tremendous opportunities in the school platform for health care, comprehensive health care programs addressing the indispensable health needs of children are still missing in many low- and middle-income countries. School health care services in many countries are limited to those that can be delivered by teachers,

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counselling or periodic deworming and/or to rare visits by clinical staff from a local health facility, for example to administer school immunization[7]. In 1995, WHO launched Global school health initiative, which has a goal to improve child, adolescent and community health through the concept of Health Promotion Schools (HPS) but this have been found to be effective in improving several aspects of student health but establishing them with high coverage, quality and sustainability has proved challenging in many countries. As a result of over two years' work by WHO and UNESCO staff, academics, policy makers, and program implementers, WHO has published its first-ever guideline on school health services in 2021, providing a menu of 87 specific interventions for improving child health[8].

Developed countries have started implementing school health care services way back in early 19th century and are steadily expanding whereas in India, it was started in 1909[9]. Health is a state subject in India and health care initiatives come from both central and state government. Tamil Nadu, a southern state in India known for its pioneering public health activities in various fields had brought in many strategies in school health services. In this article, we would like to document the origin, evolution of School Health related programs in Tamil Nadu and to feature the key interventions undertaken in school health services, which will be helpful to plan future innovations.

School Health Services in India:

The beginning of school health services in India dates back to 1909, when for the first-time medical examination of school children was carried out in Baroda city. The Bhore committee in 1946 reported that school health services were practically non-existent in India, and where they existed, they were in an under-developed state. In 1953, the secondary education committee emphasized the need for medical examination of pupils and school feeding programs. In 1960, the Government of India constituted a School Health Committee to assess the standards of health and nutrition of school children and suggest ways and means to improve them. The committee submitted its report in 1961, which contains many useful recommendations – setting up advisory boards with representatives from education, health, housing, agriculture, and social welfare, should have Bureau of school Health services to plan and initiate programs with coordination from local bodies and voluntary organizations, focussing on general hygiene and sanitation, production of birth and vaccination certificates made compulsory, school feeding programs, nutrition supplements, and with mention on dental, mental health and deaf children[9]. During the Five-year Plans, many State Governments have provided for school health, and school feeding programs. Inspite of these efforts to improve school health, it must be stated that in India, as in other developing countries, the school health services provided are hardly more than a token service because of shortage of resources and insufficient facilities.

School Health Services in Tamil Nadu :

Mid-day meal program :

The earliest school health service in Tamil Nadu instituted was the mid-day meal program in schools and the history dates back to 1920 in five schools of Madras Corporation[10]. In 1956, the scheme was executed in all primary schools across the state and subsequently it was expanded to 2-5 years children in Anganwadis and to 10-15 years. Tamil Nadu was the first state to initiate the mid-day meal program to reach the benefits of improved school attendance, reduced dropouts and beneficial impact on children's nutrition.

School Health Program :

The Directorate of Public Health & Preventive Medicine under Ministry of Health and Family Welfare initiated an exclusive program of delivering health care services to school children in 1962. Comprehensive school health care services including general health check-up, clinical screening for nutritional deficiencies, systemic illness, refractive errors, and minor ailments on all Thursdays among children studying in 1st to 12th standard in all government and government aided schools. The school health team comprised of Medical Officer, Village Health Nurse, Health Inspector and Sector Health Nurse from the local Primary Health Centres (PHCs). Minor ailments were treated at the PHC level whereas major illnesses were referred to higher centres. Children screened and found to have refractive errors were also referred to higher centres for prescription of spectacles. Two teachers from each school were identified as nodal teachers and were trained in identifying common illness among children, providing assistance for the school health team and also to follow the referred children. All Thursdays are considered as "School Health days" and Saturdays as "referral days" for ensuring follow-up of the referred children.

Rheumatic Heart Diseases program :

Consequent to the increase in number of cases of Rheumatic Heart Disease in the year 1980-1990, this program was implemented in 1996 involving teachers orienting them on the earlier symptoms of Rheumatic fever (RF) and Rheumatic heart disease (RHD). Any children identified with acute rheumatic fever were referred to nearby PHC for confirmation and if confirmed were given

free treatment with injection Benzyl penicillin or tablets and followed up. Meanwhile active case search in the residing areas of those children were done to identify cases at earlier stage to prevent Rheumatic Heart Diseases (RHD).

Congenital defects program:

During the year 2004-2005, screening of children up to 15 years of age, for any congenital defects like cleft lip, cleft palate, was instituted and children identified with defects were referred to government medical college hospitals for corrective surgeries. The program was expanded with inclusion of more visible congenital deformities and children identified with deformities were referred to medical college hospitals for cost free management.

School Children Heart diseases program (Palli sirar Irudhya Padhukaappu Thittam):

In the year 2008, from the routine screening under the school health program 9,986 children were identified with heart diseases. It was planned to form district level committees comprising of Dean from Medical college Hospital, Joint Director from government hospitals, Deputy Director of Public Health and cardio thoracic surgeons and professors in the respective districts and 2,398 children were confirmed for surgical procedures. Based on this, a Memorandum of Understanding (MoU) was formed with 24 private hospitals for treatment of children with heart diseases free of cost. Three types of packages were designed to pay to the private hospitals under the MoU, such as Type-A, B and C with allotment of RS.30,000, Rs.50,000 and Rs.1,00,000.

Modified School Health Program (MSHP) :

During the period 2009-2010, existing School Health Program was modified and implemented in districts in phased manner and covered all districts in 2011-2012. The MSHP packages include comprehensive health education, health promotion, first aid management, health screening services by the PHC team, immunization, deworming, eye care, dental care, adolescent anaemia management and minor ailments treatment and referral with follow-up. Around 200-250 children were screened by each school health team from the local PHC.

Free spectacles distribution for Refractive errors (Kannoli Kaapom Thittam):

Since the year 2009, in addition to screening of students studying in 6th to 12th standard in government and government aided schools, spectacles were prescribed by Para Medical Ophthalmic Assistants (PMOA) and appropriate spectacles were distributed free of cost to the students in their respective schools.

Comprehensive School Dental Program:

Dental care centres were established in rural areas to create awareness on prevention and treatment of dental problems. In 2011-12, it was initiated in 148 PHCs and 22 sub district hospitals, functioning 3 days a week and was then upscaled to all PHCs and hospitals. School children identified with dental caries, gum problems etc. during the screening by the local PHC team were referred to dental centres for treatment.

Menstrual Hygiene program in schools:

With the objective of increasing awareness among adolescent girls on menstrual hygiene, building self-esteem and empowering girls for greater socialization, Menstrual Hygiene Program was launched in the year 2012. Under this scheme, 18 packs of sanitary napkins with six pads per pack in a year, were provided to each adolescent girl (10-19 years) in rural areas both school going and non-school going girls at the rate of three packs for two months in a year. A teacher is designated as responsible for distributing the sanitary napkins to school students. This increased access to and usage of high-quality sanitary napkins among rural adolescent girls.

Weekly Iron Folic Acid Supplementation (WIFS):

To tackle the burden of anemia and its complications during adolescence, pregnancy and delivery, weekly supplementation of iron and folic acid tablets was provided to all girls, both school going and non-school going of age 10-19 years since the year 2011-12. In addition, albendazole tablets were given biannually for deworming. Currently, boys of same age group were also included under the program. Every Thursday afternoon, under the supervision of the class teacher, boys and girls should consume the tablets regularly.

Adolescent Immunization:

School health team focus on the school immunization of DPT 2nd booster at 5 years of age and adolescent immunization of Tetanus Toxoid (TT) vaccine for students of 10 and 16 years of age during their Thursday visits. Currently, Td (Tetanus and adult dose of diphtheria antigen) are given subsequent to the Government of India recommendations on switch to Td from TT in 2019.

Iodine Deficiency Disorders control program:

Tasks and activities under IDD control program involving schools were conducted periodically – urine sample collection for urinary iodine excretion estimation, measuring prevalence of goitre, in addition to awareness generation.

Tobacco control and NCD awareness:

Exclusive teams at block level are formed and tobacco control activities are carried out in and around schools under the COTPA. Schools abiding to tobacco control and awareness activities are encouraged by providing "tobacco

free institution" certificates. Similarly, awareness on risk factors for non-communicable diseases like sedentary life style, unhealthy food habits, smoking, alcohol were imparted during the visits of the local PHC team. Students were encouraged to participate in activities impacting awareness on non-communicable diseases.

Other health care services:

In addition to the above-mentioned basket of clinical and health care services, Public Health force in Tamil Nadu never overlooked the environment and sanitation components. The local PHC team with Medical Officer, Health Inspector will visit all schools for the environment assessment including safe drinking water, infrastructure, sanitation, toilet facilities and general hygiene for the issuance of sanitary certification. In addition to the annual environmental assessment, frequent visits are made to check spread of communicable diseases covering source reduction and other vector control activities. During the post monsoon period, these activities are intensified to prevent vector borne diseases.

28,92,374 children were treated for one or other health problems and 44,494 were referred for higher medical institutions for further management during the year 2013-14. In 2014, with the launch of nation-wide school health program by Government of India, many schemes and components carried out under school health services were merged under one roof called "Rashtriya Bal Swasthya Karyakram".

Rashtriya Bal Swasthya Karyakram (RBSK) :

Government of India had initiated a new program called Rashtriya Bal Swasthya Karyakram (RBSK) in the year 2014 under National Health Mission. This program was introduced mainly to address the long-lasting adverse health outcomes that can occur due to conditions like congenital defects, deficiencies, diseases specific to childhood and developmental delays including disabilities, through two components - Child Health Screening and Early Intervention Services. The services under RBSK aims at screening for 30 selected health conditions, early detection and free management for children from birth to 18 years of age.

Tamil Nadu started implementing the RBSK program since 2014 in all 32 districts across the State. Initially executed in all 385 rural blocks by the Directorate of Public Health and Preventive Medicine covering all 51,800 of Anganwadi centre and 45,895 of Government and Government aided schools.

Child Health Screening:

The child health screening component happens with different mechanisms to reach the target age groups. **a) For new born:** Facility based screening at public health facilities, by existing Paediatricians at Medical College Hospitals (MCHs), and by Medical Officers and Staff Nurses at secondary care hospitals and primary health centres, and Community based screening at home after 48 hours to 6 weeks as a part of Home Based New Born Care (HBNC). In Tamil Nadu, delivery point screening is operational at all 36 Medical college Hospitals and 299 secondary and 2286 Primary Health Centres (PHCs) **b) For children 6 weeks to 6 years:** Pre-school screening at Anganwadi centres at least twice a year by the dedicated Mobile Health Teams (MHT) **c) For Children 6 years to 18 years:** School screening at all Government and Government aided schools at least once a year by the dedicated Mobile Health Teams (MHT). Initially the pre-school and school screening were started at all rural blocks across the State by the dedicated RBSK Mobile Health Team @ two teams per rural block. Later expanded to urban blocks.

Mobile Health Teams (MHTs):

Each team is comprising of One Medical doctor, One Staff Nurse/ Sector Health Nurse, one Pharmacist with proficiency in computer for data management and one driver with an exclusively allocated vehicle. Totally, 770 MHTs are functioning in 385 rural blocks in all 32 districts. The teams prepare an annual Advanced Tour Program (ATP) at the block level covering all the Anganwadi centres and Government and Government aided schools in such a way that each Anganwadi centres are visited twice a year and schools once a year. The ATP once prepared is shared with the officials and nodal persons in WCD (ICDS) and education department for better preparation, coordination and quality delivery of services. All Children are screened from head to toe to identify the selected conditions and the children of adolescent age group, in addition are screened for adolescent conditions like growing up concerns, substance abuse, depression, menstrual disturbances like delay in cycles and pain during menstruation, irregular periods, symptoms related to Urinary Tract Infections (UTI) and genital tract infections. The screening details and anthropometric measurement of each child are recorded in screening tool cum referral card and entered in registers for recording and follow-up.

In addition to screening services, other services rendered are immunization appropriate to the age in Anganwadi centres and Schools, Health education on nutrition, hygiene, and sanitation, referral of children identified with any of the selected 30 conditions to early intervention centres, counselling to the care-givers and follow-up of those referred.

Early Intervention Services:

Early Intervention Services are rendered through District Early Intervention Centres (DEIC) established at District

Hospitals (DHs) or Medical College Hospitals (MCHs) in each of the 32 districts to provide diagnostic and management and follow-up support to children detected with health conditions during child health screening. The DEIC team comprises of specialists and paramedical staff – Paediatrician, Medical Officer, Dental surgeon, Physiotherapist, Audiologist cum speech therapist, Psychologist, early interventionist cum special educator/ Social worker, Lab technician, Dental Technician, Manager and Data Entry Operator. The major roles of DEIC are: confirmation of diagnosis & treatment of children referred following screening by MHT, visit all newborns delivered at District Hospitals and Medical College Hospitals & screening for hearing, vision, congenital heart disease before discharge, ensure every child born sick/ preterm/ low birth weight/ birth defects followed up at the DEIC, all the referrals for developmental delays are followed and records maintained, the LT of DEIC would screen the children for inborn errors of metabolism and other disorders, and to ensure linkage with tertiary care facilities.

In addition to the above core activities, supplementary services at DEIC include issuing disability certificates with other members if the disability board, liaisoning with other departments like disability division of Ministry of Social Justice and Empowerment (MoSJE) in providing assistive technology devices and services, special education services, aids and appliances, rehabilitation, family support services, and Ministry of Human Resource Development (MoHRD), department of School Education & Literacy under "Education of Children with Special Needs in " Sarva Shiksha Abhiyan" in providing inclusive education and support, providing Aids and appliances and to provide home based educational services to children with special needs on need basis.

Since April 2015, of the children screeened, 50,434 were identified with seven major diseases - Congenital Heart Diseases, Rheumatic Heart Diseases, Cleft lip/palate, Club foot, Congenital deafness, Congenital cataract and Neural tube defects. Of which 27,722 were treated medically and 21,954 were treated surgically.

Specific Interventions in Tamil Nadu RBSK program:

1) School Health card:

It is a physical record to document the initial health status of the child like height, weight, BMI, blood group and typing and to enter information on diseases, deficiencies, allergic conditions, visual acuity, medical conditions, etc. It is colour coded – blue for boys and pink for girls and is kept in the schools to track the medical status every year during the visits by the school health team. One record is to be maintained for one child from 1st to 12th standard and this can remain as a valuable health record.

2) Availing the existing State Health Insurance scheme:

Some health conditions covered under RBSK require cost intensive specialized treatments which are not affordable by majority of people. Government of Tamil Nadu launched its state health insurance scheme - Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) providing free medical and surgical treatment services in government and private hospitals to the members of any family whose annual income is less than Rs.72,000/. Under CMCHIS, procedures like cochlear implant, shunt procedures for hydrocephalus, cardiac and cardio thoracic surgeries for congenital defects and diseases identified under RBSK were made accessible and affordable[15]. The corpus funding model of CMCHIS helps to overcome financial burden on the public hospitals' side also and facilitates to provide high end surgical procedures with high quality treatment care to economically marginalized children identified Under RBSK. Considering the growing burden of autism and needs, a separate package for autism was also introduced in 2017 under the scheme.

3) Integration with Voluntary organizations:

Participation of voluntary organizations involved in specific areas like CURE club foot organization for club foot, Smile Train for cleft lip and cleft palate and MDCRC for Duchenne Muscular Dystrophy were utilized to refer and treat children identified with defects at free of cost.

4) Integration with Leprosy and Tuberculosis program:

Government of India recommended to collaborate the National Tuberculosis Elimination program (NTEP) and National Leprosy Eradication program (NLEP) with RBSK and RKSK and to improve screening for children under 18 years of age in 2019. In Tamil Nadu, the RBSK teams at block level were coordinating with district TB team and leprosy team in terms of screening, referral and follow-up since 2017. So far, 1002 children were diagnosed with TB through RBSK screening and 993 were treated and 10 cases of leprosy identified in the year 2021-22.

Rashtriya Kishor Swasthya Karyakram (RKSK):

Under this GoI program launched focussing on adolescents' health, teenage boys and girls should form groups, each with 10-12 members, periodically meet and discuss on adolescent health issues with a student nominated as a peer educator on the priority areas – nutrition, reproductive health, substance use, NCDs, mental health and violence.

DISCUSSION

School Health Program caters to around 70% of children aged 0-18 years and has been able to provide preventive,

promotive and curative services to this population. Like any public health intervention undertaken by the state, school health services also have a remarkable history, evolved over a period, inculcating the changing needs of this population, and has set trajectory to recreate in similar settings. The program is a perfect example for intersectoral coordination between health and education department. The data management system of education department, 'Education Management Information System' is being integrated with the program.

However, the program can expand its services to include children and adolescents who do not come under the purview of formal school education like those studying in non-formal environment like Madarassa etc. Another area for strengthening is to expand the program to cover the most vulnerable group like non-school going children, and those in juvenile homes. While this group is provided with patchy services like anaemia prevention, menstrual hygiene, they do not have access to services like routine screening and referral, which may be considered for expansion of services. Covid -19 pandemic had hit the school health program badly, as the schools were shut, and students were not accessible through the program. This has stressed on the necessity of building a resilient system to ensure continuity of service provision during disaster times.

REFERENCES

1. School enrollment, primary (% net) | Data [Internet]. [cited 2022 Apr 23]. Available from: https://data.worldbank.org/indicator/SE.PRM.NENR
2. School enrollment, primary (% gross) - India | Data [Internet]. [cited 2022 Apr 23]. Available from: https://data.worldbank.org/indicator/SE.PRM.ENRR?locations=IN
3. COVID-19 Vaccination report Immunisation Division, Directorate of Public Health & Preventive Medicine. 2022 04;
4. SCHOOL HEALTH :A NEED OF THE HOUR - PMC [Internet]. [cited 2022 Apr 23]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5531647/
5. School-Based Health Centers to Advance Health Equity - PMC [Internet]. [cited 2022 Apr 23]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5759331/
6. Obeagu G, Obeagu E. School Health Programme: An Indispensable Programme in Child Health. 2019 Apr 30;1:1–10.
7. World Health Organization Recommends Comprehensive School Health Services and Provides a Menu of Interventions - Journal of Adolescent Health [Internet]. [cited 2022 Apr 23]. Available from: https://www.jahonline.org/article/S1054-139X(21)00232-9/fulltext
8. WHO guideline on school health services [Internet]. [cited 2022 Apr 23]. Available from: https://www.who.int/publications-detail-redirect/97892400293929
9. Parks Textbook of Preventive and Social Medicine Pdf Download - Medico TIME [Internet]. [cited 2022 Apr 23]. Available from: https://www.medicotime.com/parks-textbook-of-preventive-and-social-medicine-pdf-download/
10. (Beta version)National Institute of Health & Family Welfare [Internet]. [cited 2022 Apr 23]. Available from: http://www.nihfw.org/NationalHealthProgramme/MID_DAYMEAL.html
11.Government of Tamil Nadu (2005-2006 to 2020-2021). Policy Note of Health & Family Welfare Department.
12. Operational Guidelines : National Health Mission [Internet]. [cited 2022 Apr 23]. Available from: https://nhm.gov.in/index1.php?lang=1&level=5&sublinkid=1193&lid=3721.
13. Home | National Health Mission Tamil Nadu, Department of Health & Family Welfare Govt. of Tamil Nadu, India [Internet]. [cited 2022 Apr 23]. Available from: https://www.nhm.tn.gov.in/en
14. TN Health - Informative Source For Your Health [Internet]. TN Health. [cited 2022 Apr 23]. Available from: https://www.tnhealth.org/
15. Chief Minister's Comprehensive Health Insurance Scheme [Internet]. [cited 2022 Apr 23]. Available from: https://www.cmchistn.com/

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SCIENTIFIC LETTER- PUBLIC HEALTH

RADIOLOGICAL EVIDENCE SUGGESTIVE OF TUBERCULOSIS IN CHEST X-RAYS TAKEN FOR COVID CARE IN TAMIL NADU

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Abstract

Background : The number of new TB cases notified has decreased in the country since the beginning of the COVID pandemic due to various reasons. India has a high burden of TB cases and latent TB infection. Chest X ray (CXR) taken at COVID care centres can serve as an important source to look for radiological evidence of TB in these patients. About 10570 CXR were collected from Mobile X ray units deployed in COVID care centre during the second wave of the pandemic. We used artificial intelligence (AI) to read these CXR. A total of 969 (9.2%) and 168 (1.6%) were suggestive of COVID-19 and Pulmonary TB respectively. This serves as an evidence to look for TB in CXR at any given opportunity even if the CXR are taken for other purposes enabling picking up of TB cases at every given opportunity as we move towards TB elimination.

Keywords: Tuberculosis, COVID-19, Chest X- ray, Artificial Intelligence.

MAIN CONTENT

Lung infection secondary to SARS- CoV2 can result in severe pneumonia leading to aggressive acute respiratory distress syndrome (ARDS).[1,2] The recent COVID-19 radiological literature focuses primarily on computed tomography (CT) findings, which is more sensitive and specific than chest X-ray (CXR).[2,3] Nonetheless, CXR have been proposed as a potentially useful tool for assessing COVID-19 patients, especially in overwhelmed emergency departments, urgent care centres and developing countries.[2-4] COVID triage centres in Tamil Nadu employed CXR as the first-line of radiological screening to categorise the patients for further treatment and management.[5] An important setback of the COVID-19 pandemic was the worsening of the tuberculosis (TB) epidemic in the country for a variety of reasons, such as delay in diagnosis, delay in treatment initiation, rerouting the human resources from TB services for pandemic activities in addition to the excess pressure on health systems by the pandemic resulting in weakening of the National TB Elimination Programme (NTEP). The number of new TB cases notified has decreased in the country since the beginning of the pandemic.[6] Since India has a high burden of TB cases and latent TB infection, CXR taken at COVID care centres can serve as an important source to look for radiological evidence of TB in these patients. We undertook an exercise of reading around 10570 CXR using artificial intelligence (AI) from various mobile X ray units deployed in COVID care centres across various districts of Tamil Nadu during the months of April 2021 to June 2021. Among these X -rays, a total of 969 (9.2%) CXR were suggestive of COVID-19 while 168 (1.6%) CXR were suggestive of pulmonary TB. This helped to pick up radiological evidence for TB and further investigate these individuals. These cases represent old/ treated and new cases. A high proportion of CXR abnormality (for TB) was noticed in Madurai district paralleling the high notification in Madurai district. This exercise served as an eye-opener that one has to look for evidence of TB in CXR taken for any other purpose (Table 1). These cases would have been missed if not looked for. Though doctors are trained to read the X ray holistically and not look for any particular disease, in situation like COVID pandemic when the health system is under tremendous pressure, the chances of picking out TB and referring them for further management is unlikely especially in COVID care centres. Even in normal situations TB diagnosis by X ray is mostly in tertiary care settings where pulmonologists are available. Doctors in the periphery needs periodic training on X ray reading and also neds to be sensitized that X ray is an important tool for TB diagnosis. The recently conducted National TB prevalence study in India has found that nearly 46% of the TB cases had only X abnormality and had no symptoms emphasising on the importance of X rays in TB.7 In this study the co-existence of TB and COVID-19 abnormality in CXR is only 0.2% which warrants further

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studies to prove or generate evidence for the hypothesis that TB patients are more vulnerable for COVID-19 and vice versa. Studies specifically looking into these aspects must be planned.

Table 1 : District wise reported CXR

#Proportion among the total CXR expressed as percentage

District	Overall CXR		CXR suggestive of COVID		CXR suggestive of TB	
	n	*(%)#*	*n*	*(%)#*	*n*	*(%)#*
Chennai	2050	(19.4)	33	(0.31)	34	(0.32)
Dharmapuri	242	(2.3)	3	(0.02)	0	(0.0)
Dindigul	213	(2.0)	32	(0.3)	0	(0.0)
Kancheepuram	1428	(13.5)	272	(2.57)	9	(0.08)
Madurai	3193	(30.2)	78	(0.73)	101	(0.95)
Nagapattinam	2416	(22.8)	381	(3.60)	19	(0.17)
Namakkal	14	(0.1)	1	(0.009)	0	(0.0)
Nilgiris	946	(8.9)	152	(1.43)	3	(0.02)
Salem	56	(0.5)	13	(0.12)	2	(0.01)
Thoothukudi	12	(0.1)	4	(0.03)	0	(0.0)

ACKNOWLEDGMENTS

Authors would like to thank DeepTek Medical Imaging Private Limited, Pune, Maharashtra, India for using Artificial intelligence to read all these X rays free of cost and all District TB Officers of Tamil Nadu for helping in compilation of all these X- rays. Authors would like to thank DeepTek Medical Imaging Private Limited, Pune, Maharashtra, India for using Artificial intelligence to read all these X rays free of cost and all District TB Officers of Tamil Nadu for helping in compilation of all these X- rays.

REFERENCES

1. Cheng SC, Chang YC, Chiang YL, Chien YC, Cheng M, Yang CH et al. First case of Coronavirus Disease 2019 (COVID-19) pneumonia in Taiwan. J Formos Med Assoc. 2020;119:747-751.

2. Madan M, Baldwa B, Raja A, Tyagi R, Dwivedi T, Mohan A et al. Impact of Latent Tuberculosis on Severity and Outcomes in Admitted COVID-19 Patients. Cureus. 2021;13:e19882

3. Benmalek E, Elmhamdi J, Jilbab A. Comparing CT scan and chest X-ray imaging for COVID-19 diagnosis. Biomed Eng Adv.2021;1:100003.

4. Garg M, Prabhakar N, Bhalla AS. Cancer risk of CT scan in COVID-19: Resolving the dilemma. Indian J Med Res. 2021;153:568-571.

5. Flowchart of Patients with ARI/ILI at a COVID-19 Treatment Centre. Health & Family Welfare Department, Government of Tamil Nadu. Availabe at https://stopcorona.tn.gov.in/wp-content/uploads/2020/03/TNSOP-1-B-version-1.3.pdf. Accessed on 10th December 2021.

6. McQuaid CF, Vassall A, Cohen T, Fiekert K, White RG. The impact of COVID-19 on TB: a review of the data. Int J Tuberc Lung Dis.2021; 25:436-46.

7. National TB prevalence survey in India (2019 -2021). Available at https://tbcindia.gov.in/showfile.php?lid=3659. Accessed on 10th April 2022.

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SCIENTIFIC LETTER- PUBLIC HEALTH

COMMUNITY CAMPAIGN BY A HILLY DISTRICT TO VACCINATE 100% OF ITS TRIBAL POPULATIONS

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PURPOSE OF THE MISSION

The Nilgiris is a hilly terrain lying in the western ghats with around 500 tribal towns. It has a population of 7,21,949 and is home to 27,032 tribal people. Out of the 75 Particularly Vulnerable Tribal Groups in India, six groups reside in The Nilgiris district: Todas, Kotas, Irulas, Paniyas, Kurumas and Kattunayakans. Though the district had a much lower caseload during the first wave of COVID-19 compared to the state, the second wave saw four times the caseload of the first wave, affecting the tribal populations spread across the forests and hills of The Nilgiris. The Directorate of Public Health and Preventive Medicine (DPH & PM) of The Nilgiris then decided to undertake an initiative to achieve 100% vaccine coverage for the tribal populations on a priority basis. The decision was taken based on close observation and prevalent knowledge of their traditional and cultural practices. Culturally, these populations exhibit a closely knit community behavior. They live very close to each other, and majority of their cultural practices involve coming together or aggregating in groups. Hence, we believed they had increased risk for transmission of COVID-19. Additionally, they live in isolated pockets remote from health facilities and exhibit poor health seeking behavior, rendering them a specifically vulnerable group. With this rationale, we embarked on a challenging endeavor of vaccinating the tribal populations of The Nilgiris on priority basis during March to June 2021.

STRATEGIES ADOPTED

In general, indigenous populations across continents have been observed to exhibit higher rates of vaccine hesitancy. The Nilgiris was not an exception. Hence, we adopted several strategies to pursue the mission.

Arrival of target:

We enumerated of the tribal populations and arrived at an appropriate target with the help of various departments such as Adi Dravidar and Tribal Welfare Department, Department of Labour and Employment, including our Deputy Directorate of Health Services (DDHS).

Administrative support:

We made special requests to the Honourable Minister for Medical and Family Welfare, Principal Secretary for Health and Family Welfare, and Director of Public Health and Preventive Medicine to allocate additional vaccines for this purpose, which they kindly obliged to.

Interdepartmental Coordination:

To overcome manpower shortage and to ensure continued health services delivery during the pandemic, we resorted to a cross-sectoral effort involving the, Social Welfare and Women Empowerment Department, Adi Dravidar, and Tribal Welfare Department, and Local government Bodies. Volunteers from these he departments played a crucial role in creating awareness and motivating the tribal population to get vaccinated.

Collaboration with local Non-Governmental Organisations:

Few NGOs like Nilgiris Adivasi Welfare Association (NAWA), Nilgiris Wynaad Tribal welfare Society (NWTWS), and Adivasi Munnetra Sangam (AMS) have been involved in providing health care services to the tribal population, even before the pandemic. We knew that their involvement was essential for this mission, as persuading people from tribal communities to get vaccinated was not going to be easy. Hence, we involved volunteers from these NGOs in social mobilization and sensitizing the tribal population towards COVID-19 vaccination. Apart from

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this, the NGOs also contributed by sharing infrastructure and other logistical resources to facilitate the vaccine drive.

Vaccination in outreach mode:

Considering the difficulty in mobilising the tribal populations to the nearest health centres, vaccination was done in an outreach mode. Teams consisting of doctors, staff nurses, village health nurses, health inspectors, and Accredited Social Health Activists (ASHA) traversed the wilderness of Nilgiris district, braving the rain and mist to take vaccines to the doorstep of the tribal people.

Targetted vaccine drive:

We resorted to a two-staged vaccine drive. In the first stage, we covered the mobile tribal communities in the higher altitudes, namely the Todas and Kotas. We targeted the tribal communities in the plateaus and valleys in stage two, who had the most vaccine hesitancy, namely the Irulas, paniyas, Kurumbas, and Kattunayakans. This was done due to logistics purposes and to tailor-make the campaign strategies based on their socio-cultural practices and beliefs.

Challenges faced during the mission:

1. Initial vaccine hesitancy exhibited by the tribal population was a significant challenge to the mission. This was amplified by fake news and fear-mongering on media. We sought the help of NGOs who have worked closely with the communities to tap into their culture. The NGOs, in turn, sought the help of the community leaders to address misconceptions around COVID-19 vaccines among their community members. The district administration also broadcasted the statements by the community leaders across the district and released short awareness videos in vernacular languages. Apart from this, the NGOs persuaded the community leaders to take the first jabs to instill vaccine optimism among the community members.

2. Most of the tribal people went out to work during the daytime. Some worked in specific places, while others' work nature required them to be mobile. Hence, we made a double attempt to cover these people by conducting camps at worksites and going to their homes at dusk after they returned from work. This made sure that both types of workers were covered.

3. Rugged terrain coupled with the inclement climate proved a challenge for vaccination outreach. The volunteers and healthcare workers had to take specific precautions and persist through the difficulties to achieve the mission. The district administration, local government bodies, and NGOs provided the much-needed solid and enthusiastic support in logistics and infrastructure to assist the field workers and ensure their safety.

4. There were some technical challenges during the mission. For instance, the absence of individual phone numbers was a challenge while registering them on the COWIN (COVID Vaccine Intelligence Network) portal. We had to overcome them by registering the tribal people with the phone numbers of their respective ASHAs and volunteers. Due to network issues resulting from the outreach mission, the data collected by the field workers were duly submitted to the office of DDHS, The Nilgiris. They had to be entered in the COWIN portal by the staff positioned at the office of DDHS within the next 24 hours.

The outcome of the mission:

Out of the total tribal population of 27032, 21435 people were above 18 years, making them then eligible for COVID-19 vaccination. All the eligible beneficiaries other than those with medical contraindications have been vaccinated. Under the able guidance of the state government and the district administration, The Nilgiris district became the first district in Tamil Nadu to achieve 100% tribal population vaccination for COVID-19. This was indeed a community campaign, with coming together of different walks of the community to achieve this time-sensitive mission. We hereby, express our gratitude to the people of The Nilgiris for helping us materialize the mission's success.

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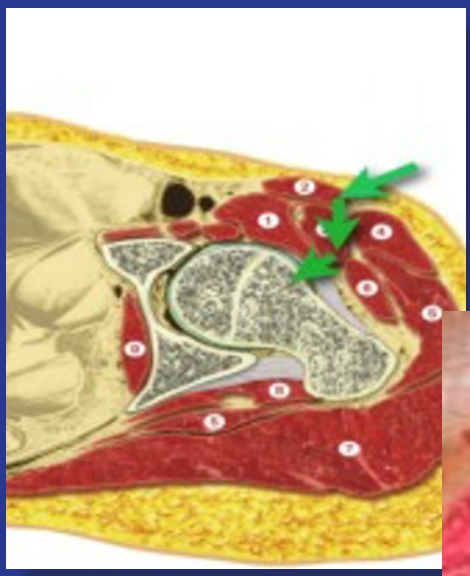
Case Reports



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

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CASE REPORT - ORTHOPAEDICS

OUTCOME ANALYSIS FOR TOTAL HIP ARTHROPLASTY BY MINI ANTERIOR APPROACH - A CASE SERIES

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Abstract

Introduction : In total hip replacement, the anterior approach is intermuscular and internervous and allows the surgeon to reach the capsule without muscle detachment. Advantages include faster recovery and excellent functional outcome. Aim of our study is to analyse the functional results following THR by anterior approach.

Materials & methods : Patients presenting with indication for total hip replacement were included into the study. Patients with ipsilateral fractures or previous history of surgery were excluded. Total hip replacement was proceeded and followed them for post op rehabilitation and their clinical and radiological parameters were analysed.

Results : Study included a total of 5 cases with M : F 4:1. Average Harris Hip Score was 90 at latest follow up, confirming an excellent clinical outcome. Minimum follow up was 1 year in all the cases.
Patients were into their routine daily activities without any limitations.

Conclusion : Anterior approach provides an excellent functional outcome with a low rate of complications. To overcome the most common difficulties encountered during the anterior approach for THR, reduce complications, and achieve a satisfactory clinical result in a reproducible manner, the steps of the surgical technique must be followed.

Keywords : Total hip arthroplasty, anterior approach.

INTRODUCTION

Over the past decade, minimally invasive surgery has gained popularity as a means of optimizing early postoperative rehabilitation and increasing patient satisfaction and cosmesis following total hip arthroplasty (THA). However, these surgical exposures has also been associated with increased risk of iatrogenic nerve injury and implant mal-positioning due to limited visibility compared to conventionally larger surgical incisions. The search for an ideal minimally invasive approach has always been in the quest of arthroplasty surgeons.

HISTORY OF ANTERIOR APPROACH TO HIP :

Smith-Petersen approach was the first old total hip arthroplasty mini-anterior approach described followed by the Hueter approach which is found 50 years ago .Since 1947,the anterior approach was done by Judet[1].

THE HUETER'S INTERVAL :

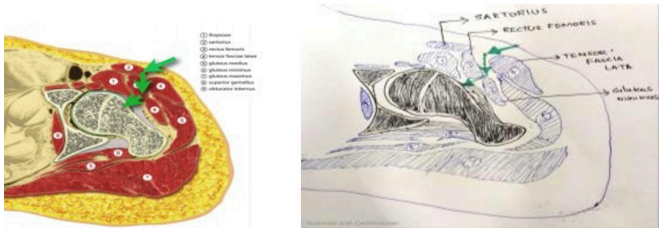

Figure 1: Hueter's Interval

Superficial : Sartorius & Tensor Fascia Lata
Deep : Rectus Femoris & Gluteus medius

The initial technique involved detaching the TFL from the antero-lateral crest, whereas the Hueter approach respected the tensor.

MATERIALS AND METHODS FOR ANTERIOR APPROACH :

Exactly as doing the procedure in the fracture table, this procedure can also be done on a specialized table similar to that or in a conventional radiolucent table. For elevating the femur in preparation and implantation of component, the table has mounted an accessory hook in the side of the table. Preparation and implantation of component for the acetabulum is direct method. Due to difficulty in accessing to the femur many surgeons prefer shorter or curved femur components for making the procedure in a simplified way.

Figure 2: Judet-Type Orthopaedic table

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PATIENT SELECTION :

1) In Thin individuals -Simple Primary THA

2) In Obese individuals -Complex Primary THA

Positioning :

Position – Supine on radiolucent table with operating limb hyperextended with anterior superior iliac spine (ASIS) at table break. For fluoroscopy -Pelvis at level with adequate imaging of both hips.

SURGICAL PROCEDURE :

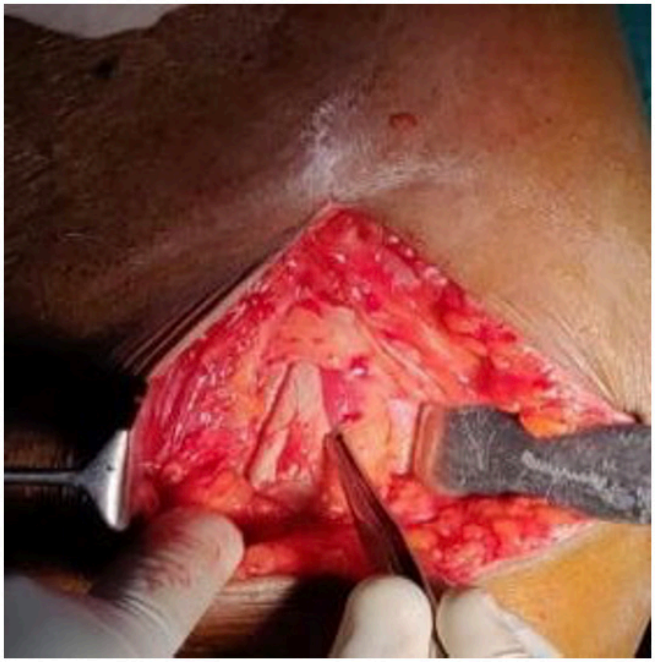

Figure 3: Interval between TFL and Sartorius

The incision is placed laterally in the interval between tensor fascia lata (TFL) and the sartorius to avoid the injury to the nerve fibers of lateral cutaneous femoral nerve but the course is variable. 3cm distal and 3cm lateral to the ASIS the incision begins and extends distally 8 to 12cm slight laterally. Now bluntly dissect medially in the interval between the TFL and sartorius.

Figure 4: Anterior capsule incised

Figure 5: Femoral neck osteotomy

The femoral neck can be palpated through thin layer of fat overlying the anterior capsule. Place blunt curved retractors superior and inferior to the femoral neck. Release the fibers of the reflected head of the rectus to allow improved medial retraction of the direct head. Divide the anterior capsule. Perform an insitu osteotomy of the femoral neck .Extract the femoral head. Excise the labrum and prepare the acetabulum with reamers.

Figure 6: Femoral canal reaming

Now break the table to position the operated hip in hyperextension for femoral canal preparation. Reaming and implantation, wound closure done in routine.

CASE ILLUSTRATION :

CASE 1:

Figure 7: 3 months old fracture neck of femur right side

Figure 8: Post OP X-ray

Figure 9: Post OP Range of Movements

CASE 2:

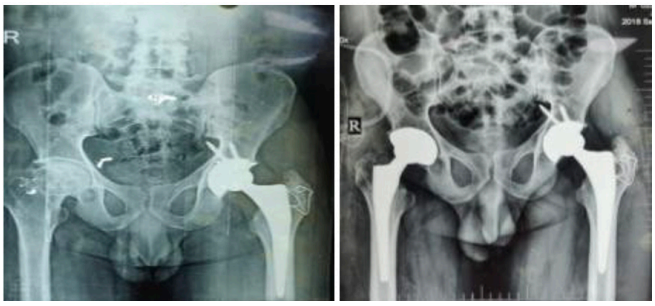

Figure 10: B/L TB Hip Post THR left side

Figure 11: Post OP X-ray

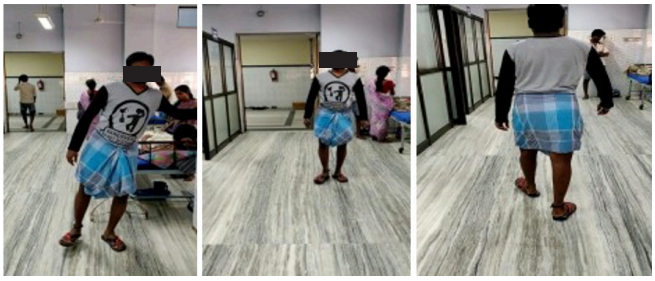

Figure 12: Post OP Range of Movements

CASE 3:

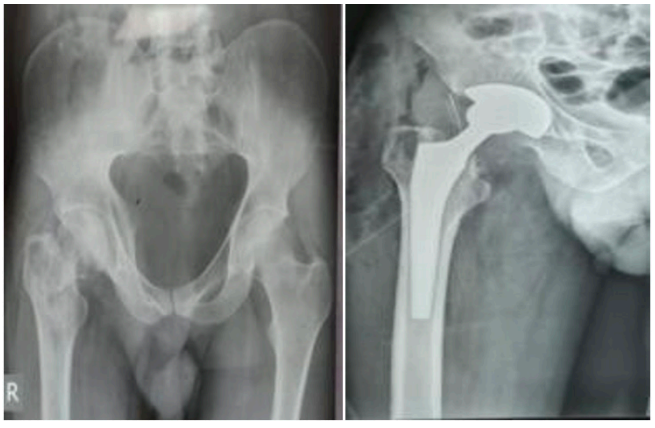

Figure 13: 4 months old Neck of Femur fracture right side

Figure 14: Post OP X-ray

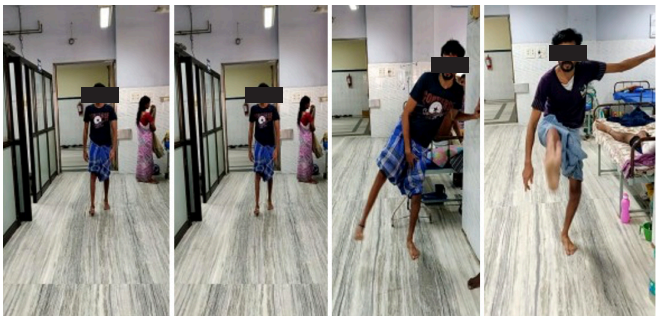

Figure 15: Post OP Range of Movements

DISCUSSION

Study included a total of 5 cases with M: F 4:1. Average Harris Hip Score was 90 at latest follow up, confirming an excellent clinical outcome. Minimum follow up was 1 year in all the cases. Patients were into their routine daily activities without any limitations. Improved Harris Hip Scores (HHS), Western Ontario and McMaster Osteoarthritis Index, and Short Form-36 scores at 6-week, 6-month, and 1-year postoperatively with direct anterior approach over direct lateral approach in a study by Restrepo et al. 2. Barrett et al. reported improved HHS at 6 weeks postoperatively with direct anterior approach.[3]

INFECTION:

Infection is a rare but known complication of total hip arthroplasty with incidence of 0.2%–1.2% after primary total hip arthroplasty.[4] Retrospective studies found no significant difference between the approaches in deep infection rates.

INSTABILITY:

Hip instability is another potential complication after total hip arthroplasty with dislocation rates of 0.6%–1.0% for direct anterior approach and 0.3%–0.6% for direct lateral approach and posterior approach with dislocation rates of 1.7%–5.3%. Sheth et al., in a study on 42,438 primary total hip arthroplasty, also reported significantly lower dislocation rates with both direct anterior approach and anterolateral approach versus posterior approach.[6]

INTRA-OPERATIVE FRACTURES:

Intraoperative fractures, particularly at greater trochanter, can occur during femoral elevation in Total hip arthroplasty. Matta et al.,reported 0.6% complicated with by intraoperative greater trochanter fractures by direct anterior approach total hip replacement done on a specialized traction table. Ankle fractures were reported in 0.6% of cases.[6] 4.0% have Greater Trochanter fractures as demonstrated by Hendel et al with direct lateral approach whereas it is 1.0% with posterior approach as reported by Nakata et al. A meta-analysis showed no difference of fracture risk between the approaches.[7]

SOFT TISSUE DAMAGE:

Muscle damage is a major concern in direct lateral approach and posterior approach. Gluteus maximus and Short external rotators damaged during posterior approach. Gluteus maximus, and medius damaged during direct lateral approach. 4%–20% report with abductor weakness after direct lateral approach total hip arthroplasty. Due to utilization of an intermuscular interval direct anterior approach is "muscle friendly"approach. Higher levels of serum creatine kinase postoperatively in posterior approach patients were observed by Bergin et al.[8] A study by Meneghini et al. on cadaver reflects that direct anterior approach is truly muscle sparing with less damage occurred in gluteus minimus with direct anterior approach (mean 8% of surface area) compared to posterior approach (18%).[9]

NERVE DAMAGE:

Nerve injury is a potentially devastating complication after total hip replacement. The nerves at risk include lateral femoral cutaneous nerve, superior gluteal Nerve, femoral nerve and sciatic nerve. Due to its variable course, Lateral femoral cutaneous nerve is the most commonly injured structure in direct anterior approach. Nearly 3.4%–81.1% of patients will have some symptoms of lateral femoral cutaneous nerve neuropraxia after this surgery and most resolve with time. Superior gluteal nerve injury most commonly occurs in direct lateral approach. 2.2%–42.5% of patients have superior gluteal nerve injury after direct lateral approach total hip arthroplasty.[10] Sciatic nerve injury is significantly higher in posterior approach.

LIMITATIONS

- Lateral femoral cutaneous nerve of thigh at risk.
- Technically demanding.
- Requires extensive knowledge of hip-joint anatomy.
- Previous acetabular fracture.
- Extensive posterior access may be needed for Pelvic deformity/defects in posterior acetabulum.

CONCLUSION

It is a safe and reproducible technique providing low morbidity and fast postoperative recovery for the patient. Early mobilisation and short hospitalisation time have significant social and financial benefits. Training and experience are crucial to successfully performing this minimally invasive surgical technique, so there is a learning curve for the surgeon and the team. Minimal invasiveness is not in size of incision but in the amount of soft tissue injury it incurs during the procedure.

REFERENCES

1. Matta JM, Shahrdar C, Ferguson T (2005) Single-incision anterior approach for total hip arthroplasty on an orthopaedic table. Clin Orthop 441:115–124

2. Restrepo C, Parvizi J, Pour AE, Hozack WJ. Prospective randomized study of two surgical approaches for total hip arthroplasty. J Arthroplasty. 2010;25:671–9.e1.

3. Barrett WP, Turner SE, Leopold JP. Prospective randomized study of direct anterior vs. postero-lateral approach for total hip arthroplasty. J Arthroplasty. 2013;28:1634–8.

4. Pugely AJ, Martin CT, Gao Y, Schweizer ML, Callaghan JJ. The incidence of and risk factors for 30-day surgical site infections following primary and revision total joint arthroplasty. J Arthroplasty. 2015;30(9 Suppl):47–50.

5. Higgins BT, Barlow DR, Heagerty NE, Lin TJ. Anterior vs. posterior approach for total hip arthroplasty, a systematic review and meta-analysis. J
Arthroplasty. 2015;30:419–34.

6. Sheth D, Cafri G, Inacio MC, Paxton EW, Namba RS. Anterior and anterolateral approaches for THA are associated with lower dislocation risk without higher revision risk. Clin Orthop Relat Res. 2015;473:3401–8.

7. Matta JM, Shahrdar C, Ferguson T. Single-incision anterior approach for total hip arthroplasty on an orthopaedic table. Clin Orthop Relat Res. 2005;441:115–24.

8. Higgins BT, Barlow DR, Heagerty NE, Lin TJ. Anterior vs. posterior approach for total hip arthroplasty, a systematic review and meta-analysis. J
Arthroplasty. 2015;30:419–34.

9. Bergin PF, Doppelt JD, Kephart CJ, Benke MT, Graeter JH, Holmes AS, et al. Comparison of minimally invasive direct anterior versus posterior total hip arthroplasty based on inflammation and muscle damage markers. J Bone Joint Surg Am. 2011;93:1392–8.

10. Meneghini RM, Pagnano MW, Trousdale RT, Hozack WJ. Muscle damage during MIS total hip arthroplasty: Smith-Petersen versus posterior approach. Clin Orthop Relat Res. 2006;453:293–8.

11. Jacobs LG, Buxton RA. The course of the superior gluteal nerve in the lateral approach to the hip. J Bone Joint Surg Am. 1989;71:1239–43.

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CASE REPORT - PHYSIOTHERAPY

PHYSIOTHERAPY INTERVENTIONS IN A POST HEMORRHAGIC STROKE HEMIPLEGIC PATIENT-A CASE REPORT

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Abstract

Background : Stroke is one of the leading causes of death and disability in India. Stroke is classically characterized by a neurological deficit attributed to an acute focal injury of the central nervous system (CNS) by a vascular cause including cerebral infarction, Intra-Cranial Hemorrhage (ICH) and Sub-Arachnoid Hemorrhage (SAH), which may also present as Transient Ischemic Attack (TIA). Hemiplegia refers to paralysis of one side of the body, usually as a result of injury to the brain, as in this case; Cerebrovascular Accident (CVA). The Physiotherapy interventions that include specific Evidence based treatment techniques, are aimed at improving the quality of living and restoring back the functional capacity of the patients. This may vary from the treatment commencing early in the Intensive care unit to the functional improvements that allows patient's ability to participate in one's role in the society.

Materials & Methods : A 62 years old gentleman with resultant right sided hemiplegic post hemorrhagic stroke was treated with physiotherapy interventions comprising therapeutic exercises and specific treatment techniques such as Proprioceptive Neuromuscular Facilitation(PNF), Functional Rehabilitation Sequence, Motor Re-learning Program and training sessions for Activities of Daily Living (ADL), Bladder and Bowel Control, Balance, Co-ordination and Gait. The evaluations of Pre and Post rehabilitation were made at certain intervals, using "Barthel Index Score" a therapeutic scale used to assess Activities of Daily Living (ADL)

Results : Patient was treated with regular sessions of exercise protocols that were designed and re-designed appropriately in accordance to the prognosis of the individual. Short-term and Long-term goals were set; and focused on the target achievement.

Conclusion : The Physiotherapy interventions aimed at Rehabilitation and Restoration of a healthy lifestyle had a good result as anticipated.

Keywords : Physiotherapy, Acute stroke, Hemorrhagic stroke, Cerebrovascular Accident, Hemiplegia.

INTRODUCTION

A Male, 62 years old, residing in Erode, had complaints of Slurring of speech, weakness of right upper limb and lower limb in October 2021 and got treated initially in a private hospital.

His condition was diagnosed as Acute Intra-Cranial Hemorrhage in Thalamo-capsular Region (Left side) and a Mild Mass-effect over Third Ventricle. He was also diagnosed earlier with Systemic Hypertension that was not under treatment.

After discharge from the hospital, he was enrolled in Physiotherapy interventions through Makkalai Thedi Maruthuvam (MTM) scheme under Modakurichi Block Team (Erode District).

CASE ILLUSTRATION

Initial Assessment:

- Patient was conscious and well oriented.
- Had mild slurring of speech.
- Had flaccid tone of Muscles in the Right Upper Limb and Lower Limb.
- Sensation : - Superficial senses were intact,
  - Deep sensations such as Kinesthetic,
  - Proprioceptive & Vibration were affected,
  - Cortical sensations were affected.
- Had stooping posture when made to stand with support.
- Co-ordination was affected.
- Balance and Gait couldn't be assessed as ambulation was affected.
- Activities of Daily Living (ADL) were assessed through the Scale "Barthel Index".

Goals of Treatment:

Physiotherapy Interventions were planned based on the assessment, with following goals,

- Functional Re-education
- Training of Activities of Daily Living
- Bladder and Bowel control
- Balance Training
- Co-ordination Training
- Gait Training

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Tool for Evaluation : Barthel Index Score

Table 1 showing the Barthel Index Scores in the Initial Phase of treatment and in the Later Phase following a particular interval in the course of treatment.

S. No	Activity	Score		Reference
		Initial	Post Therapy	
1	Feeding	0	6	0 = unable 5 = needs help cutting, spreading butter, etc., or requires modified diet 10 = independent
2	Bathing	0	4	0 = dependent 5 = independent (or in shower)
3	Grooming	0	3	0 = needs to help with personal care 5 = independent face/hair/teeth/shaving (implements provided)
4	Dressing	0	5	0 = dependent 5 = needs help but can do about half unaided 10 = independent (including buttons, zips, laces, etc.)
5	Bowels	2	9	0 = incontinent (or needs to be given enemas) 5 = occasional accident 10 = continent
6	Bladder	0	9	0 = incontinent, or catheterized and unable to manage alone 5 = occasional accident 10 = continent
7	Toilet Use	0	6	0 = dependent 5 = needs some help, but can do something alone 10 = independent (on and off, dressing, wiping)
8	Transfers (Bed to chair and back)	0	13	0 = unable, no sitting balance 5 = major help (one or two people, physical), can sit 10 = minor help (verbal or physical) 15 = independent
9	Mobility (On Level Surfaces)	3	15	0 = immobile or < 50 yards 5 = wheelchair independent, including corners, > 50 yards 10 = walks with help of one person (verbal or physical) > 50 yards 15 = independent (but may use any aid; for example, stick) > 50 yards
10	Stairs	0	5	0 = unable 5 = needs help (verbal, physical, carrying aid) 10 = independent
Total (0 – 100)		5	75	Improved

Therapeutic Techniques :

The following techniques were used to treat this patient to achieve the above set goals,

- Passive movements progressing to Active assisted movements and then to Active movements
- Facilitation techniques to improve Muscle tone including Proprioceptive Neuromuscular Facilitation (PNF) techniques,
- Functional Rehabilitation Sequence with Motor Re-learning programme
- Exercises to improve swallowing and speech, Facial exercises
- Sitting, Standing and balance training
- Core exercises, Bladder and bowel control exercises
- Gait training and rehabilitation
- Task specific movements training
- Training ADL
- Breathing exercises
- Co-ordination exercises (Frenkel's Exercises)

CONCLUSION

This patient was treated with the therapeutic techniques mentioned in the description and the attenders were taught regular exercises. The prognosis was monitored and the progressive exercise modifications were done, based on the achievement of goals and capabilities.

Barthel Index Scale was used as a tool for evaluation of prognosis. The patient showed a good improvement in his lifestyle. Further exercises that are to be continued and the modifiable risk factors were explained to the patient and his family.

REFERENCES

1. Stroke Epidemiology and Stroke Care Services in India, J Stroke. 2013 Sep; 15(3): 128–134,www.ncbi.nlm.nih.gov/pmc/articles/PMC3859004

2. An Updated Definition of Stroke for the 21st Century, Stroke, July 2013,Vol 44, Issue 7www.ahajournals.org/doi/10.1161/str.0b013e318296aeca

3. The Barthel ADL Index: a reliability study, National library of Medicine, https://pubmed.ncbi.nlm.nih.gov/3403500/

4. The Efficacy of the proprioceptive neuromuscular facilitation (PNF) approach in stroke rehabilitation to improve basic activities of daily living and quality of life: a systematic review and meta-analysis protocol. BMJ Open. 2017; 7(12): e016739.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5728303/

5. Effect of motor relearning programme on activity of daily living ability among post stroke patients in Makassar, International Journal of Medical Science and Dental Research, Volume 02, Issue 02 (March-April 2019), PP 14-19

6. Frenkel's exercise on lower limb sensation and balance in sub-acute ischemic stroke patients with impaired proprioception, Semantic Scholar, Published 2018,Psychology, Medicine, www.semanticscholar.org/paper/Frenkel-%E2%80%99-s-exercise-on-lower-limb-sensation-and-in-Ko-Chun/7aad6c05f43889c85284fb6be69782bb217b1347.

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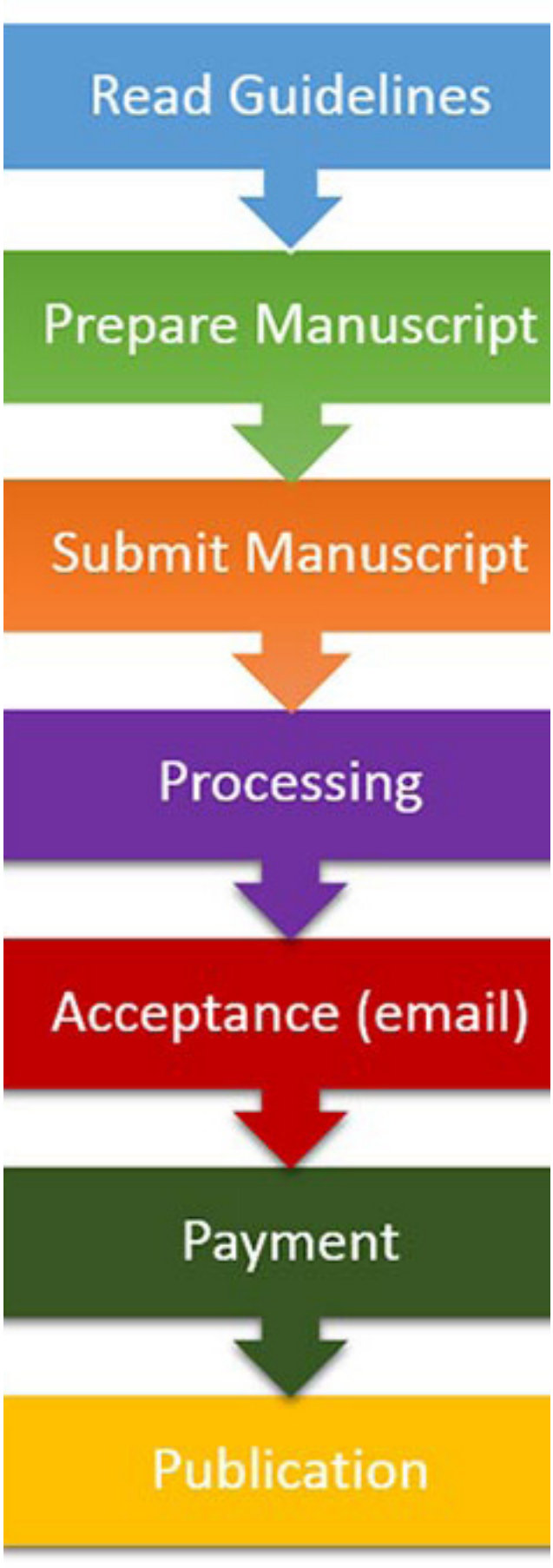

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