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TAMILNADU JOURNAL OF PUBLIC HEALTH AND MEDICAL RESEARCH

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Letter from the Editor's Desk

It's a great pleasure in expressing my sincere thanks to our readers, contributors, and editorial board for bringing out this amazing second issue of TNMPHJ in time. We assure you that our high-quality public health research journal will be reaching you four times in a year.

We also like to assure you that, the turnaround time of final response in less than a month to your article submission with more than 70% success rate of publishing if it aligns to the objective of the journal. Our emphasis is on reaching the entire health system particularly the primary health care oriented preventive research.
We are not restricted to any specialty or geographical location and more interested in community-oriented research including operational research, which can be applied on mass scale across the population.

With your support and commitment of editorial board, our journal will be having a prominent role in public health research in the years to come, also translate research as benefits to the public at large.

Best wishes.

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

Director of Public Health & Preventive Medicine

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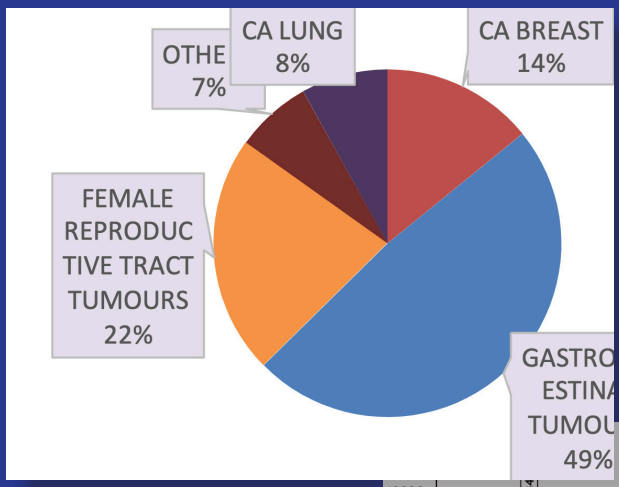

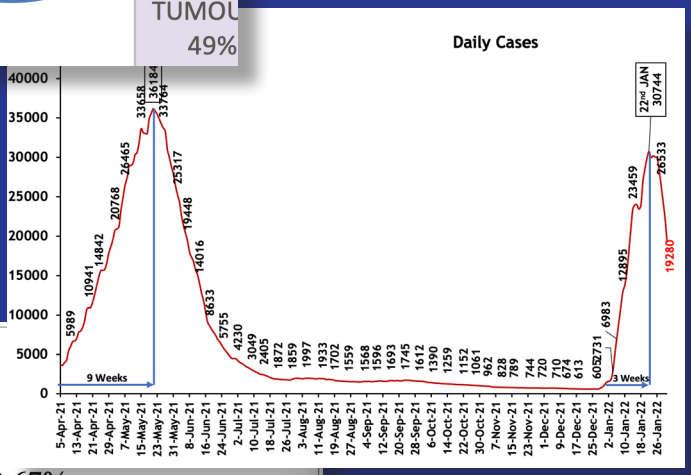

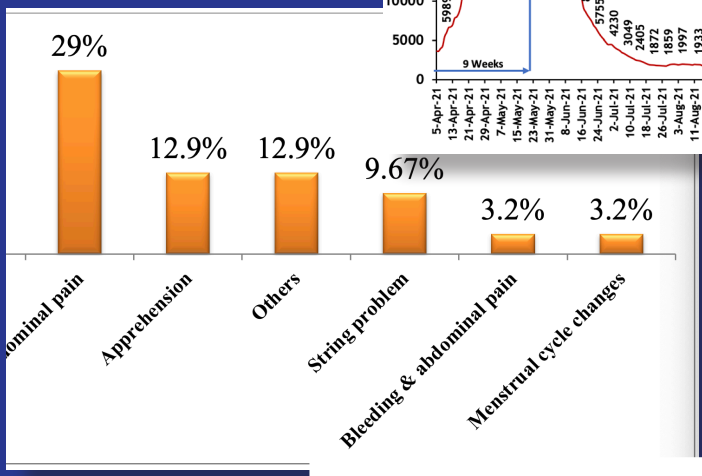

RESEARCH IS TO SEE WHAT EVERYBODY ELSE HAS SEEN, AND TO THINK WHAT NOBODY ELSE HAS THOUGHT.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A CROSS SECTIONAL STUDY ON CUTANEOUS MANIFESTATIONS OF DIABETES MELLITUS OF THE PATIENTS ATTENDING TERTIARY CARE CENTRE, CHENNAI

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Abstract

INTRODUCTION: Diabetes mellitus is a common and debilitating disease that affects a variety of organs including the skin. Between thirty and seventy percent of patients with diabetes mellitus will present with a cutaneous complication of diabetes mellitus at some point during their lifetime Recognition and management of these conditions is important in maximizing the quality of life and in avoiding serious adverse effects in patients with diabetes mellitus.

OBJECTIVE: To assess the various cutaneous manifestations of Diabetes Mellitus among Diabetic patients.

METHOD: A cross sectional study was conducted at a Tertiary Hospital in Chennai (Govt. Stanley Medical College and Hospital). 240 Diabetic patients were included in the study during the period between April 2021- July 2021. After obtaining informed consent from the patients, details were collected by face-to face interview using questionnaire designed for the study.

RESULT: A total of 240response were collected in which 66.3% were female participants. Most of the participants belong to upper lower class with poor educational status. Cutaneous manifestations of Diabetes was more common in the age group above 50 years (65.4%).42.1% of the study participants had a positive family history of DM.

Fungal infections (34.3%) were the most common infections in which 17.5% includes Pruritus vulvae and 12.5% constitutes Tinea infections.

CONCLUSION: Skin manifestations can be the presenting sign of type 2 DM or they can indicate underlying diabetes-induced organ damage in known diabetics. Patient education and lifestyle changes are key in improving the health and quality of life of patients with diabetes mellitus.

INTRODUCTION

Diabetes Mellitus is a clinical syndrome characterized by hyperglycemia caused by absolute or relative deficiency of insulin. Lack of insulin affects the metabolism of carbohydrate, protein and fat, and cause significant disturbance of water and electrolyte homeostasis. Long standing metabolic derangement is associated with functional and structural changes in many organs[1]. 76% of diabetic patients have skin manifestations[1]. Numerous skin lesions are associated with either type 1 or type 2 diabetes, specific chronic complications of the disease, use of anti-diabetic drugs, and certain endocrine and metabolic disorders that cause secondary diabetes mellitus. The progressive damage to vascular, neurological or immune systems also contributes significantly to skin manifestations[2].

The various cutaneous finding in diabetes include erythrasma, xanthomatosis, xanthelasma, pycomycetes, malignant otitis media, acanthosis nigricans, limited joint mobility, scleroderma like syndrome, scleroderma diabeticorum, eruptive xanthomas, cutaneous infections(furunculosis, carbuncle, pyodermas, candidiasis, dermatophytosis), pruritis, necrobiosis lipoidica diabeticorum, granuloma annulare, diabetic dermopathy and diabetic bullae[3]. The mechanism for most diabetic associated skin conditions are remain unknown. Hyperglycemia leads to non-enzymatic glycosylation (NEG) of various structural and regulatory proteins, including collagen. NEG leads to the formation of advanced glycosylation end products (AGEs) that are responsible for decrease in both acid solubility and enzymatic digestion of cutaneous collage. Disorders such as Diabetic thick skin and limited joint mobility are ought to directly result from accumulation of AGEs[3].

Among the cutaneous manifestations, skin infections accounted for 30.9%, foot gangrene and ulcers 12.9%, pruritis 7.1%, vitiligo 5.7%, yellow skin 4.2%, diabetic dermopathy 4.2%, skin tags 3.7%,Acanthosis Nigricans(AN) 2.9%,eruptive xanthomas 2.6%, necrobiosis lipoidica diabeticorum 1.4%, diabetic bullae 0.6% and pigmented purpuras 0.3%. Acanthosis nigricans [4] is a hyperpigmented velvety thickening of skin folds, presenting predominantly in the neck, axilla, and groin areas. Possible additional presentations could include skin tags and hyperkeratosis. Heredity, obesity, endocrine disorders, certain drugs, and malignancy are associated with AN[5]. Benign AN type 2 is related to type 2 diabetes, and pseudo-AN type 3 is associated with the metabolic syndrome. Acrochordons are

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benign lesions, but may become symptomatic with abrasion or necrosis. Red or black skin tags are the result of twisting of the base, which cuts off the blood supply. The diagnosis of acrochordons is made by clinical appearance. Rarely, they may look suspicious for malignancy and should be sent for histological testing.

METHODOLOGY

Study Design: A Cross Sectional Study.

Study Duratiuon: 4 months (April 2021 to July 2021)

Study Population: All known cases of Diabetes Mellitus Patients.

Study Area: Non communicable disease clinic at a tertiary hospital (Government Stanley Medical College Hospital)

Sample Size: According to the study on "Pattern of Cutaneous Manifestations in Diabetes Mellitus" by Abhishek Goyal[4] et al, sample size was calculated with P – prevalence 38% , q – 62% [7]. With 95% Confidence level and relative precision of 20% of Prevalence, sample required for the study was calculated as follows

Sample size n =4pq /d^2= 240 (with non-responsive rate of 5%)

Sampling Technique: Convenient sampling technique

Inclusion Criteria: Patients with known case of Diabetes Mellitus attending non communicable disease clinic.

Exclusion Criteria: Unconscious patients, patients with auditory impairment, visual impairment and mental deformities are excluded from this study.

Methoda of Data Collection: After giving preliminary introduction about the study in their mother tongue, written consent was obtained from the each respondent, the validated structured questionnaire was used to assess the cutaneous manifestations of DM through face-face interview and clinical examination.

Data Analysis: Data was entered in MS EXCEL and analyzed using statistical package for social sciences software (SPSS) Version 16. Desprictive statistics (mean, median, mode) were used to describe continuous variable, while proportion were used for categorical variables used for categorical variable.

RESULTS

This study was done among a sample of 240 Diabetic patients of various socio economic status.

In this study, majority of the study participants were above 50 years (61.7%). 66.3% constitutes females. 49.58% of the participants belongs to Upper lower class.

Table 1: Sociodemographic Profile

VARIABLE		FREQUENCY (%)
Age group	<30 years	1 (0.4%)
	30-39 years	30 (12.5%)
	40-49 years	61 (25.4%)
	>50 years	148 (61.7%)
	Total	240 (100)
Gender	Male	89 (33.6%)
	Female	159 (66.3%)
	Total	240 (100%)
Socio - economic Class	Upper	5 (2.08%)
	Upper Middle	28 (11.66%)
	Lower Middle	72 (30%)
	Upper Lower	119 (49.58%)
	Lower	16 (6.6%)
	Total	240 (100%)

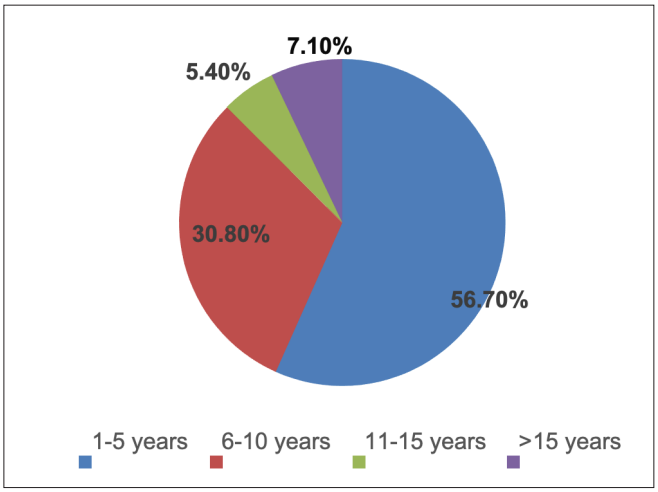

Figure 1: Duration of DM Among the Study Population

In this study, 56.70% of the study participants falls under 1-5 years duration.

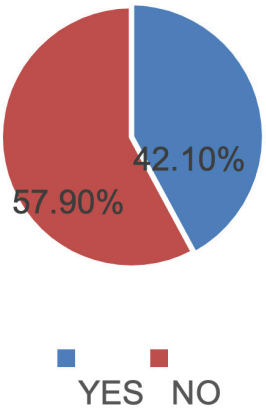

Figure 2: Family History of Diabetic Status of the Study Population

In this study, 57.9% of the study participants had no family history of DM

Table 2: Smoking and Alcohol Status of the Study Population

		FREQUENCY	PERCENTAGE
SMOKING	YES	48	20%
	NO	192	80%
ALCOHOL	YES	42	17.5%
	NO	198	82.5%

In this study, only 20% of smokers and 17..5% of alcoholics were present.

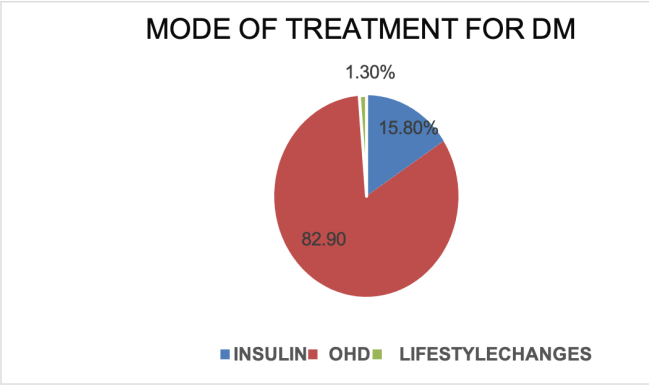

Figure 3: Mode of Treatment for DM

In this study, majority of the study participants (82.90%) were on Oral Hypoglycemic Drugs(OHD)

Table 3: Distribution of Cutaneous Manifestations of Diabetes among the study population:

S.NO	CATEGORY		FREQUENCY	PERCENTAGE
1	ACANTHOSIS NIGRICANS	YES	23	9.6%
		NO	217	90.4%
2	HAIR LOSS	YES	17	7.1%
		NO	223	92.9%
3	XANTHELASMA PALPEBRUM	YES	4	1.7%
		NO	236	98.3%
4	SKIN TAGS	YES	23	9.6%
		NO	217	90.4%
5	XEROSIS	YES	6	2.5%
		NO	234	97.5%
6	CUTANEOUS INFECTIONS	NOT APPLICABLE	155	64.6%
		IMPETIGO	6	2.5%
		TAENIA	33	12.7%
		CANDIDIASIS	49	19.5%
		DIABETIC CELLULITIS	1	0.4%
7	TAENIA (N=33)	TAENIA CRURIS	15	97.5%
		TAENIA CORPORIS	18	2.5%
8	PRURITIS VULVAE	YES	42	17.5%
		NO	198	82.5%
9	DIABETIC BULLAE	YES	1	0.4%
		NO	239	99.6%
10	ICTHYOSIS VULGARIS	YES	7	22.9%
		NO	232	97.1%
11	VITILIGO	YES	16	6.5%
		NO	224	93.3%
12	PSORIASIS	YES	13	5.4%
		NO	227	94.6%
13	DIABETIC ULCER	YES	7	2.9%
		NO	233	97.1%
14	SENILE PRURITIS	YES	41	17.1%
		NO	199	82.9%

15	ECZEMA	YES	27	11.3%
		NO	213	88.8%
16	URTICARIA	YES	8	3.3%
		NO	232	96.7%
17	SRS	YES	10	4.2%
		NO	230	94.8%
18	BULLOUS PEMPHIGOID	YES	5	2.1%
		NO	235	97.9%

Table 4:Association between duration of Diabetes and major Cutaneous Manifestations:

S.N0	SKIN MANIFESTATIONS	CATEGORY	DURATION OF DM		Total	CHI SQUARE VALUE	P value
			<5 YRS	>5 YRS			
1	Acanthosis nigricans	Yes	10	13	123	0.178	0.182
		No	126	91	217		
2	Hair loss	Yes	10	7	17	0.035	**0.0348***
		No	126	97	104		
3	Skin Tags	Yes	12	11	23	0.209	0.208
		No	124	93	104		
4	Tinea	Yes	116	94	30	0.221	0.121
		No	116	94	210		
6	Pruritis vulvae	Yes	26	16	42	0.451	0.449
		No	110	88	198		
7	Ichthyosis	Yes	1	6	7	0.022	0.19
		No	134	98	232		
8	Vitiligo	Yes	11	5	16	0.313	0.305
		No	125	99	224		
9	Psoriasis	Yes	7	6	13	0.833	0.833
		No	129	98	227		
10	Foot ulcer	Yes	5	2	7	0.64	0.68
		No	131	102	233		
11	Senile pruritis	Yes	21	20	41	.597	0.594
		No	115	84	199		
12	Eczema	Yes	16	11	27	.083	0.084
		No	120	93	213		
13	Urticaria	Yes	7	1	8	3.204	3.703
		No	129	103	232		
14	SRS	Yes	6	5	11	.047	**0.048***
		no	130	100	229		
15	Diabetic bullae	Yes	3	2	5	.023	**0.023***
		No	133	102	235		
16	Diabetic Intertrigo	Yes	4	1	5	1.13	1.23
		No	132	103	235		

*p value significant < 0.05

Interpretation: A Chi square test of association was done between duration of DM and various cutaneous manifestations of DM. Statistically significant association was observed for hair loss (p=0.0348*), SRS (p value=0.048*), Diabetic bullae (0.023*)

DISCUSSION :

In the present study the incidence of cutaneous manifestations of diabetes was most common in the age group of above 49years (61.7%). Majority of the present study population belong to upper lower class (49.58%%). 42.1% of the present study population had a positive family history of diabetes. Cutaneous infections were present in 35.1% cases. Fungal infections (34.3%) formed the largest group with pruritis vulvae being present in 17.5% cases. Tinea infections constituted 12.7% of the cutaneous manifestations of which 7.5% was tinea corporis and 6.25% was tinea cruris. This is very much similar to these findings in the study at Kashmir [10] where cutaneous infections constituted 37.5% of cases. In the study by Nek Ram Baghel et al[11] tinea cruris constituted 6.5% and tinea corporis 5.5%1. Intertrigo was 2.94% of cases in the study at Kashmir. Mahajan et al[4] observed 2 cases of balanoposthitis.[4]

Acanthosis nigricans constituted 9.6% cases of the present study population. In a study at Kashmir[10], acanthosis nigricans was present in 11.64% of the cases. Hair loss over fingers and toes was found to be present in 17 cases (7.1%). Kadam MN et al [13] found 135 cases of hair loss in their study. Vitiligo constituted in 6.5% of the present study population. In the study by Kadam MN et al[13] vitiligo was found in 2% of cases. Psoriasis was observed in 5.4% of the present study population with Koebner's phenomenon being present in 4.2% of cases. Similar observations were made by Manish M Kadam et al [13] psoriasis being present in 3% of cases.

Urticaria constituted 3.3% of the cases in the present study population. Ferringer T [3] et al reported 2% of cases as urticaria. Xerosis occurred in 2.5% of the present study population. Ferringer T[3] et al found xerosis as the second most common manifestation, present in 13.5% of cases.

Bullous pemphigoid was found in 2.1% of cases in present study population. Manish M Kadam et al[13], reported it in 1% of cases. Xanthelasma palpebrum was found in 1.7% of cases in this study. Bhat YJ et al[5] reported 2 cases of xanthelasma in his study.

CONCLUSION :

Cutaneous manifestations of Diabetes Mellitus often acts as an indicator of underlying disease process. Further complications can be avoided if they are diagnosed at an earlier stage itself at Primary Health Care level. It can be easily detected by simple clinical examination at primary health care where advanced techniques are not available. Patient education and lifestyle changes are key in improving the quality of life of patients with diabetes mellitus.

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ORIGINAL ARTICLE - PUBLIC HEALTH

RT-PCR CYCLE THRESHOLD VALUES MAY NOT BE USEFUL FOR PRIORITIZATION OF CONTACT TRACING IN THE CONTEXT OF SARS-COV-2 INFECTION

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Abstract

BACKGROUND: Viral load is an important factor determining the likelihood of transmission of COVID-19. Assuming that Cycle threshold (Ct) values of the diagnostic RT-PCR assay are a surrogate marker of viral load, we wanted to determine whether Ct values can be used to estimate the infectivity in terms of secondary attack rate among COVID-19 positive individuals so as to inform public health surveillance.

METHODS: We conducted a cross sectional study to compare cycle threshold values by secondary attack rates, age, gender, symptom status and comorbidity of COVID-19 individuals. We extracted data of Ct values from the sample referral form of all 485 COVID-19 positive individuals from three districts, tested in the state public health laboratory in three days. We extracted patient details like symptom status, number of contacts who tested positive for COVID-19 from the district surveillance records. We report median with interquartile range of Ct values and tested between groups using Mann-Whitney test.

RESULTS: There was no statistically significant difference in median Ct values across sub groups of secondary attack rate. COVID-19 positive individuals with symptoms had lower Ct value in all three genes with statistically significant difference in E gene (21.8; IQR 18.5-24.6) vs 23; IQR 19.7-26.1, p<0.02) and RDRP gene (21.4; IQR 18.5-25) vs 22.7; IQR 19.3-26, p<0.03). There was no significant difference in median Ct values between individuals with and without comorbidity.

CONCLUSION: We could not identify a relationship between Ct values and secondary attack rate. Symptomatic COVID-19 positive individuals have a significant lower Ct values corroborating with a higher viral load among them. Our findings indicate that Ct values of RT-PCR assay cannot be used in public health surveillance to predict transmission of COVID-19.

KEY WORDS: Contact Tracing, Covid-19, Cycle Threshold Value, Sars-Cov-2, Secondary Attack Rate, Surveillance.

INTRODUCTION

Viral load is an important factor determining the likelihood of transmission of COVID-19.1 Aggressive contact tracing and isolation will aid in quick isolation of high viral shedders who may play a critical role in transmission of infection among their contacts.[2] Resource constrained settings warrant measures that will save time and efforts in identification of individuals who need to be prioritised and isolated. The cycle threshold values generated during RT-PCR have an inverse correlation with the viral load of the person who is infected. Positive association is reported between sputum viral load and disease severity, risk of intubation, disease progression and death.3,4 With an underlying assumption that cycle threshold (Ct) values of the diagnostic RT-PCR assay are a surrogate marker of viral load of the individual, we did a cross-sectional study to determine whether Ct values could be used to estimate the infectivity in terms of secondary attack rate and association with age, gender, symptom status and comorbidity among COVID-19 positive individuals in order to inform public health surveillance.

METHODOLOGY

We extracted data of 485 COVID-19 positive individuals and their contacts from state public health laboratory. We extracted details about the symptom status, comorbidity, and number of contacts who tested positive for COVID-19 available with the district surveillance records. We calculated the secondary attack rate of COVID-19 for positive individuals. We divided them into four subgroups with secondary attack rate <25%, 25-50%, 50-75% and >75%. We calculated the median with interquartile range of Ct values and tested between groups using Mann-Whitney test.

RESULTS AND DISCUSSION

The difference in median Ct values of all three genes was not statistically significant across subgroups of age. Females had a significantly lower Ct value in RDRP gene compared to males. There was no statistically significant difference of

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median CT values across sub groups of secondary attack rate. COVID-19 positive individuals with symptoms had lower Ct value in all three genes with statistically significant difference in E gene and RDRP gene. There was no significant difference in median Ct values between individuals with and without comorbidity. (Table 1)

Table 1: Median CT values by age, gender, secondary attack rate, symptom and comorbidity status in COVID-19 positive individuals, Tamil Nadu, India, August 2020

Characteristics	n	E gene		RDRP gene		ORF-1B gene	
		Median (IQR)	p value	Median (IQR)	p value	Median (IQR)	p value
Age group (years)							
0-17	67	23.8(20.0,25.9)	0.4	24(20.4,26.6)	0.1	22.7(20.2,25.2)	0.2
18-44	260	22.6(19.1,25.6)		22.5(18.7,25.5)		21.9(18.4,25.2)	
45-60	109	21.8(18.8,25.4)		21.5(18.5,25.4)		21.3(18.5,24.6)	
60 & above	46	23.4(19.7,26.0)		23.2(19.5,25.9)		22.9(19.6,24.6)	
Sex							
Male	282	22.8(19.7,30)	0.2	22.8(19.8,25.9)	0.03	21.9(19.3,25.1)	0.5
Female	203	22.1(18.6,22.7)		21.8(18.1,25.5)		21.9(18.2,25.2)	
Secondary attack rate							
<25%	375	23(20,25.9)		22.7(19.4,25.8)		22.1(19.2,25.1)	0.2
25-50%	41	22.8(18.1,26.5)	0.1	22.8(19.3,26.4)	0.2	21.7(17.6,26.6)	
50-75%	17	20.8(17.3,26.5)		21.2(17.8,26.2)		21.7(17.6,26.6)	
75-100%	5	15.6(13.2,18.7)		16.1(14,16.2)		16.1(13.9,19.3)	
Symptomatic							
Yes	126	21.8(18.5,24.6)		21.4(18.5,25)		21.0(18.2,24.6)	
No	350	23(19.7,26.1)	0.02	22.7(19.3,26)	0.03	22.4(19.4,25.2)	0.05
Comorbidity							
Yes	48	24.4(19.7,26.6)	0.1	24.1(19.4,26.5)	0.2	23.7(19.5,25.7)	0.2
No	427	22.4(19.2,25.7)		22.4(18.9,25.6)		21.8(18.9,25.1)	

Ct values were not associated with secondary attack rate for SARS-CoV-2 infection in our setting. However, we have not accounted for the contacts who have not been tested and for unknown confounders with relation to the value of the cycle threshold numbers. Symptomatic COVID-19 positive individuals have a significant lower Ct values corroborating with a higher viral load among them. It may be noted that self-reported symptoms and comorbidity could be a source of information bias. This could have led to misclassification in the subgroup analysis and biased the association. Ct values can vary based on the sample collection, type of sample, workflow, standard curve and interpretation of the assay during confirmation of diagnosis.[5] However we report our findings from a single laboratory and we assume that some operational biases are nullified in the process.

CONCLUSION

Our findings indicate that Ct values may not be of use in public health surveillance to predict transmission of SARS-CoV-2 infection.

CONFLICT OF INTERESTS

None declared

AUTHORS' CONTRIBUTIONS

SB and BB conceived the study; SB and TB designed the study protocol, carried out analysis, interpretation of data and drafted the manuscript; TSS, BB critically reviewed the manuscript for intellectual content. All authors read and approved the final manuscript.

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ORIGINAL ARTICLE - PUBLIC HEALTH

POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE (PPIUCD) RETENTION RATE IN KANCHEEPURAM HEALTH UNIT DISTRICT (HUD) - A CROSS SECTIONAL STUDY

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Abstract

INTRODUCTION: While there are numerous methods available for contraception, Post-Partum Intra Uterine Contraceptive Device has been the most used method in Tamil Nadu. However, over a period, the retention rate tends to be low for various reasons. Hence this study was conducted to estimate the retention rate of intrauterine device among PPIUCD users at the end of 6 months and the factors determining the retention of IUCD in Kancheepuram district of Tamil Nadu, which has the lower PPICUD acceptors.

METHODS : A cross-sectional study was conducted in Kancheepuram Health Unit District in November 2019 among 260 PPIUCD acceptors between 6 months to 2 years after PPIUCD insertion. The required sample size was selected by multistage sampling method. After obtaining written informed consent, the participants were interviewed using an interviewer administered semi-structured questionnaire.

RESULTS : The retention rate was 81.5% (95% Confidence Interval -76.5% - 86.1%) Among those who discontinued to use IUCD, 64.5% had removed it intentionally. among women who did not receive any information on follow-up visit had higher proportion of discontinuation which was statistically significant. Bleeding and abdomen pain was the most common reason quoted for discontinuation, while considering IUCD as a safe option was the most common reason quoted for retention of IUCD.

CONCLUSION : PPIUCD retention rate has improved in Kancheepuram HUD. There should be a definite protocol on follow-up of PPIUCD acceptors and implementation of the same should be focused on to ensure the retention rate.

KEYWORDS : PPIUCD, retention.

INTRODUCTION

Tamilnadu is a pioneer by not only performing better in health indicators but also in controlling population growth. When family planning in the form of spacing of pregnancies by more than 2 years is followed by couples, it can reduce child mortality by 10% and can prevent approximately 1/3rd of maternal deaths. Among the various methods of contraception available, the contraceptive method which is most commonly used in Tamilnadu is Postpartum Intrauterine Contraceptive Device (PPIUCD). The IUCD used in recent times has very few adverse effects, safe, lasts long, very much effective, independent of coitus, private, most cost-effective and rapidly reversible.

Post-partum period is the period in which the mothers are more receptive to adopt family planning methods. It has 3 phases.

- The first 6–12 hours postpartum is known as the acute or initial phase.
- The sub-acute postpartum period lasting for 2-6 weeks is the second phase.
- The delayed postpartum period is the third phase lasting till 6 months.

PPIUCD is inserted during the first 48 hours after delivery. Intrauterine device can also be inserted after an abortion (Post Abortal) and after 6 weeks postpartum (Extended PP)[2]. Therefore, women tend to accept PPIUCD insertion readily and in some cases, they consent even before they completely understand about the method. However, over a period of time, the retention rate tends to be low for various reasons. As per NFHS-4 data (2015 – 16), in the age group of 15 – 49 years, PPIUCD usage in India is 1.5% and discontinuation of PPIUCD within 12 months is 26.4%. PPIUCD usage in Tamil Nadu is 1.9%, and discontinuation of PPIUCD within 12 months is 47.8%. Kancheepuram district is situated on the northeastern coast of Tamil Nadu and is adjacent to Chennai, the capital of Tamil Nadu. The PPIUCD usage rate in Kancheepuram is 1.7% which is lower than the state average and there is no data on retention rate. Hence, this study was conducted

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to estimate the retention rate of intrauterine device among PPIUCD users at the end of 6 months and study the factors which determine the retention of IUCD.

OBJECTIVES

1) To study the retention rate of intrauterine device among PPIUCD users at the end of 6 months until 2 years.
2) To identify the factors associated with PPIUCD retention.

METHODOLOGY

A cross-sectional study was conducted in Kancheepuram Health Unit District (HUD) in the month of November 2019 among PPIUCD acceptors between 6 months to 2 years after PPIUCD insertion. The number of sample size required to be included in the sample with 95% confidence was calculated using the following formula.

$$N = \frac{Z\alpha^2 pq}{d^2}$$

Assuming 95% confidence level, retention rate of 81.11% based on the study done by Mishra et al [2] and an absolute precision of 5%, the minimum sample size required was 236. Adding 10% non-response rate, the required sample size was 260. The required sample size was selected by multistage sampling method. Kancheepuram HUD has 7 blocks, of which 3 blocks were selected by simple random method. (Figure 1). The list of mothers who had inserted PPIUCD at least 6 months till 2 years prior to the survey from the three selected blocks was obtained from the Deputy Director of Health Services office of Kancheepuram HUD. The number of participants from each block were chosen unequally as the samples were taken proportionate to the population size of the postnatal mothers in the blocks. (Figure 1) Using simple random sampling technique, the required number of participants were chosen from each block. The selected study participants were located with the help of the concerned Village Health Nurses. After obtaining written informed consent, the participants were interviewed using an interviewer administered semi-structured questionnaire. The questions were on demographic profile, obstetric factors, details on PPIUCD insertion, the current status of PPICUD usage, reasons for acceptance and removal of IUCD. Ethical clearance for the survey was obtained from The Institutional review Board, Madras medical College. Official permission to conduct the study was obtained from the DDHS, Kancheepuram HUD.

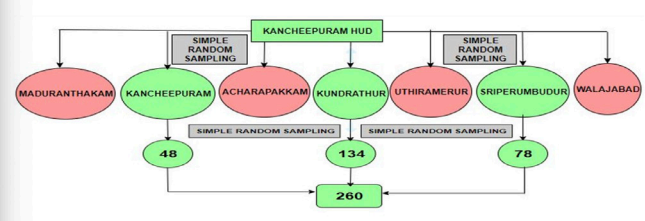

Figure 1: Sample allocation in Kancheepuram Health Unit District

The data was entered in MS Excel and analyzed using SPSS Version 16. Appropriate descriptive and inferential statistics were used to analyze the data.

RESULTS

The basic demographic profile of the study participants is shown in Table 1.

Table 1: Socio-demographic profile of study participants

Socio-demographic factors	n	Percentage
Age		
18-26 years	201	77.3
27-35 years	59	22.7
Religion		
Hindu	234	90.0
Muslim	11	4.2
Christian	10	3.8
Others	5	1.9
Education		
No formal school education	2	0.8
Formal education	258	99.2
Parity		
Primipara	228	87.7
Multipara	32	12.3

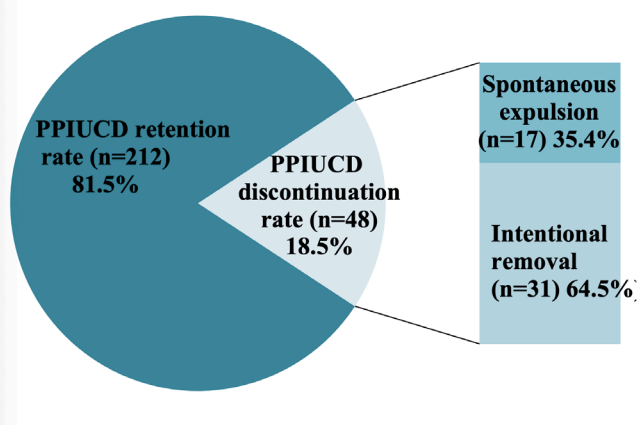

Figure 2. PPIUCD Retention Rate

PPIUCD retention rate was 81.5% with a 95% Confidence Interval of 76.5% - 86.1%. PPIUCD discontinuation rate was 18.46% with a 95% Confidence Interval of 13.94% - 23.72%. Among the 48 mothers who did not continue PPIUCD, 17 mothers (35.4%) had spontaneous expulsion and 31 mothers (64.5%) had removed PPIUCD intentionally. Spontaneous expulsion was observed maximally between 1-4 weeks following PPIUCD insertion. Only 20.8% of mothers in PPIUCD discontinued group were willing for re-insertion.

Table 2: Association between sociodemographic factors and PPIUCD retention rate

Socio-demographic factors (N = 260)	IUCD retained% N = 212	IUCD discontinued% N = 48	p value
Age group			
18–26 yrs (201)	159 (79.1%)	*42 (20.9%)*	0.062°
27–35 yrs (59)	53 (89.8%)	6 (10.2%)	
Religion			
Hindu (234)	195 (83.3%)	39 (16.7%)	0.061°
Muslim (11)	6 (54.5%)	*5 (45.5%)*	
Christian (10)	8 (80%)	2 (20%)	
Others (5)	3 (60%)	2 (40%)	
Education			
No formal education (2)	1 (50%)	*1 (50%)*	0.336°
Formal Education (258)	211 (81.8%)	47 (18.2%)	

° - chi-square test

* - Fisher's exact test

Table 3: Association between Obstetric factors and PPIUCD retention rate

Obstetric factors (N = 260)	IUCD retained% N = 212	IUCD discontinued % N = 48	p value
Parity			
Primipara (228)	189 (82.9%)	39 (17.1%)	0.132°
Multipara (32)	23 (71.9%)	*9 (28.1%)*	
IUCD insertion time			
Within 10 mins (68)	59 (86.8%)	*9 (13.2%)*	0.546°
Within 48 hrs (85)	67 (78.8%)	18 (21.2%)	
Intra-CS (104)	84 (80.8%)	20 (19.2%)	
48 hrs–6 wks (3)	2 (66.7%)	1 (33.3%)	

Table 4: Factors influencing PPIUCD retention

VARIABLE	IUCD Retained (%)	IUCD Discontinued (%)	p value
No informed consent	13 (65%)	7 (35%)	0.067°
No motivation & counselling	7 (70%)	3 (30%)	0.399°
No information on follow-up visit	2 (33.3%)	4 (66.7%)	**0.012°**
Didn't attend follow-up visit	16 (72.7%)	6 (27.3%)	0.259*
Bleeding	33 (63.5%)	19 (36.5%)	**0.000°**
Abdominal pain	78 (82.1%)	17 (17.9%)	0.858°
Vaginal discharge	43 (86%)	7 (14%)	0.366°
Missing strings	7 (46.7%)	8 (53.3%)	**0.002***

° - chi-square test

* - Fisher's exact test

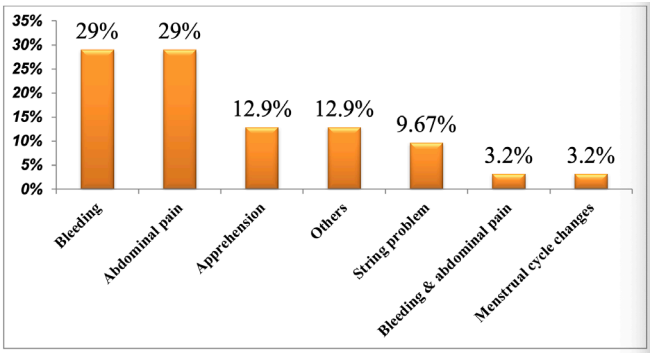

Figure 3. Reasons for PPIUCD removal

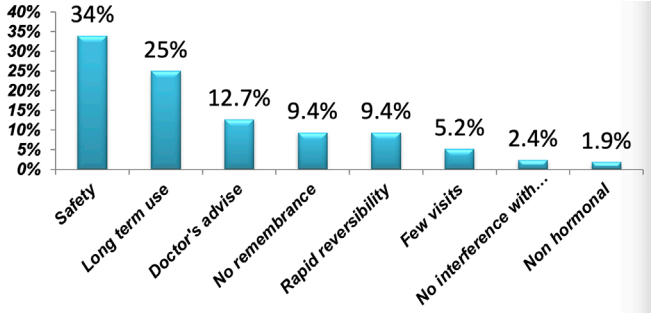

Figure 4. Reasons for PPIUCD retention

DISCUSSION

This study was conducted in Kancheepuram HUD which had PPIUCD insertion rate lower than the state average. The retention rate was 81.5%. Among those who discontinued to use IUCD, 64.5% had removed it intentionally. There was no significant difference between women continued to retain IUCD and discontinued to use based on socio-demographic characteristics and parity. Timing of insertion also did not determine the retention pattern. However, among women who did not receive any information on follow-up visit had higher proportion of discontinuation which was statistically significant. Bleeding and abdomen pain was the most common reason quoted for discontinuation, while considering IUCD as a safe option was the most common reason quoted for retention of IUCD.

As per NFHS-4 data (2015 – 16), the national average of PPIUCD discontinuation of within 12 months was 26.4% and the Tamil Nadu state average was 47.8%.[4] The discontinuation rate in Kancheepuram district was comparable to that of national average but much better compared to the state average. In a survey conducted by the Directorate of Public Health and Preventive Medicine among all IUCD acceptors from Government Medical College Hospital in the year 2013, showed that 50% and 22% had retained IUCD at the end of 1 and 2 years respectively. This shows that in Kancheepuram HUD, the retention rate is better than the state average. This could also be attributed to the temporality showing improvement over period of time. Also lack of information on follow up visit was significantly associated with discontinuation of IUCD. Hence, it should be ensured that all PPIUCD acceptors, should be informed on the follow up visit details like when to come. This will give time for the IUCD acceptors to clarify their doubts and also give space for the health care providers to reassure the patients and alleviate their misconceptions. This study reflects the retention rate of only Kancheepuram HUD and the results could be generalized to the entire state as the protocol followed in PPIUCD is uniform across the state. However, PPIUCD retention rate can be compared between districts which have higher proportion of high order birth. The limitation of this study is that the PPIUCD retention is self-reported and was not verified by the clinician. The other limitation is the recall bias.

CONCLUSION

PPIUCD retention rate has drastically improved over period of time in Kancheepuram HUD. There should be a definite protocol on follow-up of PPIUCD acceptors and implementation of the same should be focused on to ensure the retention rate.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A STUDY ON PREVALENCE OF ANXIETY AND DEPRESSION AMONG FAMILY CARE GIVERS OF CANCER PATIENTS IN TERTIARY CARE CENTRE, CHENNAI.

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Abstract

Introduction: Care giver's role in cancer patients is eminent one. Without caregivers' contribution the cancer patients cannot lead a better quality of life. Anxiety and depression will be quite common among care givers of cancer patients, if their anxiety and depression is within the acceptable limit. If the level is more than the acceptable limit their quality-of-care giving is diminished. Hence, this study is assessing the prevalence of anxiety and depression in the present scenario is getting importance.

Objective : To assess the level of anxiety and depression among family caregivers of cancer patients.

Methods: A cross sectional study conducted in tertiary hospital Chennai. 100 caregivers of cancer patients are included in this study during the period of July and august 2016. After obtaining informed consent from care givers of cancer patients, detail was collected by face-to-face interview using HADS questionnaire designed for this study.

Results: The prevalence of anxiety and depression of among family caregivers of cancer patients is 80%and 67% respectively and it is more common among female care givers than males.

Conclusion: This calls for more psychotherapeutic intervention to address the problems and to improve their quality of life thereby preventing them from physical and mental health deterioration.

INTRODUCTION

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Early diagnosis is essential to reducing cancer morbidity and mortality since cancer stage at the diagnosis is the most important determinant of treatment options and patient survival. Palliative care is essential and effective for adequate symptom control and management of pain in cancer patients. Patients living with and dying from cancer have the fundamental right to do have a care with the dignity and comfort, irrespective of their disease or where they live. Cancer is predicted to be an increasingly important cause of morbidity and mortality in the next few decades, in all regions of the world.

Caregivers of Cancer Patients

Caregiver as the person who most often helps the person with cancer and is not paid to do so. Professional care providers are paid to give care. They tend to have more limited roles. Caregivers may be partners, family members, or close friends. Most often, they're not trained for the caregiver job. Many times, they are the lifeline of the person with cancer. Caregivers have a huge influence of both positive and negative on how the cancer patient deals with their illness. Their encouragement can help the patient stick with a demanding treatment plan and take other steps to get well, like eating healthy meals or getting enough rest. Good communication between caregiver and cancer patients is the most important part of care giving. They should make sure that the patient know that he/she is always open to listening, even about tough topics.

Stress Among Caregivers

Stress is both a cause and effect of cancer. Cancer causes stress not only to the patient but also to the caregivers. They often experience stress, anxiety, and depression on the course of the role as a caregiver. Anxiety and depression among caregivers ultimately affect the quality of care that is being provided to the patient. Among them, psychological and emotional problems pose a great threat to the caregivers than the patients themselves. Palliative caregiving is stressful, challenging and can impact the caregiver's physical, emotional, psychological, and social well-being. Understanding lived experiences of caregivers of cancer patients on palliative care is important for the health professionals to improve the support, guidance, and education given to the caregivers of cancer patients on palliative care.[2]

Stress among caregivers ultimately affects quality of care that is being provided to the patient. This is also because they are unprepared to provide care, have inadequate knowledge

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about care giving along with financial burden, physical and emotional stress. Thus, interventions are needed to help caregivers to strengthen their confidence in giving care and come out with better quality of care.[3] Thus, it is essential to identify caregivers with risk of negative health outcomes and intervention is required to attenuate the anxiety and depression associated with the caregiving experience.

OBJECTIVES

•To find the level of caregiver burden of patients with cancer.

• To assess the level of anxiety and depression among family caregivers of cancer patients.

METHODOLOGY

STUDY DESIGN: A cross sectional study.

STUDY SETTING: The study is conducted in the Departments of Oncology and Radiotherapy, Govt. Stanley Medical College and Hospital.

STUDY DURATION: The study is conducted from July 2016 till October 2016.

STUDY POPULATION: The sample is drawn from the family caregivers of cancer patients attending OP and admitted in the wards of Departments of Oncology and Radiotherapy, Govt. Stanley Medical College and Hospital.

SAMPLE SIZE: In a study of "Care giving impact on depressive symptoms of family care givers of terminally ill patients in Taiwan Siew Tzuh Tang, RN, DNSc Associate Professor, School of Nursing Chang Gung University, Taiwan".[4] The prevalence of clinical depression in care givers is 75.9%. Hence, with relative precision of 12% of prevalence the sample size is taken as 100.

INCLUSION CRITERIA: Caregivers of patients with any cancer. Primary caregivers of the cancer patients. Caregivers of any age/gender.

Caregivers irrespective of their relation to the patient.

EXCLUSION CRITERIA: Caregivers not willing to participate.

PLACE OF STUDY: Government Stanley Hospital, Chennai.

HUMAN SUBJECT PROTECTION: Study done after obtaining permission from IEC.

METHOD OF COLLECTION: After getting informed consent from the students, details were obtained using HADS (Hospital Anxiety and Depression Scale) questionnaire designed for the study. The questionnaire contained demographic details of the caregivers and questions to assess the level of anxiety and depression among the caretakers.

DATA ANALYSIS: Data was entered in MS EXCEL and analyzed using EPI INFO 7.2

RATIONALE OF THE STUDY:

This study attempts to study the caregiver's level of anxiety and depression. If caregiver's emotional and physical health is not preserved, the quality of care they deliver may suffer and more demands placed on the health care system by the patients and caregivers. Because of these psycho social issues faced by the caregivers, this study focuses to understand the level of anxiety and depression experienced by them in the process of providing care.

RESULTS

I-Types of tumours in patients, sex, age and socio economic class distribution in care givers (Figure 1,2,3,4)

Among the study population, 49 patients had Gastro intestinal tumours, 22 patients had tumours of the female reproductive tract,14 patients had CA Breast, 8 patients had CA lung. 7 patients had other tumours like Hodgkins lymphoma, Synovial carcinoma of knee joint, Malignant melanoma,etc., (Figure 1)

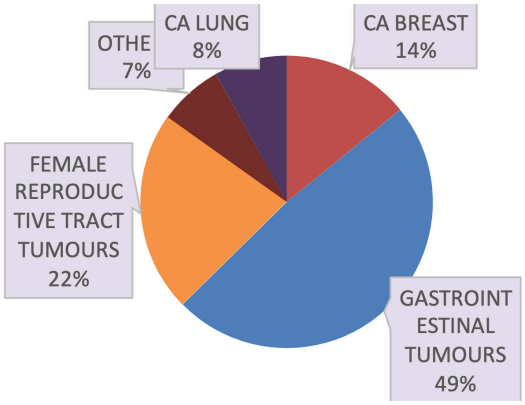

Figure-1: Prevalence of different types of Cancers in the Study

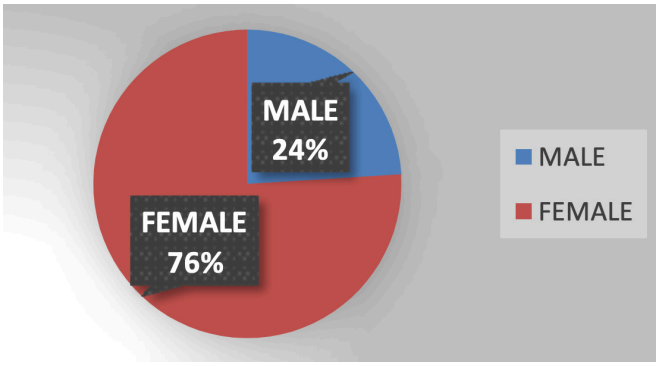

Figure-2: Sex Distribution of the Study Population

Among the study population,24 caregivers were male, 76 caregivers were female. (Figure 2)

Among the study population, 3 caregivers were under the age of 20, 18 caregivers were between 20-29 years of age, 23 caregivers were between 30-39 years of age, 27 caregivers were between 40-49 years of age, 19 caregivers were between 50-59 years of age, 10 caregivers were above the age of 60. The mean age of the caregivers in the study population is 42 years. (Figure 3)

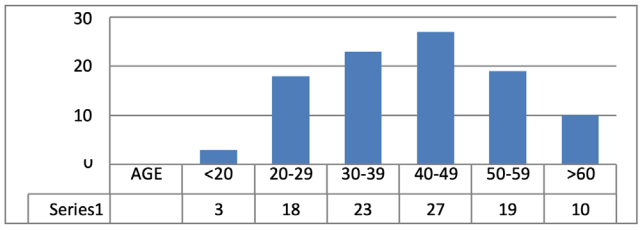

Figure-3: Age Distribution among the Study Population

Among the study population as per B G Prasad Socio economic classification, 6 caregivers belonged to upper class, 31 caregivers belonged to upper middle class, 32 caregivers belonged to middle class, 26 caregivers belonged to lower middle class, 5 caregivers belonged to lower class. (Figure 4)

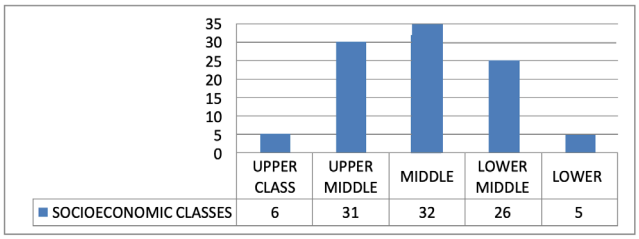

Figure-4: Socioeconomic Class Distribution of the Study Population

II-Anxiety and severity of anxiety in care givers (Figure 5,6)

Among the study population of 100 caregivers, 80% of the caregivers were anxious, 20% of the caregivers were not anxious (Figure 5)

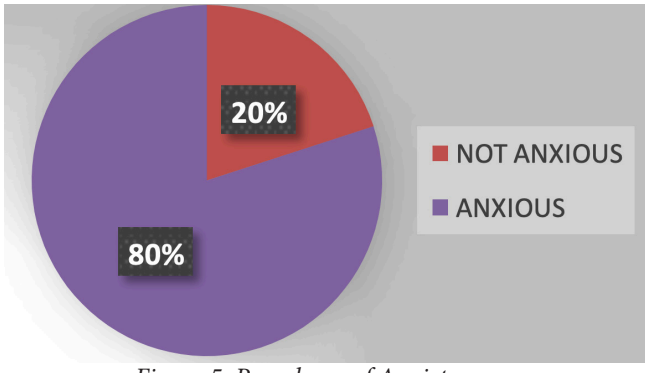

Figure-5: Prevalence of Anxiety among the study Population

Among the study population, 20% of the caregivers were not anxious, 25% of the caregivers had mild anxiety, 34% of the caregivers had moderate anxiety, 21% of the caregivers had severe anxiety (Figure 6)

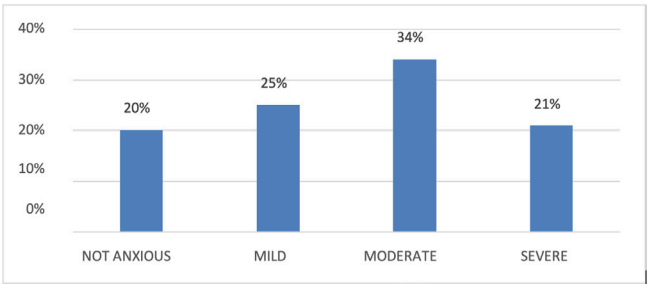

Figure-6: Frequency of severity of Anxiety among the Study Population

III-Depression and severity of depression in care givers (Figure 7,8)

Among the study population of 100 caregivers, 67% of the caregivers were depressed, 33% of the caregivers were not depressed. (Figure 7)

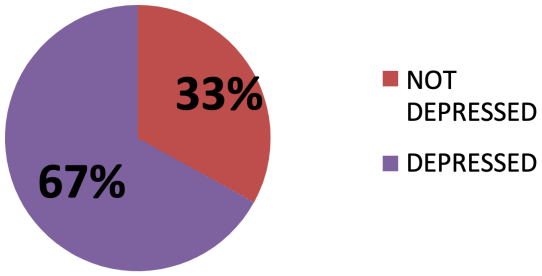

Figure-7: Prevalence of Depression among the Study Population

Among the study population, 33% of the caregivers were not depressed, 31% of the caregivers had mild depression, 25% of the caregivers had moderate depression, 11% of the caregivers had severe depression. (Figure 8)

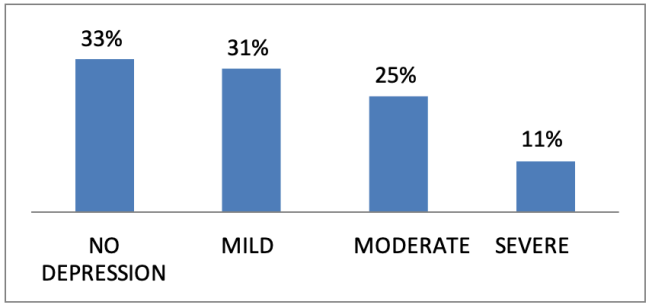

Figure-8: Frequency of severity of Depression among the Study Population

IV-Anxiety and depression among male and female caregivers (Figure 9,10)

Among the study population, 70.2% of the males and 80.3% of the females were anxious. 29.8% of the males and 19.7% of the males were not anxious. Thus, the prevalence of anxiety is more in female caregivers than in male caregivers. The probability value according to Chi-Square test is 0.0308 (which is less than 0.05). Hence, the result is statistically significant. (Figure 9).

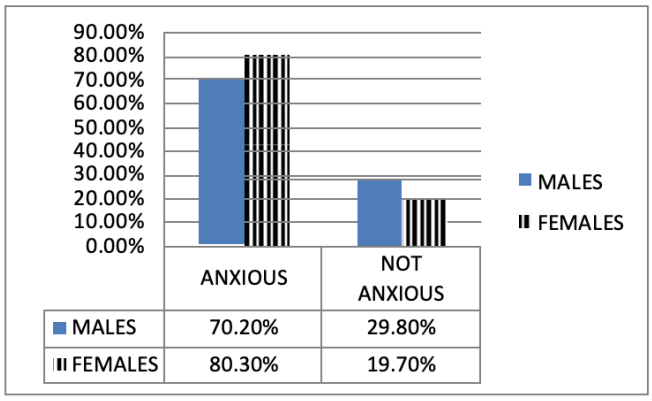

Figure-9: Frequency of Anxiety among male And female Caregivers

Among the study population, 54.2% of the males and 71.1% of the females were depressed. 45.8% of the males and 28.90% of the females were not depressed. Thus, the prevalence of depression is more in female caregivers than in male caregivers. The probability value according to Chi-square test is 0.0256 (less than 0.05). Hence, the observed result is statistically significant. (Figure 10)

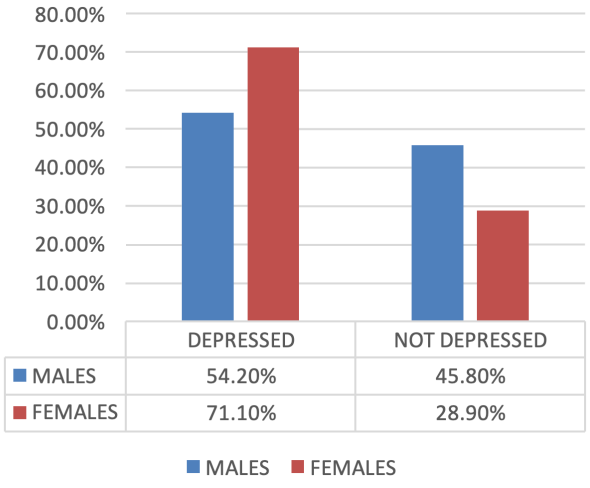

Figure-10: Prevalence of Depression among Male and Female Caregivers

V-Anxiety and depression among care givers of above and below 30 years of age (Figure 11,12)

Among the 100 caregivers, 25 caregivers were below 30 years of age and 75 caregivers were above the age of 30 years. 85.3% of the caregivers above the age of 30 and 64% of the caregivers under the age of 30 were anxious. Thus, the prevalence of anxiety is more in caregivers above 30 years of age. The probability value according to Chi-Square test is 0.0433 (less than 0.05) which is statistically significant. (Figure 11)

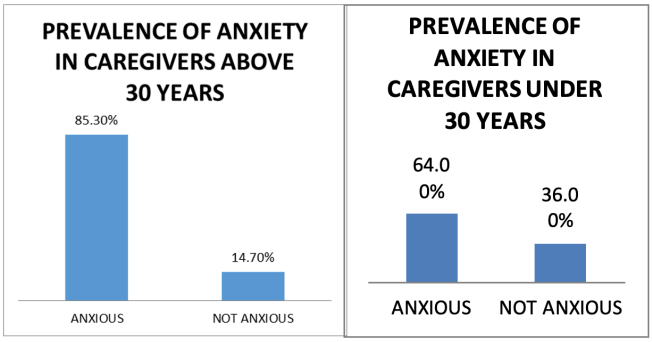

Figure-11: Frequency of Anxiety among caregivers under 30 years of age and caregivers above 30 years of age

Among the study population, 74.7% of the caregivers above 30 years of age and 41.3% of the caregivers below 30 years of age were depressed. Thus, the frequency of depression is more in caregivers above 30 years of age. The probability value according to Chi-Square test is 0.0099(less than 0.05). Hence, the observed result is statistically significant.
(Figure 12)

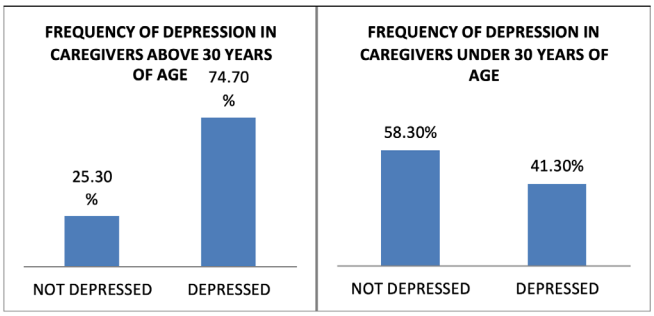

Figure-12: Frequency of Depression among caregivers under the age of 30 and caregivers above the age of 30

VI-Anxiety and depression among care givers from upper and lower socio-economic class (Figure 13, 14)

Among the study population, 78.4% of the caregivers from upper socioeconomic class and 81% from the lower socioeconomic class were anxious. Thus, the frequency of

anxiety is more in caregivers from lower socio economic classes. The probability value according to Chi-Square test is 0.0027 (less than 0.05). Hence, the observed result is statistically significant. (Figure 13)

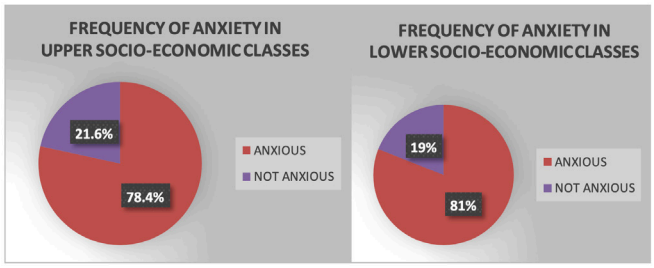

Figure-13: Frequency of Anxiety among caregivers from Upper and Lower Socioeconomic Classes

Among the study population, 62% of the caregivers from upper socioeconomic class and 70% of the caregivers from low socioeconomic class were depressed. Thus,the frequency of depression is more in caregivers from low socioeconomic classes. The probability value according to Chi-Square test is 0.0322 (less than 0.05). Hence, the observed result is statistically significant. (Figure 14)

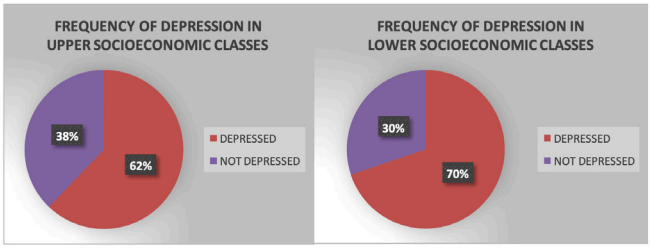

Figure-14: Frequency of Depression among caregivers from Upper and Lower Socioeconomic Classes

VII-Relationship to the patient and anxiety, depression among care givers (Figure 15,16,17)

Among the study population, 42% of the cancer patients were the spouses of the caregivers. 32% of the cancer patients were the caregiver's parents, 12% of the cancer patients were the caregiver's in-laws, 6% of the cancer patients were the caregiver's siblings, 5% of the cancer patients were the caregiver's children, 3% of the cancer patients were the caregiver's grandparents. (Figure15)

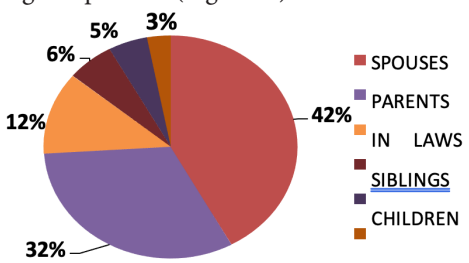

Figure-15: Relationship of the patient to the caregiver

Among the study population, 83% of the caregivers nursing their parents, 95.2% of the caregivers nursing their spouses, 80% of the caregivers nursing their children, 66.7% of the caregivers nursing their siblings and 65.6% of the caregivers nursing their in-laws were anxious. Caregivers who were nursing their parents, spouses and children had a higher frequency of anxiety than the caregivers nursing their siblings and their in-laws. The probability value according to Chi-square test is > 0.05. Thus, the observed result is not statistically significant. (Figure 16)

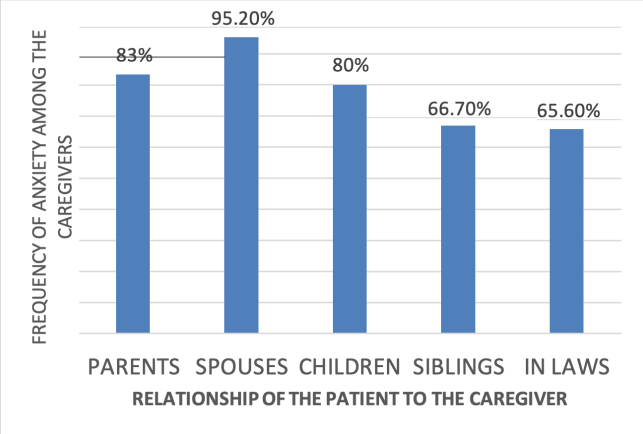

Figure-16: Frequency of Anxiety among the caregivers according to their relationship to the patient

Among the study population, 75% of the caregivers nursing their parents, 78.6% of the caregivers nursing their spouses, 80% of the caregivers nursing their children, 52% of the caregivers nursing their siblings and 50% of the caregivers nursing their in-laws were depressed. The frequency of depression was found to be higher in the caregivers nursing their parents, spouses and children than those nursing their siblings and in-laws. The probability value according to Chi-Square test is 0.026 (less than 0.05). Hence, the observed result is statistically significant. (Figure 17)

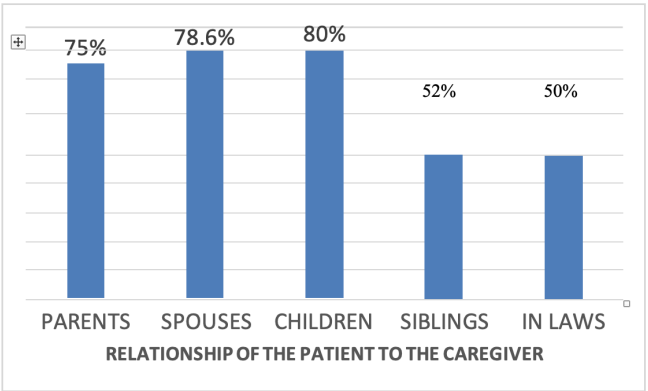

Figure-17: Frequency of depression among the caregivers according to their relationship to the patient

VIII-Anxiety, depression among caregivers of earning and dependent patients (Figure18,19,20)

Among the study population of 100 caregivers, 55% of the caregivers were nursing financially dependent patients, 45% of the caregivers were nursing earning patients. (Figure 18)

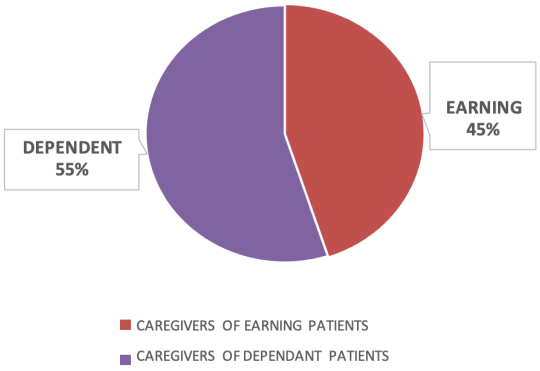

Figure-18: Caregivers of earning patients vs caregivers of financially dependent patients

Among the study population, 82.2% of the caregivers of earning patients were anxious and 17.8% of the caregivers of earning patients were not anxious. 78.2% of the caregivers of dependent patients were depressed and 21.8% of caregivers of dependent patients were not depressed. Thus, the frequency of anxiety is higher in caregivers of earning patients than the caregivers of dependent patients. The probability value according to Chi-Square test is 0.0453 (less than 0.05). Hence, the observed result is statistically significant. (Figure 19)

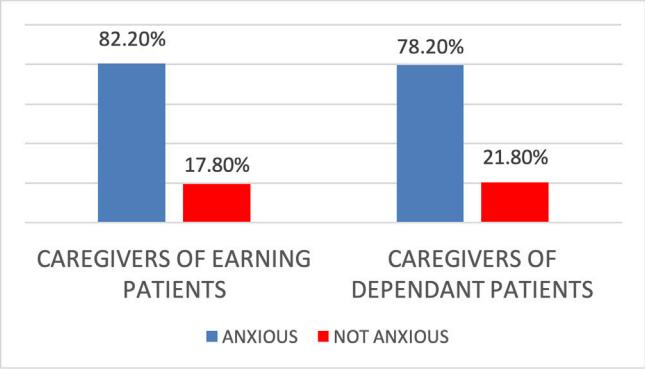

Figure-19: Frequency of anxiety among caregivers of earning patients and caregivers of financially dependant patients

Among the study population, 77.8% of the caregivers of earning patients were depressed and 22.2% were not depressed. 58.2% of the caregivers of financially dependent patients were depressed and 51.8% of the patients were not depressed. Thus, the frequency of depression is higher in caregivers of earning patients than the caregivers of financially dependent patients. The probability value according to Chi-Square test is 0.0389 (less than 0.05). Hence, the observed result is statistically significant. (Figure 20)

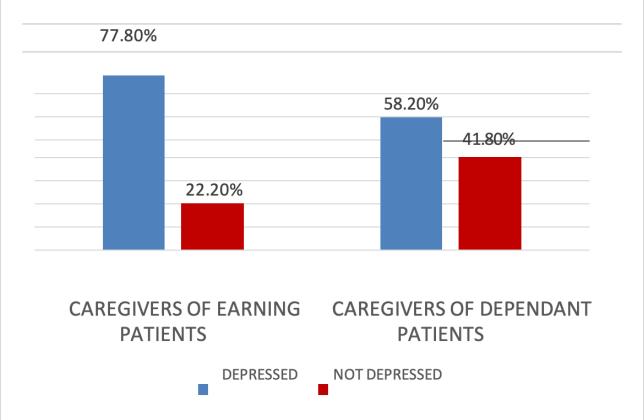

Figure-20: Frequency of depression among caregivers of earning patients and caregivers of fincancially dependant patients

DISCUSSION

The descriptive study was conducted among 100 family caregivers of patients with cancer attending OP and admitted in the wards of Department of Oncology and Radiotherapy, Govt. Stanley Medical College and Hospital during the period of July 2016 to October 2016 to assess the level of anxiety and depression. Gastro intestinal tract tumors are the most common in the study (49%). In females, breast cancer and reproductive tract tumours are more common. The age group of the caregivers was from 18 to 70 years. Majority of the caregivers (50%) belong to the age group 30-49 and majority (76%) were females.

Female caregivers were more anxious and depressed than males. According to the study conducted by L.L.Northouse D. Mood, T.Templin et al., female caregivers have the highest psychological distress since they spend more time providing care, provide more complex care and receive less support from others.[5]

Caregivers below 30 years of age were less anxious and depressed than those above 30 years. This is in contrast with a study that stated that adult children of patients often take on the caregiving role, leaving themselves little time or energy for their immediate family or themselves leading to stress.[6]

Caregivers from upper socioeconomic classes cope up with stress better than those lower classes. This result is in concordance with the study conducted by Laizner et al. who stated that the various factors which lead to increased anxiety and depression in lower socioeconomic classes were lack of awareness and knowledge, financial constraints, family resistance, transportation issues, incongruent goals between health care providers and the patient.[7]

Anxiety and depression were more when the cancer patients were their spouses, parents or children. Studies have shown that spouses are as distressed as cancer patients. 20-30% of spouses suffer from psychological impairment and mood disturbances as the result of the spouse's cancer.[8]

The caregivers are affected more when the cancer patients were earning members of the family. Cancer appears to reduce a person's chance of being employed and many cancer patients are unable to work, need to take leave without pay. Since most of the cancer patients were in lower paid jobs, being affected by cancer creates a financial burden for the family members both in outright expenses and lost income and benefits.[9]

The overall results of the study shows that caregivers suffer from anxiety and depression. These caregivers are challenged by a loss of meaningful conversation, emotional closeness and changes in the patient's personality. Because of these factors the caregivers face stress which in turn affects the quality of their life. The burden of the caregivers are exaggerated by fewer social activities due to over workload of the caregivers. The role of a Social Worker here is to assess the mental health of the caregivers and to provide interventions to help the caregivers cope with lifestyle changes.

The type of interventions are classified into three groups:

1. Psycho educational
2. Skills training
3. Therapeutic counselling [10]

Educational support was most beneficial for caregivers when it was problem focused such as on behavioral management. A combination intervention which included individual and family counselling sessions may help the caregivers to cope well with the stress.

Family physicians can have a significant impact on the health and well-being of the caregivers. By assessing the caregivers' level of burden including the issue of depression, the physician can identify the caregivers who are at high risk for physical and emotional problems. Family physicians can prepare the caregivers for the many phases of the challenging role of caregiving.[11]

CONCLUSION

The study which was conducted among 100 family caregivers of cancer patients attending OP and admitted in the wards of Departments of Oncology and Radiotherapy, Govt. Stanley Medical College and Hospital during the period of July 2016 to October 2016 assessed the level of anxiety and depression.

The principal findings of our study are:

- The prevalence of anxiety among family caregivers of cancer patients is 80%.
- The prevalence of depression among family caregivers of cancer patients is 67%.
- The prevalence of anxiety and depression were more among female caregivers.
- The prevalence was more when the cancer patients were spouses, parents or children to the caregivers.
- The prevalence was more in caregivers from lower socioeconomic classes.

RECOMMENDATIONS

This calls for more psychotherapeutic interventions to address the problems of care givers and to improve the quality of life of caregivers of cancer patients and thereby preventing them from physical and mental health deterioration.

Frequent psychiatric counselling sessions should be arranged at the care givers level to provide mental and moral support to them.

LIMITATIONS

The study conducted in hospital setup, to increase the validity of study the study need to be conducted at the community level. To ensure external validity the study has to be conducted with more number of samples.

ACKNOWLEDGMENTS : Nil

CONFLICT OF INTEREST : Nil

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ORIGINAL ARTICLE - PUBLIC HEALTH

KNOWLEDGE, ATTITUDE AND PRACTICE ON TUBERCULOSIS NOTIFICATION BY PRIVATE MEDICAL PRACTITIONERS OF KANCHEEPURAM, SOUTH INDIA – 2016-17.

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Abstract

Background : Tuberculosis (TB) is a global issue and a major public health problem in India. India ranks first in holding a huge number of TB cases which goes un-notified. Nearly half of the TB patients are being treated in private sector. If TB patients diagnosed and treated under any sector is reported to public health authorities, an appropriate, adequate, complete and supervised drug treatment to combat resistance may be ensured. Govt. of India declared tuberculosis a notifiable disease on 7th May 2012. In spite of these steps, TB notification by private health care providers is still a big challenge.

Objective : To assess the knowledge, attitude and practice of TB notification among the private practitioners.

Methodology: A cross sectional study was conducted among estimated sample of 91 private practitioners with a minimum qualification of MBBS in Kancheepuram township of Tamil Nadu. Data was collected using a semi – structured, self – administered questionnaire.

Results: About 96.7 percent of practitioners know that TB notification is mandatory and 82.4 percent know to whom they should notify. Almost all felt that it is important to notify tuberculosis. Only 27.5 percentage were aware about NIKSHAY. Regarding the notification, 51.6 percent of participants had good knowledge. The perceived difficulties of private practitioners in providing patient information on notification are patient's aadhar number and date of diagnosis. The preferred mode of communication to notify TB are through toll free number, phone call and field workers. Only 9 (12 percent) among 75 practitioners notified tuberculosis cases through field workers and phone call to public health authority. The notification practices were better in the participants with good knowledge compared to those with poor knowledge (p-0.004).

Conclusion: The study reveals that the participants were well aware of mandatory notification of tuberculosis. But there is high prevalence of poor knowledge on the process of notification and practice regarding TB notification among the private practitioners. Training programs and supportive supervision are crucial to raise their awareness and practice. Eliminating the barriers in the notification process will also help in improving the practice.

Keywords: NIKSHAY, Private Practitioners, Tuberculosis, Tuberculosis notification.

INTRODUCTION

Tuberculosis (TB) is a global issue and a major public health problem in India. The World Health Organization's (WHO) "End TB Strategy" which was approved in 2014 by World Health Assembly, calls for a reduction in the TB deaths by 90% and 80% reduction in the incidence of TB by 2030, keeping the 2015 data as baseline.(1) The United Nations (UN) in 2015 adopted Sustainable Development Goals (SDG) for 2030, targets to end the global TB epidemic (3.3 - Goal 3 and Target 3).

India holds more than a quarter of tuberculosis cases and also deaths due to tuberculosis. India's Revised National Tuberculosis Control Program (RNTCP) provides free diagnostic and treatment services with a theme of universal access to quality assured TB care as per Standards for TB Care in India (STCI) and a target of "reaching the unreached"(2). Of the BRICS (Brazil, Russia, India, China and South Africa) countries, India has been the last to effectively implement TB notification(3). Even though there is a substantial rise in tuberculosis notification in India by about 34%, there is still a huge gap between notifications of new cases and the estimated number of incident cases(1). Only 58% of TB cases are being notified in our country(4). India ranks first in holding a huge number of TB cases which goes un-notified, thus making the TB epidemic larger than previously estimated with a major share of Multi – Drug Resistant (MDR) cases(1).

In India, the private sector dominates in health care and most often it is the first point of health care. Nearly half of the TB patients are being treated in private sector(4). As per the drug sales in 2014, an estimate of 2.2 million cases were treated in private sector which is two to three times higher than expected(5). About 50% of retreatment cases notified under RNTCP were previously treated in private sectors(6). The non – standardized, unsupervised

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drug treatment in private sector, easy accessibility of over the counter anti- TB drugs, incomplete treatment due to financial constraints and sense of well-being with initial treatment are the major contributors to drug resistance. The TB patients diagnosed and treated under any sector, if reported to public health authorities – an appropriate, adequate, complete and supervised drug treatment to combat resistance will be achieved by ensuring treatment adherence(7).

Therefore, Govt. of India declared tuberculosis a notifiable disease on 7th May 2012. All public and private health providers shall notify TB cases diagnosed and/or treated by them to the local district nodal officers for TB notification (7) every month in a standard format or through a web based application called NIKSHAY (meaning – Eradication of Tuberculosis) which can be used by any health functionaries to notify TB cases (8). A gazette notification was published by the Government of India which mandates all private health establishments should inform the details of tuberculosis patients treated by them to NIKSHAY repository(9).

RNTCP has successful partnerships with various organizations viz., Indian Medial Association (IMA), Catholic Bishops' Conference of India (CBCI), Foundation for Innovative New Diagnostics (FIND), World Vision, The International Union against Tuberculosis and Lung Diseases (The UNION) and The Clinton Health Access Initiative (CHAI) to strengthen the notification from private sector. Medical Colleges were involved with RNTCP through the task force mechanism and are contributing in diagnosis, management and formulating policies for the program(2).

In spite of all these steps and efforts, TB notification by private health care providers is still a big challenge (10). India's TB annual status report 2014 states that only 3.1% of TB cases enrolled in RNTCP are being notified by private practitioners(11). Across South India, it varies from 30% (12) in a Chennai region to 82% in Mysore city(13). The private practitioners in cities are supposed to have a higher knowledge and notification practices as they have many Continuum Medical Education Programs. This study was planned in a township area of Kancheepuram to assess the knowledge, perceptions and practice in TB notification among private practitioners which will help in developing appropriate strategies to improve the TB notification.

OJBECTIVE

- To assess the knowledge, attitude and practice of TB notification among the private practitioners of Kanchipuram town.

METHODS

This is a Cross sectional study conducted in November 2016 to February 2017 at Kancheepuram Township among the private practitioners practicing allopathic medicine in Kancheepuram with a minimum qualification of M.B.B.S degree. The Inclusion criteria with the operational definition as the Private practitioner / Clinic (single) will include any Health Establishments where the medical services are provided by single registered medical practitioner with a minimum qualification of M.B.B.S degree who may or may not be attached to any hospital and who were consented. The private practitioners who are not available on two consecutive visits were excluded.

The sample size is calculated based on the proportion of tuberculosis notification by private practitioners - 30%(12) and considering Confidence level of 95% and absolute precision of 10%. Allowing a 10% excess sampling to account for non- response, total sample size was estimated to be 89 participants. Multi stage sampling method was adopted and simple random technique was used by lot method for selecting wards and then the streets. 21 wards were selected in Kanchipuram town to approach a total of 100 private practitioners.

Operational Definitions of TB Notification: Tuberculosis cases diagnosed and/or treated by the practitioner, notified to a local public health authority or Tuberculosis nodal officer by any mode.

Questionnaire: The Semi – structured self -administered questionnaire contained questions about their personal profile – Gender, Educational qualification, period and type of practice, questions to assess their knowledge, attitude and practice on tuberculosis notification and the difficulties in providing information during notification.

Ethics: Permission was obtained from Institutional Ethics Committee of Madras Medical College, Chennai – 3 and Informed consent obtained from the participants after a brief information about the study.

Data entry & Analysis: Totally 100 private practitioners were approached and 9 were excluded and data was collected and cleaned accounting to a total of 91 subjects. The data was analyzed using Statistical Package for Software Solutions (SPSS) version 21.The descriptive and inferential statistics of the private practitioner's responses to the questions were calculated. A two tailed p value of <0.05 was considered as statistically significant.

RESULTS

This study includes 91 participants with a minimum

qualification of M.B.B.S degree from 21 electoral wards of Kancheepuram township area and the socio demographic details are given in table 1.

Table 1. Socio demographic details of study participants

Characteristic	Category	Frequency (N=91)	Percentage
Gender	Male	59	64.8
	Female	32	35.2
Type of Practice	Specialist	75	82.4
	General Practitioner (MBBS)	16	17.6
Type of Specialization	Physician	22	39.3
	Pediatrician	10	13.3
	Obstetrician	18	24
	Surgeon	25	33.3
Experience in Private Practice	0-10 Years	41	45
	10-20 Years	20	22
	More than 20 years	30	33
Working in Government Sector	Yes	25	27.5
	No	66	72.5

Knowledge on Tuberculosis Notification among Private Practitioners

About 96.7% of practitioners know that the TB notification is mandatory and 82.4% of participants know to whom they should notify. About 64% and 57% of participants know about the modes of communication and the details needed to notify respectively. But only 27.5% of participants were aware about NIKSHAY. Only 14.3% of practitioners had training on TB notification and among them 85% were trained through Indian Medical Association. Regarding notification, only 51.6% of participants had good knowledge and 48.4% had poor knowledge.

Association between knowledge adequacy about TB notification and socio demographic details:

Among the socio demographic details, the gender, type of specialty and the period of experience in private practice had statistically significant association with the knowledge of tuberculosis notification. (Table 2)

Attitude on Tuberculosis Notification among Private Practitioners

Among 91 participants, almost all felt that it is important to notify tuberculosis. Nearly 98% of practitioners felt that this notification will help them in terms of facilitating contact tracing and social support systems. About 96% of study participants agree to follow RNTCP endorsed TB diagnostic tests to confirm TB. Nearly 91% of private practitioners felt comfortable in notifying their TB patients. Only 40% of practitioners think that NIKSHAY may be helpful in notifying TB cases.

Table 2. Relationship between knowledge adequacy on TB notification and socio-demographic details of Private practitioners

Factors	Knowledge N (%)		Total	Test	p-Value
	Good	Poor			
Gender					
Male	37 (62.7)	22 (37.3)	59	$\chi^2_{(0.05)} = 8.224$	0.004
Female	10 (31.3)	22 (68.8)	32	df = 1	
Type of Practice					
Specialist	38 (50.7)	37 (49.3)	75	$\chi^2_{(0.05)} = 0.165$	0.685
General (MBBS)	9 (56.3)	7 (43.8)	16	df = 1	
Type of Specialist					
Physician	11 (50)	11 (50)	22	Fisher's exact test	0.026
Pediatrician	7 (70)	3 (30)	10		
Obstetrician	4 (22.2)	14 (77.8)	18		
Surgeon	16 (64)	9 (36)	25		
Experience					
Less than 20 years	26 (42.6)	35 (57.4)	61	$\chi^2_{(0.05)} = 6.036$	0.014
More than 20 years	21 (70)	9 (30)	30	df = 1	

The private practitioners felt that they may find difficulties in providing the following details of TB cases during notification, which is given in Table 3.

Table 3. Perception of difficulties in providing patient information on notifying Tuberculosis

Characteristics	Frequency N	Percentage
Patient Identity Details*		
Patient's Name	6	6.6
Patient's Gender & Age	3	3.3
Patient's Residence	27	29.7
Patient's Phone number	30	33
Patient's Aadhar number	53	58.3
No difficulty	28	30.8
Patient Treatment Details*		
Investigations done	11	12.1
Date of Diagnosis	40	44
Type of TB	8	8.8
Category of Treatment	16	17.6
Date of Anti – TB drugs prescribed	10	11
No difficulty	35	38.5

* Multiple Responses.

The multiple responses on preferred mode of communication to notify tuberculosis is shown in the figure1.

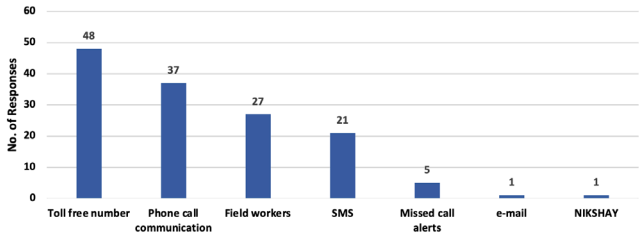

Fig 1. Preferred mode of communication to notify TB (Multiple responses)

Practice on Tuberculosis management among Private Practitioners

Among 91 participants, Seventy four (81.3%) practitioners referred their tuberculosis patients to Govt. health facilities at one or other occasions during their practice. The reasons for referral is shown in figure 2.

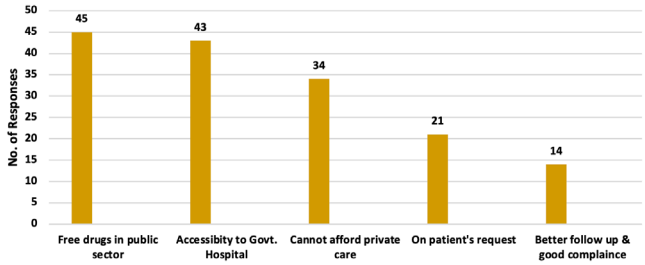

Fig 2. Reasons for referring TB cases to Public sector (Multiple responses)

Practice on Tuberculosis diagnosis and treatment pattern among Private Practitioners

In the past 6 months, 45 practitioners (49.45%) diagnosed about 106 tuberculosis cases. About half of them (24 Practitioners) referred some of their cases to district tuberculosis center for starting of treatment in the past 6 months. Among the 45 practitioners, 28 (62.2%) adhere RNTCP and 17 (37.8%) follow Non RNTCP treatment guidelines.

Practice on Tuberculosis Notification among Private Practitioners

Among 91 practitioners, 16 practitioners have not diagnosed and treated tuberculosis cases in their practice. Till now, only 9 among 75 practitioners (12%) who diagnose and/or treat tuberculosis cases notified their cases to public sector through field workers and phone call information to public health authority. Another 19 among 75 practitioners referred their cases to public sector with referral slips. The multiple reasons for not notifying TB cases are shown in figure 3.

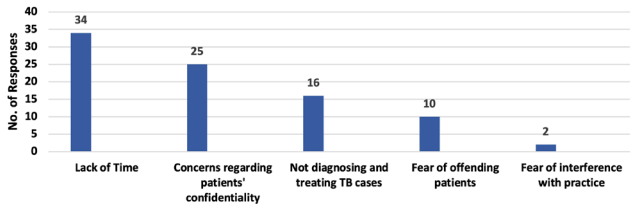

Fig 3. Reasons for not notifying TB cases to Public Sector (Multiple responses)

Relationship between knowledge and practice among the respondents

The relationship between the knowledge and practice of tuberculosis notification among private practitioners who diagnose and/or treat tuberculosis patients is statistically significant and is shown in table 4.

Table 4. Relationship between the knowledge and practice of tuberculosis notification

Knowledge	Practice		Total	p-Value
	Yes	No		
Good	9 (21.4%)	33 (78.6%)	42	Fisher test (Monte Carlo) 0.004
Poor	0 (0%)	33 (100%)	33	

Table 4 clearly points out that the notification practices were better in the participants with good knowledge compared to those with poor knowledge and the difference is statistically significant (p=0.004).

DISCUSSION

The observation in this study is that 96.7% of private practitioners were aware about the mandatory notification of tuberculosis which accords with Chadha S et al and Philip S et al (13,14). But the knowledge about the process of notification is low and only 27.5% were aware about NIKSHAY. Only 13 (14.3%) were trained on TB notification, especially by IMA. Forty seven (51.6%) of participants had good knowledge and 44 (48.4%) had poor knowledge about notification.

In our study, association between gender and years of experience with the knowledge adequacy is statistically significant. Male practitioners are found to have good knowledge compared to females and this could be due to the increased opportunity to attend Continuum Medical Education programs. The knowledge also increases with the number of years of practice as they become more aware of the facilities available with different health sectors and

orientation programs. Four-fifths of our participants were specialists of varied departments, there is no significant difference in the proportion of knowledge when compared to general practitioners as against the Philip S et al study (14). This may be due to the better competence and period of experience in private practice. However, among specialists, pediatricians have good knowledge followed by surgeons, physicians and the least were obstetricians in our study and is statistically significant (p=0.026).

Ninety one percent of private practitioners said that they feel comfortable in notifying their TB patients to public sector. However, they feel that there is difficulty in providing some patient details like aadhar number (58.3%), phone number (33%) and residential address (29.7%) which is supported by Thomas BE et al (12). Even though 38.5% of participants felt that they have no difficulty in providing patients diagnostic and treatment details, 44% of people felt it is difficult to provide information on date of diagnosis.

Among 91 participants, only 45 (49.45%) had diagnosed tuberculosis patients in the past 6 months. Among 45 practitioners, 24 (53.3%) referred some of their cases to public sector for starting of treatment. Among 45 practitioners, only 28 (62.2%) adhere to RNTCP treatment guidelines and others follow Non RNTCP regimens. Main reasons for not notifying cases were lack of time and concerns regarding patients confidentiality which is supported by Thomas BE et al, Velayutham B et al and Yeole RD et al (12,15,16).

Regarding notification, till now only 9 participants (12%) notified TB cases among 75 participants who diagnose and/or treat them. Two of them notified through field workers and 7 of them through phone calls to public health personnel. Nineteen participants reported that they refer the cases to public sector through referral slips. None of them notified via NIKSHAY as against Chadha S et al(13). This may be due to the lack of awareness, motivation, training and lack of time in engaging web interfaces to notify cases. Most of the participants prefer to notify the cases through toll free number (52.8%), Mobile phone communication (40.7%), field workers (29.7%) and SMS (23.1%) which is supported by Thomas BE et al and Philip S et al study (12,14).

Relationship between knowledge and practice among the respondents

Even though 96.7% of practitioners know that TB notification is mandatory, the knowledge on process of notification is low and even among practitioners with good knowledge, the notification practice is low due to the barriers like lack of time, fear of breaching patient's confidentiality and providing patient details like Aadhar number.

The notification practices were better in the participants with good knowledge compared to those with poor knowledge and is statistically significant (p=0.004). This implies that training programs are more crucial to impart knowledge on tuberculosis notification among private practitioners which would definitely result in good practice with efficient supportive supervision.

CONCLUSION

The study reveals that the participants were well aware of mandatory notification of tuberculosis. But there is high prevalence of poor knowledge on the process of notification and hence poor practice regarding TB notification among the private practitioners. Training programs are required to raise their awareness and supportive supervision will help to enhance the attitude and practice of TB notification. At the same time, the barriers in the notification process must be eliminated in order to make it easy and time saving to improve the practice.

LIMITATIONS

A limitation of the present study is that the findings and their interpretations are restricted only to the private practitioners. Further studies are needed that include the district program managers and the notified patients so that the barriers in that group can also be known and rectifications can be made. Though statistically significant results were obtained while studying the association between knowledge, attitude and practice of TB notification with their socio-demographic factors in this study, further larger studies with stratification of specialists, practice settings are needed to prove it.

RECOMMENDATIONS

All the private practitioners must be trained on TB notification to impart knowledge in turn to improve their practice. A district liaison officer should impart constant motivation, academic updates, support and monitoring. The notification process must be made simple, time saving and the web based applications should be in user – friendly manner.

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ORIGINAL ARTICLE - PUBLIC HEALTH

EFFECT OF VITAMIN "A" ON HEALTH CARE WORKERS IN PRIMARY HEALTH CARE SYSTEM IN COVID 19 PANDEMIC IN SALEM DISTRICT 2020 - TAMIL NADU

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Abstract

Background : The severe acute respiratory syndrome (SARS) coronavirus-2 is a novel coronavirus belongs to the family of corona viridae and it originated in the Wuhan city of China in 2019. The disease caused by this virus, termed coronavirus disease 19 or simply COVID-19, has rapidly spread throughout the world at an alarming pace and has been declared a pandemic by the WHO on March 11, 2020.

Vitamin A is a multifunctional vitamin involved in the proliferation and maintenance of epithelial cells in the body, including those of the respiratory tract epithelium. The immune-mediating, antioxidant and antimicrobial roles of vitamin A was applied in the study. Because of its proven effectiveness in protecting against measles-associated pneumonia, Vitamin A supplementation in the healthcare workers has been investigated as a possible intervention to speed recovery, reduce the incidence and the severity of the covid 19 infections.

Objective : To estimate the incidence of covid 19 infection among the health care workers who received the vitamin" A" supplementation.

Methodology: An observational study was conducted for 6 months from month of May 2020 to November 2020 among the health care workers in primary care system of Salem district of Tamil Nadu. The sampling was a purposive sampling to supplement Vitamin A to all the primary health care workers. Vitamin A supplementation was given to the primary health care workers and the reports were documented.

Results: Among the primary healthcare workers, the positivity rate was 1.2% and 46% in the Vitamin A recipients and Vitamin A nonrecipients respectively. The mortality rate was 0.05 and 0.26 among the Vitamin A recipients and Vitamin A nonrecipients healthcare workers respectively.

Conclusion: There is a chance of reducing covid 19 infections among the health care workers. Possible reduction in death rate is also possible for which the study to be by assessing the complications.

Keywords: Vitamin A, Respiratory Epithelium, Corona virus, Immunity

INTRODUCTION

SARS-CoV2 infects the epithelium in the respiratory tract through the cellular receptor angiotensin-converting enzyme 2, and causes viral pneumonia with inflammation resulting in significant damage to the lungs and other organs in the body[3]. The symptoms and the severity of the covid disease are variable depending on the intensity of exposure and presence of underlying conditions that may affect the immune response[3].

Some patients progress from mild to more severe disease, characterized by tachypnoea and hypoxaemia and specific findings of decreased arterial oxygen concentration or a chest X-ray or chest CT showing pneumonia, indicating extensive lung inflammation.[3] Some patients with severe infection (approximately 5 % of all infections) develop renal failure and intravascular coagulation, require prolonged mechanical ventilation and may have multi organ system failure[3].

Vitamin A has immunomodulatory effects in inflammatory diseases. The possible mechanisms by which vitamin A act against SARS-CoV2 virus may include anti-inflammatory effects, cytoprotective effect, and immunomodulation[4]. It has been revealed that vitamin A plays a role in cellular and humoral immune processes, and its deficiency causes deterioration in immune system responses. Vitamin A is involved in the epithelial proliferation and maintenance of epithelial cells including those of the respiratory tract[2]. From a pulmonary perspective, retinoic acid has been implicated in modulating the pathogenesis of Acute Respiratory Distress syndrome, influencing the production of IL1-β and IL-1 receptor antagonist by alveolar macrophages, and the subsequent pulmonary infiltration of neutrophils[5].

Vitamin A deficiency causes squamous metaplasia of

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the respiratory epithelium and the ciliated epithelial cells are replaced by squamous epithelium which in turn causes decrease in mucus production. These factors increase the risk for invasive pathogens. The function of the resident macrophages, neutrophils and the natural killer cells and the development of T cells mediated antibody responses also impaired leading to a decreased protective mechanism at mucosal surfaces[5]. The viral infection and the vitamin A effects on respiratory epithelium has already been proven by reduced infection in the recipients of Vitamin A solution during measles.[7]

The respiratory infections are more frequent in persons with reduced plasma vitamin A levels and this constitutes one of the main health problems in developing countries. In addition, during infectious diseases and particularly of the respiratory tract, plasma retinol levels decline and this induces an increased susceptibility to infection creating a "vicious cycle". Since covid 19 is also a respiratory tract infection, Vit A supplementation during the covid 19 pandemic would be a greater weapon against the corona virus infection.

The health care workers in the primary care system are involved tracking the COVID-19 patients in the field and admitting them, participating in the fever camps, distributing the medicine to the needed patients, surveillance activities in the field levels in the containment area zones. The risk of exposure is more to the primary health care workers. Also, it is difficult for them to wear full PPE in field settings while getting exposed to positive persons. In the primary care setting, it will not be possible to ascertain the COVID status of persons all the times. To protect them from the hazardous infection and complications of infection, Vitamin A supplementation was identified as a public health intervention for the COVID warriors.

OJBECTIVE :

To assess the incidence of covid 19 infection among the health care workers who received the Vitamin" A" supplementation.

METHODOLOGY :

An observational study conducted during the month of 29th April 2020 to 30th November 2020 for a period of 7 months among the health care workers in primary care system of Salem district of Tamil Nadu.

SAMPLE SIZE: 2096 healthcare workers in primary care setting in Salem District were selected for the study.

SAMPLING: Purposive sampling to include all the primary health care workers.

EXCLUSION CRITERIA:

Seriously ill persons were excluded from the study Vitamin A supplementation of 2,00,000 IU was given to the primary health care workers on 29th April and followed up for a period of 7 months and the reports were documented. Among the Primary Health Care Workers, 1724 has taken the oral Vit A supplementation (2,00,000 I.U) and 372 workers did not take Vitamin A supplementation due to various reasons. All the study participants were followed up every month for RT-PCR positivity for Covid-19.

INFORMED CONSENT:

Informed consent was obtained for administering Vitamin A. Those who have not given consent to take Vitamin A were followed up for occurrence of infection without administering Vitamin A supplementation.

OPERATIONAL DEFINITION:

COVID POSITIVE- Those persons whose nasal or throat swab were tested positive by RT-PCR for SARS CoV-2 were taken as COVID positive.

RESULTS :

The demographic characteristics of the study participants is given in Table 1. Covid infection rate among Vitamin A recipients and Vitamin A nonrecipients during the 7 month follow up period was 1.2% and 46% respectively. The mortality rate was 0.05% and 0.26% among the Vitamin A recipients and Vitamin A nonrecipients respectively during the study period. Among the Vitamin A recipients, 9 medical officers, 4 staff nurses and 4 multipurpose health workers were positive for Covid. Among Vitamin A non-recipients, 41 medical officers,35 staff nurses and 46 multipurpose health workers had reported Covid-19 infection. The positivity rate is very low in the Vitamin A recipients.

transcriptase polymerase chain reaction) test using the oral and nasopharyngeal swab.

Table 1 : Socio-demographic profile of study participants

Socio-Demographic Variables	Vitamin A recipients N-1724	Vitamin A nonrecipients N=372
Age (Years)		
≤ 30	394 (22.85)	79(21.23)
31 – 40	613 (35.55)	127(34.13)
41 – 50	354 (20.53)	85(22.84)
>50	363 (21.05)	81(21.77)
Gender		
Men	558(32.36)	119(31.99)
Women	1166(67.64)	253(68.01)

Table 2 : Comparison of Covid -19 infection among Vitamin A recipients and non-recipients across demographic characteristics

Variable	VITAMIN A RECIPIENTS N=22(%)	VITAMINA NONRECIPIENTS N=173(%)
Positivity rate for covid 19	1.2%	46%
Age (Years)		
≤ 30	10(45.45)	55(31.79)
31 – 40	4(18.18)	52(30.05)
41 – 50	5(22.72)	39((22.54)
>50	3(13.65)	27(15.60)
Gender		
Men	10(45.45)	65(37.57)
Women	12(54.54)	108(62.42)
Health Care Worker Category		
Medical officers	9(40.90)	31(17.91)
Staff Nurses	4(18.18)	35(20.23)
Village health nurses	2(9.09)	8(4.62)
Multipurpose health worker	4(18.18)	46(26.58)
Lab Technician	1(4.54)	9(5.20)
Pharmacists	1(4.54)	3(1.73)
Block health supervisor	1(4.54)	-
Others (Drivers, hospital workers, Data entry operators, Block health statisticians)	-	41(23.69)

DISCUSSION :

The proportion of Covid-19 positives among Vitamin A recipients was very less compared to Vitamin A non-recipients. In a study done by Villamor, Vitamin A supplementation reduced the incidence of the respiratory tract infections among children[11]. In a survey with 684 Chinese children (age range 5 months to 12 years old), observed that vitamin A deficiency (retinol<0.05) was associated with increased respiratory infections[12].

In a study done by Kankala M et al Majority of the children (61%) in Vitamin A-received group had lesser number of Acute Lower Respiratory Tract Infections episodes (less than 3 episodes/year), whereas majority of the children (66%) in Vitamin A- not received group had recurrent Acute Lower Respiratory Tract Infections episodes e (3 or more episodes/year)[4].

In a randomized double-blinded controlled trial performed by Si et al, moderately malnourished children with pneumonia who received vitamin A supplementation significantly had a shorter time of hospitalization after admission for pneumonia (p=0.04).13

In the Vitamin A recipients ,the male and female health care workers affected were 45.5% and 54.5% respectively. In the Vitamin A nonrecipients the male and female health workers affected were 37.6 % and 62.4% respectively.

In the vitamin A recipients, the death among the covid positive patients was one and it was also associated with comorbidities. In the control group in present study, the death was one and it was not associated with comorbidities.

Since Vitamin A supplementation was planned as a preventive intervention strategy during the 1st wave of the pandemic, it was offered for all the Health Care Workers. Hence, the distribution of participants in the two groups were not equal. Since the participants were not followed up for symptoms, there is a possibility of under reporting of COVID positivity.

CONCLUSION :

The Vitamin A recipient group healthcare workers proportion of turning out to be covid positive was very less compared to the Non recipient group. There is a chance of reducing covid 19 infections among the health care workers. Possible reduction in death rate is also possible by supplementing with Vitamin A solution for which the study to be done assessing the complications.

The antioxidant, anti-inflammatory effect of vitamin A has a major protective role in the community in decreasing the morbidity due to corona virus and viral infections affecting the respiratory tract.

RECOMMENDATIONS :

Vitamin A supplementation to the health care workers all over the state as well as to the public has the chance of reducing the covid 19 infections.

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ORIGINAL ARTICLE - PUBLIC HEALTH

A CROSS SECTIONAL STUDY TO ASSESS THE PREVALANCE OF MUSCULOSKELETAL MANIFESTAIONS AMONG DIABETIC PATIENTS ATTENDING TERTIARY CARE CENTRE, CHENNAI

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Abstract

Introduction : Diabetes mellitus, an endocrine disorder is characterized by derangement of glucose homeostasis. Musculoskeletal complications are the most common of the diabetic complications. These complications make the physical activity much more difficult. This study has been done to assess the prevalence of musculoskeletal problems among the diabetics.

Objective : To assess the prevalence of musculoskeletal symptoms among the diabetic patients.

Method : A cross sectional study was conducted at a Tertiary Hospital in Chennai (Govt. Stanley Medical College and Hospital). 402 diabetic patients were included in the study during the period between October 2020 to February 2021. After obtaining informed consent from the patients, details were collected by face-to face interview using questionnaire designed for the study.

Results : A total of 402 response were collected in which male and female participants were nearly equal. Most of the participants belong to upper lower class with poor educational status. Among the 402 study participants,61.44% of the diabetic patients had at least one symptoms of musculoskeletal problems Symptoms of musculoskeletal disorders like frozen shoulder presents in 118(29.35%) patients, medial condylitis in 101(25.12%) patients, Anserine bursitis in 150(37.31%)patients, Lateral epicondylitis in 81(20.14%) patients, Dequervain's tenosynovitis in 80(19.91%) patients.

Conclusion : Adequate management of musculoskeletal problems in Diabetic patients can improve their quality of life. Proper exercise training may not only have positive impacts on pain from the musculoskeletal system but also on glycaemic control.

INTRODUCTION

Diabetes mellitus, an endocrine disorder is characterized by derangement of glucose homeostasis which results in cardinal symptoms like polyuria, polyphagia and polydipsia. The number of people with diabetes is expected to increase from 171 million in 2000 to 366 million in 2030 [1].

Control of this metabolic disorder is mostly aimed at regulating and maintains the optimal glycaemic levels, as poor glycaemic control is associated with diabetic complications[2]. Physical activity is among one of the most effective interventions to prevent and control diabetes mellitus. In a recent study, researchers have found that HbA1C level is found to be reduced in diabetic patients undergoing physical training programs, by a large margin that decreases the risk of diabetic complications considerably [3].

Musculoskeletal complications are the most common among the diabetic complications. These complications make the physical activity much more difficult. This study has been done to assess the prevalence of musculoskeletal problems among the diabetics.

Musculoskeletal complications occurring due to diabetes can be grouped as occurring due to consequences of diabetic complications, metabolic derangements inherent to diabetes, syndromes that may share etiologic mechanisms with microvascular disease and probable associations[4,5]. Cheiroarthopathy, Dequervain tenosynovitis, Medial epicondylitis, Lateral epicondylitis, Flexor tenosynovitis, Frozen shoulder, Dupuytren contracture, carpel tunnel syndrome and Anserine bursitis are the complications going to be evaluated in this study.

OBJECTIVES

•To assess the proportion of diabetic patients suffering from musculoskeletal complications.

METHODOLOGY

Study Design :

Cross sectional study

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Study Population :

Diabetic patients attending OPD at Stanley Medical College Hospital

Period of Study :

July 2016 to September 2016

Study Area :

Diabetic OPD in Stanley Medical College hospital

Inclusion Criteria :

Known case of Diabetes Mellitus attending non-communicable disease OPD

Exclusion Criteria :

Unconscious patients, patients with auditory impairment, visual impairment and mental deformities are excluded from this study.

Sample Size :

According to the study done by A.Majjad et al, the prevalence of musculoskeletal problems in Diabetes patients[13] was reported as 35.5%.Sample size was calculated with P -35.5% , q – 64.5%. Absolute precision of 5 with 95% Confidence level, sample required for the study was calculated as follows

Sample size n =4pq/d2

= 402 (with non-responsive rate of 10%)

Sampling Technique : Convenient sampling

DATA COLLECTION :

Questionnaire was prepared with the help of previous literatures. Data was collected using the semi structured questionnaire. The questionnaire was originally made in English, and it was translated into the local language (Tamil) and back translated again to ensure appropriateness of translation. After giving preliminary introduction about the study in their mother tongue, written consent was obtained from each respondent, the validated structured questionnaire was used to assess the symptoms of musculoskeletal disorders among diabetic patients through face to face interview. Clinical examination will be done to identify musculoskeletal disorders like movement of the shoulder, de quervain disease, medial epicondylitis etc.

The following rheumatologic manifestations were diagnosed on the basis of the following clinical features.

- Diabetic cheiroarthopathy:By eliciting Prayer sign(When the patient is asked to raise his hands as like prayer position, the patient will be unable to approximate the palmar surface of the fingers) and Tabletop sign(When the patients is asked to keep his palms flat on the surface of tabletop, he will be unable to touch the palmar surface of the fingers to the table).
- Dupuytren's contracture : Patient will be examined for the presence of a nodule on the palmar aspect of the hand, palmar fascia thickeningand also examined for the deformity of the second, third, fourth or fifth fingers(flexor aspect).
- Flexor tenosynovitis: Patient will be examined for the presence of nodules.
- De Quervain's tenosynovitis : Radial styloid process is examined for the presence of pain and tenderness with a positive Finkelstein manoeuvre
- Lateral epicondylitis: Lateral epicondyle is examined for the presence of pain and tenderness whenever pain is given against resistance on wrist extension.
- Medial epicondylitis : Medial epicondyle is examined for the presence of pain and tenderness whenever pain is given against resistance on wrist flexion.
- Frozen shoulder : Unilateral and/or bilateral pain over the deltoid area without any preceding history of trauma.
- Carpel tunnel syndrome : When the carpel tunnel is percussed, the patients experiences an electric sensation radiating along the course of median nerve(Tinel sign) and the when the patient is asked to hold his hands gainst each other in full palmar flexion,patient will have paraesthesia in 30 to 120 seconds in that position(Phalen test)

DATA COLLECTION :

After collecting, the data was compiled and entered in Microsoft Excel Sheet. Analysis was done using Statistical Software SPSS VERSION 23. All Categorical variables was expressed as Frequencies and Proportions. Chi square test was used as test of significance for categorical data.

RESULTS :

A total of 402 diabetic patients were interviewed for the study.

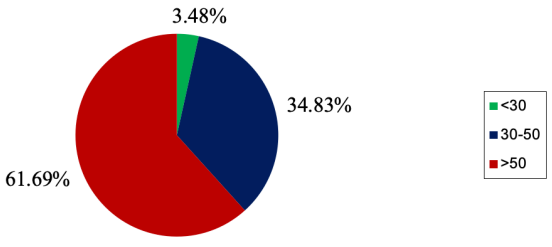

Figure 1: Age distribution among the study participants

Among the total population, only 14 (3.48%) were under 30 years of age, 140 (34.83%) were between the age of 31-49 years and 248 (61.69%) were above 50 years of age.

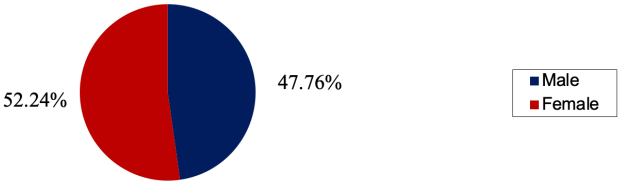

Figure 2. Sex distribution of the Study Participants

Among the study participants, 192 (47.76 %) were males and 210 (52.24 %) were females.

Table 1. Socio Economic Status of the Study Participants

Socioeconomic class	Frequency	Percentage
Upper	3	0.74%
Upper middle	23	5.72%%
Lower middle	56	13.93%%
Upper lower	312	77.61%%
Lower	8	1.99%

Majority of the study participants belongs to upper lower class(77.6%) as per Modified Kuppuswamy scale.

Table 2. Routes of drug administration in DM patients

Route of drug administration	Frequency	Percentage
OHGD	312	77.61%
Insulin	35	8.71%
Both	55	13.68%

Of the total study population, 312 (77.61%) patients were taking oral hypoglycaemic drugs, 35(8.71%) patients were taking insulin injections and 55(13.68%) patients were taking both.

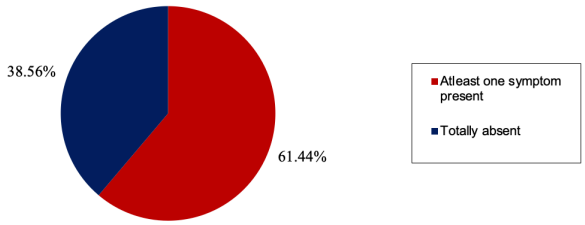

Figure 3: Presence of musculoskeletal complications in DM patients

Of the study population, 247(61.44%) diabetic patients have complaints of at least one of the musculoskeletal manifestations and 155(38.56%) patients were devoid of any such problems.

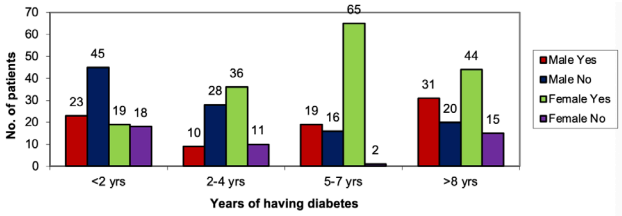

Figure: 4 Prevalence of musculoskeletal problems with respect to duration of diabetes

Of the study participants, 23(5.72%) of males and 19(4.72%) of females had musculoskeletal problems in <2 years duration of DM. In 2-4 years of DM duration group,10(2.49%) of males and 36(8.95%) of females had symptoms. In 5-7 years, DM duration group, 19(4.72%) of males and 65(16.16%) of females had symptoms. In > 8 years DM duration group, 31(7.71%) of males and 44(10.94%) of females had musculoskeletal symptoms.

Table 3: Association between musculoskeletal symptoms and duration of DM

MUSCULOSKELETAL PROBLEMS IN DM PATIENTS	DURATION OF DM		TOTAL
	<5 YEARS	≥ 5 YEARS	
PRESENT	88 (35.62%)	159 (64.38%)	247 (61.44%)
ABSENT	102(65.80%)	53(34.20%)	155 (38.56%)
TOTAL	190 (47.26%)	212(52.74%)	402

Chi square value=34.8, p value <0.005*

INTERPRETATION:

A Chi-square test of association done between musculoskeletal symptoms in DM and duration of DM in diabetic patients. Statistically significant association observed between duration of DM and occurrence of musculoskeletal problems(p<0.005*).

Table 4 : Association between musculoskeletal problem and age group in DM patients

CATEGORIZATION OF MUSCULOSKELETAL PROBLEMS	CATEGORY	AGE OF DM PATIENTS		TOTAL (n=402)	CHI SQUARE VALUE	P VALUE
		AGE < 50 YEARS	AGE ≥ 50 YEARS			
CHEIROARTHOPATHY	PRESENT	11(32.35%)	23(67.65%)	34(8.45%)		
	ABSENT	143(38.85%)	225(60.86%)	368(91.54%)	0.5471	0.45
DEQUERVAIN'S TENOSYNOVITIS	PRESENT	33(41.25%)	47(58.75%)	80(19.91%)	1.536	0.1079
	ABSENT	109(32.63%)	213(63.77%)	322(80.09%)		
MEDIAL EPICONDYLITIS	PRESENT	67(66.33%)	34(33.67%)	101(25.12%)		
	ABSENT	86(28.57%)	215(71.43%)	301(74.88%)	45.75	**<0.005***
LATERAL EPICONDYLITIS	PRESENT	57(70.37%)	24(29.63%)	81(20.14%)		
	ABSENT	96(29.91%)	225(70.09%)	321(79.86%)	44.92	**<0.005***
FROZEN SHOULDER	PRESENT	55(46.61%)	63(53.39%)	118(29.35%)	5.18	**0.0114***
	ABSENT	98(34.51%)	186(65.49%)11	284(70.65%)		
DUPUYTREN CONTRACTURE	PRESENT	16(61.53%)	10(38.47%)	26(6.46%)	6.5	0.423
	ABSENT	137(36.43%)	239(63.57%)	376(93.54%)		
CARPEL TUNNEL SYNDROME	PRESENT	31(63.26%)	18(36.74%)	49(12.18%)	15.04	**<0.005***
	ABSENT	122(34.56%)	231(65.44%)	353(87.82%)		
ANSERINE BURSITIS	PRESENT	55(36.66%)	95(63.34%)	150(37.31%)		
	ABSENT	93(36.91%)	159(63.09%)	252(62.68%)	0.002	0.48

INTERPRETATION : A Chi square test of association was done between age group and musculoskeletal disorders in DM patients. Medial epicondylitis($p<0.005^*$), Lateral epicondylitis($p<0.005^*$), Frozen shoulder($p=0.014^*$), carpel tunnel syndrome($p<0.005^*$) had statistically significant association.

DISCUSSION :

Prevalence of musculoskeletal complications among the diabetics attending diabetic op at Government Stanley medical college hospital was 61.44%. Most of the study population belongs to Upper Lower class. The most common musculoskeletal complications in this study are Medial Epicondylitis (25.12%), Frozen Shoulder (29.35%) and Anserine Bursitis (37.31%).

Several studies have reported that Patient living with Diabetes [PWD] have an elevated risk of having musculoskeletal pain[2]. Nerves, muscles and bones may get damaged due to insufficient control of diabetes and cause musculoskeletal pain over time[5]. 61.44% of the diabetic patients in this study had musculoskeletal complications. This was comparable with the study done by Kim RP [10] et al, the prevalence of musculoskeletal conditions in DM patients was 58.15%.

Median epicondylitis observed in 25.12% of the study population. Lateral epicondylitis observed in 20.14% It was comparable with the study done by Maltezos E et al among the diabetic patients on diabetic hand[4]. Dupuytren contracture was present in 6.46% of patients in the current study. In a study conducted by Crispin & Alcocer-Varela, Smith et al, prevalence of Dupuytren contracture in diabetes ranges between 10% and 63%, considerably higher than among nondiabetic subjects [5].

Among diabetic subjects, carpal tunnel syndrome appears to be associated with age and diabetes duration [13] in the study conducted by Chammas et al which was comparable with our study where 12.18% of the study participants had carpel tunnel syndrome. Age of the patients plays a significant role in the development of musculoskeletal complications. A significant association was observed between age of patients with diabetes mellitus and medial epicondylitis($p<0.005^*$), lateral epicondylitis($p<0.005^*$), frozen shoulder($p=0.0114^*$), carpel tunnel syndrome ($p<0.005^*$) in this study.

CONCLUSION :

Musculoskeletal disorders and associated pain are common in patients living with diabetes. In this study, duration of DM and age of the study participants plays a significant role in occurrence of musculoskeletal problems. Adequate management of musculoskeletal problems in Diabetic patients can improve their quality of life .Proper exercise training may not only have positive impacts on pain from the musculoskeletal system but also on glycaemic control.

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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

FREIBERG'S DISEASE IN A 20 YEAR OLD FEMALE PATIENT - A CASE REPORT

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Abstract

Background : Freiberg disease is avascular necrosis of head of second metatarsal, but can occur in any metatarsal. Physical stress causes multiple tiny fracture where the middle of metatarsal meets the growth plate. These fractures impair blood flow resulting in death of bone cells (osteonecrosis). It is an uncommon condition occupied most often in young women, athletes and those with abnormally long metatarsals. 80% diagnosed patients are women.

Materials & methods : A 20 year old girl with avascular necrosis of second metatarsal head treated by osteotomy and K wire fixation of metatarsal and immobilization in toe extension slab. Histopathological analysis reported as Avascular Necrosis and was confirmed. Routine radiographs and clinical assessment of pain, stiffness, movement of joint and functional status were done at regular intervals.

Results : A cross sectional study was conducted at a Tertiary Hospital in Chennai (Govt. Stanley Medical College and Hospital). 402 diabetic patients were included in the study during the period between October 2020 to February 2021. After obtaining informed consent from the patients, details were collected by face-to face interview using questionnaire designed for the study.

Results : Patient was immobilized for 3 months and after K wire removal patient developed stiffness of toes and in follow up treated with analgesics and toe mobilization exercises.

Conclusion : Osteotomy with K wire fixation is an option for management of painful AVN of second metatarsal head.

Keywords : Freiberg's disease, Avascular Necrosis (AVN) of metatarsal head.

INTRODUCTION

A 20 yrs old female presented with the following complaints &clinical features

- Patient had pain in foot while walking
- Increased first web space
- Tenderness over second metatarsal head

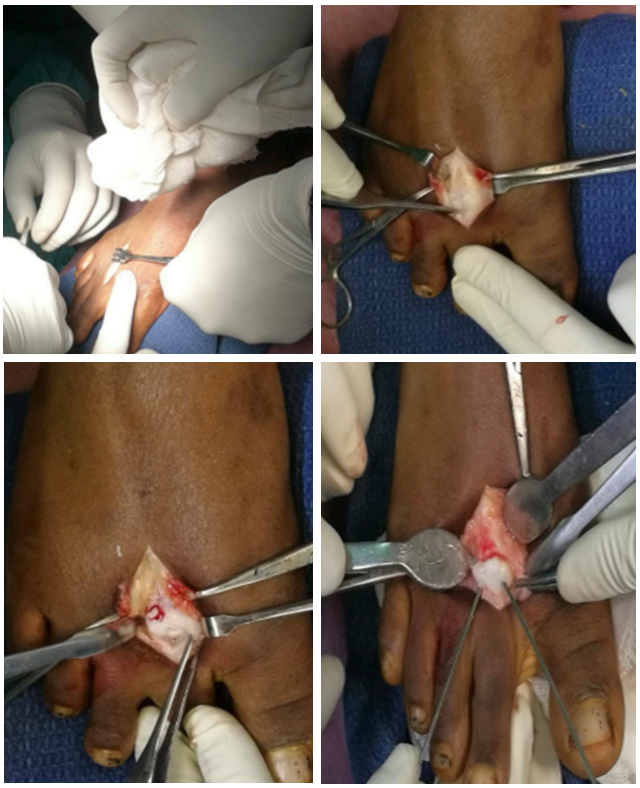
Radiologically,

- o X-ray -Sclerosis of second metatarsal head
- o MRI –AVN of second metatarsal head

It comes under stage lV Smile classification

PRE OP IMAGES :

INTRA OP IMAGES :



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Under Spinal Anaesthesia and strict Aseptic precaution. Patient in supine position with knee flexed, Through dorsal approach over second metatarsal head skin, subcutaneous tissue incised. Extensor tendon retracted ,dorsal wedge osteotomy done over second metatarsal head and specimen sent for Histopathological analysis and 1.5 mm K wire fixation done. Toe extension slab applied.

PRE OP IMAGES :

FOLLOW UP IMAGES :

Follow up was done after six weeks, toe extension slab removed and partial weight bearing started.

Treatment of choice :

- Dorsal wedge osteotomy is the treatment of choice in Freiberg's disease patient.
- Prolonged immobilization should be avoided after any procedure and mobilisation of Metatarsophalangeal joint to be done at the earliest.

Literature review:

- Dorsal closing wedge closings osteotomy with K wire fixation.
- In 2007 Bulent capar, erdogan kutluay and saluah mujde done dorsal closing wedge osteotomy in 19 patients.
- In 2007 sank Ki lee, moon sang chung, goon hyun bark, young ho lee, hyun Sim gong done dorsal wedge osteotomy.

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CASE REPORT - ORTHOPAEDICS

MANAGEMENT OF NON-UNION ULNA IN CHILDREN IN DIFFERENT CLINICAL SCENARIO'S - A SHORT CASE SERIES

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Abstract

Background : Non-union of ulna in children is uncommon, which is usually associated with neglected monteggia fractures, osteomyelitis, open injuries or significant bone or soft tissue loss.

Objective : Unusual or difficult management in non-union ulna

Methodology : Three paediatric cases of inadequately treated monteggia, post septic sequale which leads onto non-union and multi directional instability of elbow & forearm presenting at Orthopaedics department, Institute of Child Health, Egmore were selected for this study.

Results : In all 3 cases our study demonstrates management of non-union in ulna due to different etiology. In one case of fracture non-union ulna with implant insitu and radial head dislocation, we have managed this case in 2 stages because of difficult closure during fixation of ulna. In Stage 1 we have done ulna fixation and in stage 2 plating Shortening of radius Recreating the ulnar angulation with corrective osteotomy ,temporary Radio capitellar k wire .In other two cases of non-union ulna with elbow instability, radial head dislocation we have done single bone forearm to give elbow stability. Functional outcome was assessed and found satisfactory. Safe and salvageable procedure is Single bone forearm in forearm with significant bone loss.

Conclusion : We have achieved union of ulna and stable elbow and forearm .In single bone forearm surgery when reconstruction not possible, the disadvantage of restricted supination and pronation movements which can be compensated by shoulder movements. This procedure warrants good range of motion with normal daily activities.

Keywords : Post-septic sequale, non-union, osteotomy, instability.

INTRODUCTION

Forearm fractures are common in children. Most of these fractures can be treated non-surgically with excellent functional outcomes as fracture healing in children is usually uncomplicated with an excellent remodeling potential. There are several factors that may have lead onto the nonunion in our patients.single bone forearm is the option for the children who presented with inadequately treated monteggia, radial head dislocation and with non-union ulna proximal 1/3rd lead onto non-union and multi directional instability of elbow & forearm which may necessitate the need for single bone forearm or other staged procedures. Providing stability to the forearm and minimizing the pain are goals of single bone forearm surgery which offers a stable bony bridge between the wrist and the elbow. We presented three cases of non-union ulna & elbow instability here, The purpose of this study was to report on the management option of single bone forearm in fracture non-union ulna with monteggia variant and in cases with elbow instability in different scenarios when reconstruction not possible.

METHODOLOGY

Three paediatric cases of non-union presenting at Orthopaedics department, Institute of Child Health, Egmore, Chennai were selected for this study.all patients were followed up to a period of 2 years. The indications for the operation, procedure done, age at that time, and the length of follow up are given in Table 1.

S.no	Presentation	Age during surgery	Procedure done	Follow-up period
1	Fracture non-union ulna with implant insitu and radial head dislocation	8 years	Stage 1 -ulna fixation, stage 2-plating with Shortening of radius Recreating the ulnar angulation with corrective osteotomy temporary Radio capitellar k wire.	24 months
2	Neglected Monteggia fracture	8 years	Single bone forearm	18 months
3	post septic sequale of right ulna with non-union	9 years	Single bone forearm	18 months

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CASE ILLUSTRATION

CASE 1:

8 years old child presented with fracture non-union ulna with implant insitu and radial head dislocation. On examination there was a Cubitus varus deformity, elbow movements Flexion-0-70º, supination-60º, pronation -30º. We have managed this case in 2 stages because of difficult closure during fixation of ulna.

PRE OP

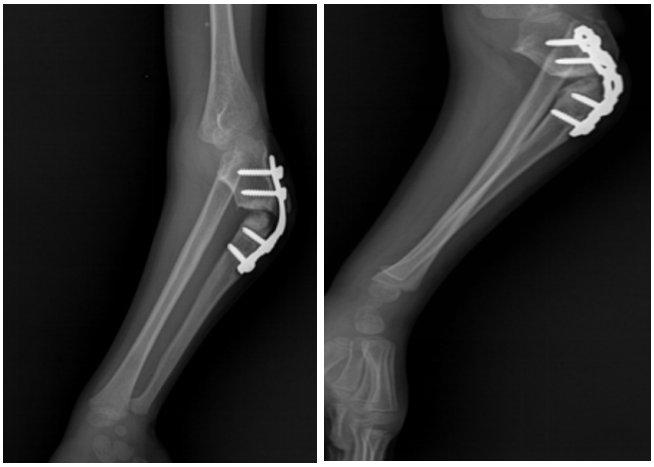

Figure 1: A & B X ray left Elbow at the time of presentation showing fracture non-union ulna with radial head dislocation.

Figure 2: A) Cubitus Varus deformity B) Flexion 0-70º C) Supination 60º D) Pronation 30º

POST OP

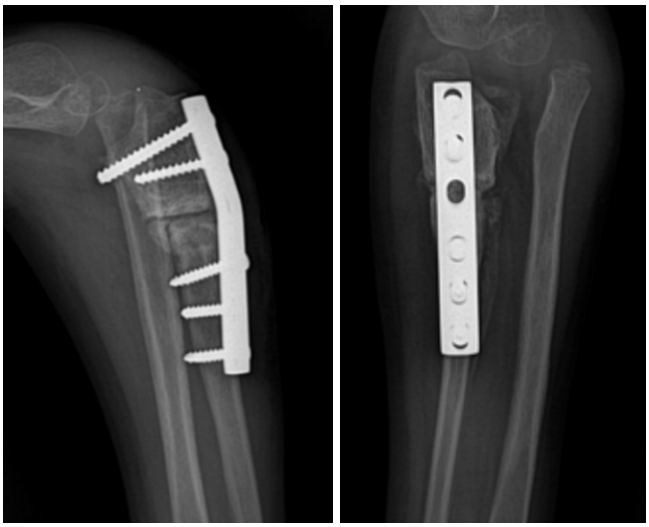

Figure 3 : Implant exit and Compression plating of ulna done

Figure 4 : 6 Months Post OP X Ray

Figure 5 : Shortening of radius with recreating the ulnar angulation with corrective osteotomy & Radio capitellar k wire fixation done in stage 2

Figure 6 : 8 months follow up X Ray

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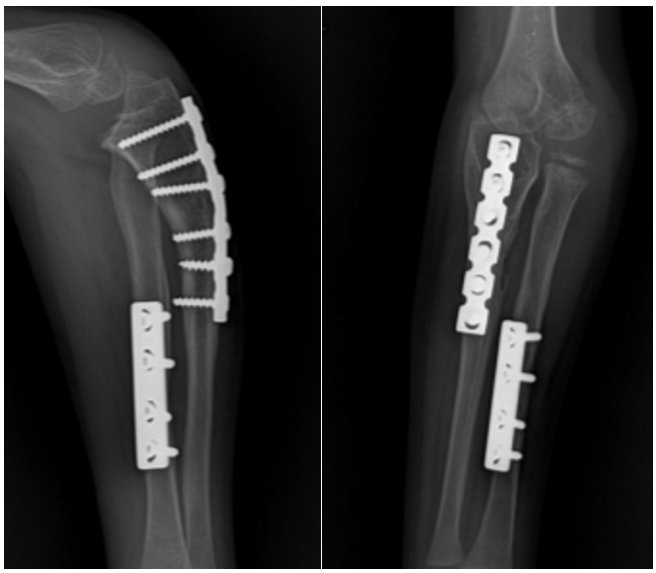

Figure 6 : 12months follow up X Ray

Figure 7 : 2 Year follow-up shows A) No deformity B) Flexion 0-140º C) Supination 85º D) Pronation 70º

In this case scenario, we operated in 2 stages and following issues are solved non-union, radial head dislocation, previous implant and instability. We proceeded with implant exit and compression plating for ulna in first stage. Shortening of radius with Recreating the ulnar angulation with corrective osteotomy &Radio capitellar k wire fixation done in stage 2 and patient followed up for 2 years shows improved range of movements with stable elbow.

CASE 2:

8 years old female child presented with deformity & difficulty in doing daily activities .On examination, ROM – flexion 20-80º, supination-70º & pronation-50º, radial head dislocation, shortening, instability .we have done single bone forearm in this case.

Figure 8 : Neglected monteggia fracture right side

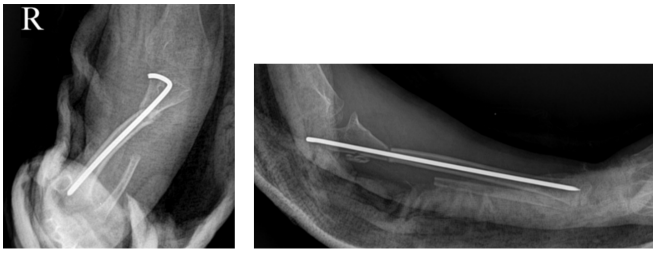

Figure 9 : Proceeded with single bone forearm

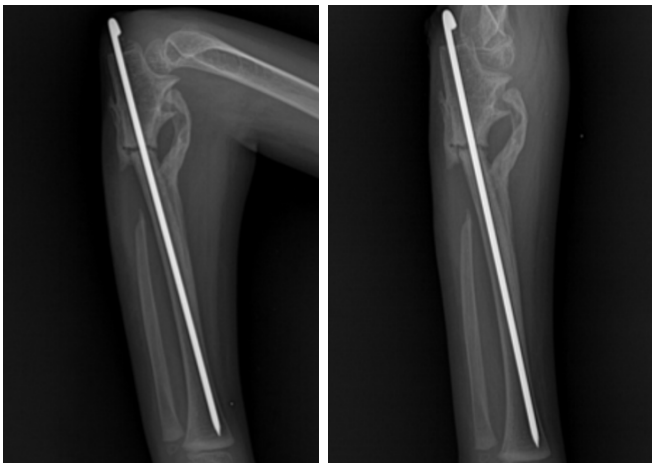

Figure 10 : 3 Months follow up X Ray

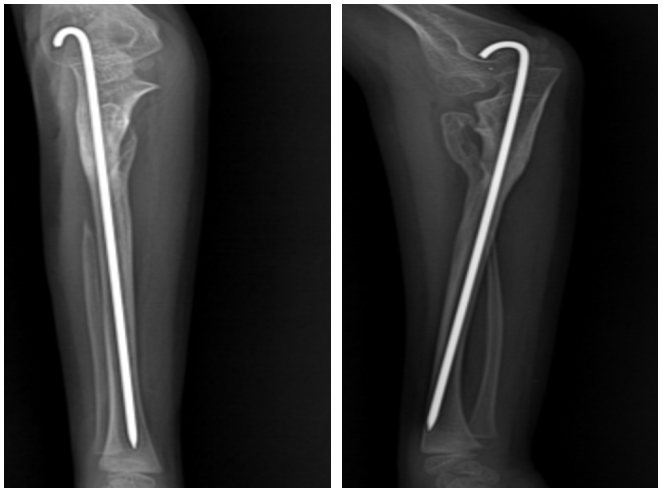

Figure 11 : 6 Months follow up X Ray

Figure 12 : 9 Months follow up X Ray

Figure 12 : Clinical photographs of single bone forearm patient shows stable elbow for activities of day to day life and satisfactory elbow movements (18 months follow up)

The one-bone forearm is a salvage option that restores the upper limb function. It finds its interest when radio-carpal and humero-ulnar joints are intact. Proximal ulna is fixed with remaining part of radius with one intramedullary rush nails cortico-cancellous bone graft incorporated into it, after excision of proximal radius. Union was suspected clinically and radiologically at 9 months follow up. As a result, there was no pain at elbow and forearm. Range of Movements of elbow improved with Flexion of 10-130 degrees, supination fixed in 20 degrees. The girl can do her day to day activities without any limitation.

CASE 3 :

9 years old child a case of post septic sequale of right ulna Presented with complaints of deformity & difficulty in doing daily activities. On examination Multidirectional instability in elbow, Deformity, Shortening, Radial head dislocation, ROM-Flexion-0- 90 o, Restricted supination & pronation. We have done single bone forearm for give elbow stability.

PRE OP :

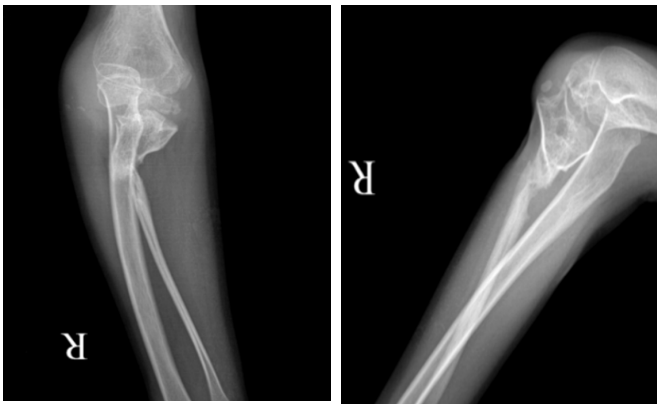

Figure 13 : Radiographs showing post septic sequale of ulna.

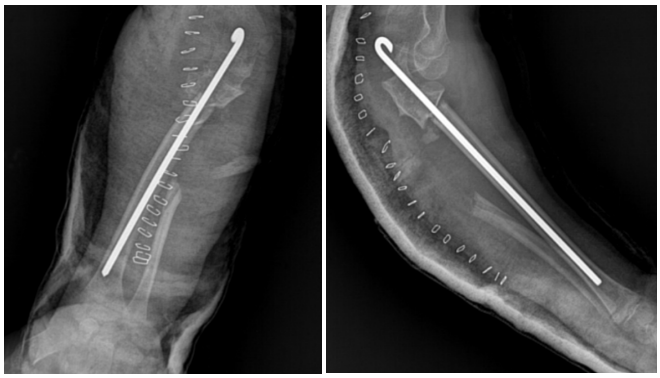

Figure 14 : Immediate post-operative radiographs showing single bone forearm fixed with rush nail

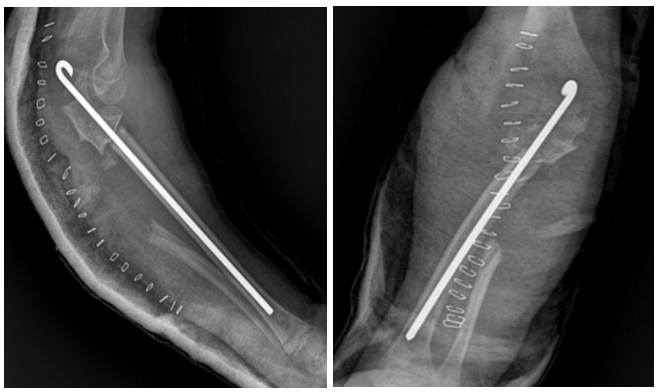

Figure 15 : 6 Months follow up X Ray

Figure 16 : 10 Months post op X Ray

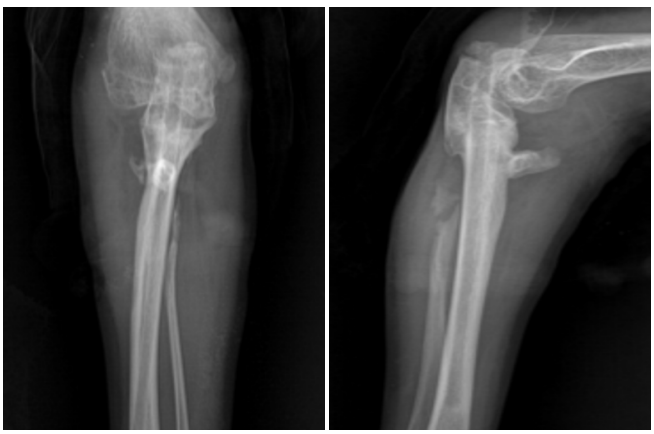

Figure 17 : 12 Months post op X Ray

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Figure 18 : Clinical images of the patient after single bone forearm procedure with satisfactory range of movement with stable elbow

RESULTS

In the first case scenario, we operated in 2 stages and proceeded with implant exit and compression plating for ulna in first stage. Shortening of radius with Recreating the ulnar angulation with corrective osteotomy &Radio capitellar k wire fixation done in stage 2 and patient followed up for 2 years shows improved satisfactory range of movements with stable elbow. In other two case scenarios where reconstruction1 is not possible we proceeded to eliminate forearm instability by creation of a radio ulnar synostosis, or "1-bone forearm," Shoulder movements compensate for loss of forearm rotations with improved grip strength, shoulder and wrist movements. The requirement for radio-ulnar transposition is intact radio-carpal and humero-ulnar joints.

Figure 6 : 12months follow up X Ray

DISCUSSION

Elbow and wrist is connected by forearm and helps in pronation and supination which is associated with human embryology in brain growth and differentiation of prehensile thumb. Activities of daily living (ADL) depends on these vital movements, so the normal anatomy should be restored as close as possible. Proximally, through radio-humeral and radio ulnar joints and distally through distal radio-ulnar and radio-carpal joints radius and ulna are complexly joined, that provide ideal biomechanics for wrist and elbow movements including pronation and supination at the forearm. Due to relative growth discrepancy and deficiency of radius or ulna segment causes deformity particularly in children. Dislocation of radio-capitellar joint with Varus deformity is due to partial absence of ulna. Partial absence of radius causes dislocation of distal radio-ulnar joint and mannus valgus deformity. Inadequately treated monteggia fractures lead onto non-union and multi directional instability of elbow & forearm which may necessitate the need for single bone forearm or other staged procedures. Various factors including age of onset, cause, preliminary treatment plays a major role in extent of deformities. The operation of radio-ulnar transposition was given by Hey Grooves in 1921. Greenwood (1932), Watson Jones (1934), Vitale (1952) 1,2 reviewed some cases showing improved functional and cosmetic outcomes and need not worry on the growth discrepancy after continuity is established with axial growth producing adequate functional and cosmetic results.[3]

CONCLUSION

In this study, three patients of non-union ulna were studied. Among them two patients were suffering from neglected Monteggia fracture and one was having chronic osteomyelitis. one case reconstruction done using compression plating and Shortening of radius with recreating the ulnar angulation with corrective osteotomy &Radio capitellar k wire fixation. In other two cases single bone forearm reconstruction was done. The stability of forearm and range of movements are adequate and without visible deformity in all three different case scenarios. In conclusion, elbow & forearm instability is an extremely complex problem that must be recognized and addressed acutely to optimize good results.

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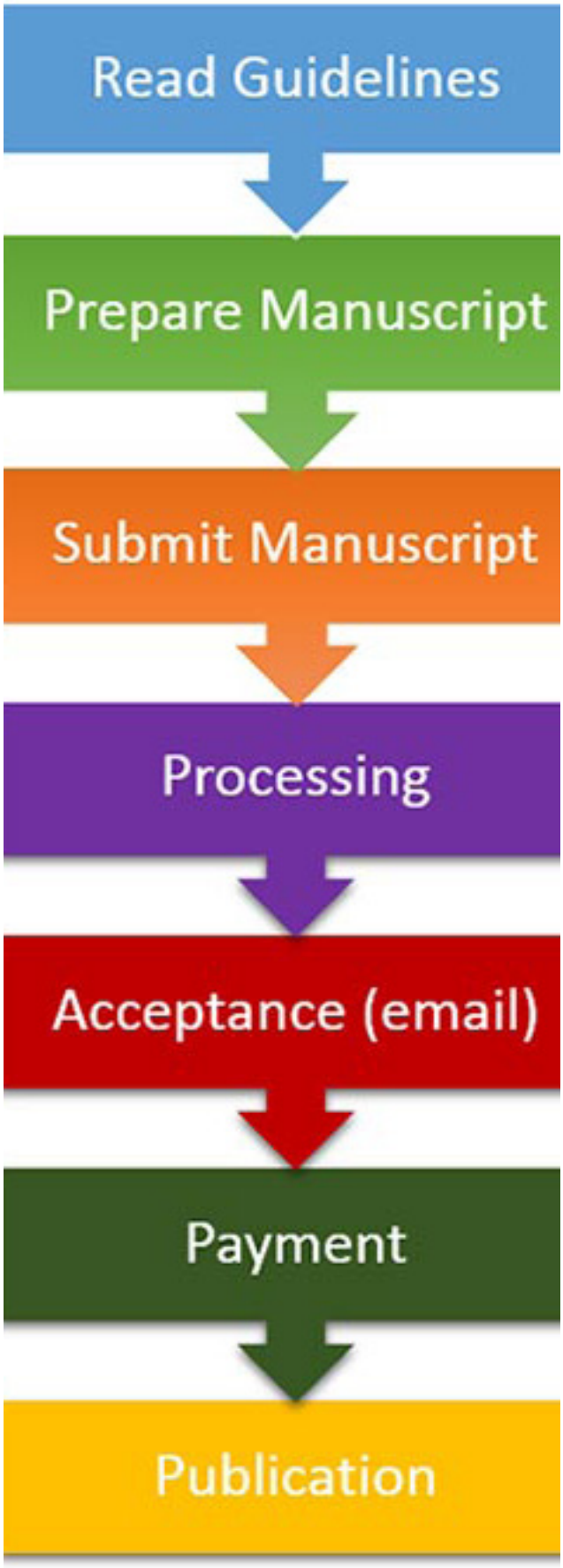

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Journals:

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