

GENDER WISE DISTRIBUTION OF THALASSEMIA IN SOLAPUR DISTRICT, MAHARASHTRA STATE, INDIA.

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ABSTRACT

India is a large Southeast Asian country with a population of over one Billion. The purpose of this study is to observe gender wise distribution of Thalassemia patients from Solapur District, Maharashtra State, India. An observational survey was done in 125 patients aging from 6 Months to 18 Years diagnosed with thalassemia.

KEYWORDS: Gender, Sex ratio, Thalassemia.

INTRODUCTION

Thalassemia is a major health problem, placing an immeasurable emotional, psychological and economic burden on millions of people around the World (Panos, 2005; Riewpaiboo *et al.* 2010). Recent data indicate that about 7% of the World's population is a carrier of a hemoglobin disorder and that 3,00,000-5,00,000 children are born each year with the severe homozygous states of these diseases (WHO-March of Dime, 2006).

Thalassemia in India: An estimated 1-3% of the populations are carriers of beta thalassemia, a figure rising up to 17% in some ethnic groups (Sukumaran and Master, 1973). About 6,000 children are born with thalassemia major each year, more than 30% of births with a major thalassemia syndrome in South East. Madan Sharma *et al.* (1998) observed that 10% of the World incidence of Thalassemia. In India, prevalence of Thalassemia is very high in Punjabi, Sindhi, Gujarati, Bengali, Parsee, Lohana and certain tribes community, i.e. Northern, Western and Eastern parts, while it is much less in the south of India (Shah, 2004). Sood *et al.* (1993) in his report of ICMR Task Force study, he studied on thalassemia in India. The burden of haemoglobinopathies in India studied by Balgir (2000). Krishnamurti (2000) in his report he observed the hemoglobin E-beta-thalassemia in Northeast India. Vaz *et al.* (2000) finds the distribution of BT mutations in the Indian population. Piplani (2000) observed the hemoglobin E disorders in North East India. Genetic epidemiology of the sickle cell anaemia in India observed by Balgir (2001). The purpose of this study is to observe gender wise distribution of Thalassemia patients from Solapur District, Maharashtra State, India.

MATERIALS AND METHODS

The entire survey study is to be carried out under the observations of medical officer from thalassemia transfusion centre, Indian Red Cross Society, Gopabai Damani Blood Bank, Solapur Maharashtra, India.

An observational survey was done in more than 125 patients aging from 6 Months to 18 Years diagnosed with thalassemia. Clinically proved cases of Thalassemic children's of age group 6 months to 18 Years coming from different parts of Solapur district, Maharashtra State. The study population consisted of one hundred twenty five, cases of Thalassemic children receiving regular blood transfusions in the following blood banks and hospitals collaborating in this multicentre study, with prior written consent from the parents/ guardians.

- 1) Indian Red Cross Society, Gopabai Damani Blood Bank, Thalassemia Centre, Solapur.
- 2) Hedgewar Blood Bank, Solapur
- 3) M/s Indian Red Cross Society Blood Bank, Sub Branch Sou Sarjubhai Bajaj Blood Bank, Pandharpur, District-Solapur.
- 4) Shriman Rambhai Shah Blood Bank, Sub Branch, Indian Red Cross Society, Barshi, District- Solapur.
- 5) Chatrapati Shivaji Rugnalaya, Government Hospital, Solapur.

Inclusion criteria

The criteria followed for selection of the patients for this study were. 1. Case of thalassemia. 2. Age at commencement of transfusion was more than six months

Geographical Distribution of Thalassemia

The Talukawise distribution of thalassemia:

i) Akkalkot ii) Barshi iii) Karmala iv) Madha v) Malshirus vi) Mangalwedha vii) Mohol viii) North Solapur ix) Pandharpur x) South Solapur xi) Sangola xii) Solapur City

All individuals were non-related and their selection depended on their well-defined phenotypes, transfusion-dependency, and geographical origins.

The study was carried out under the observations of Medical officer and available patients report, Damani Blood Bank (Indian Red Cross Society), Solapur District, from July 2008- January 2013.

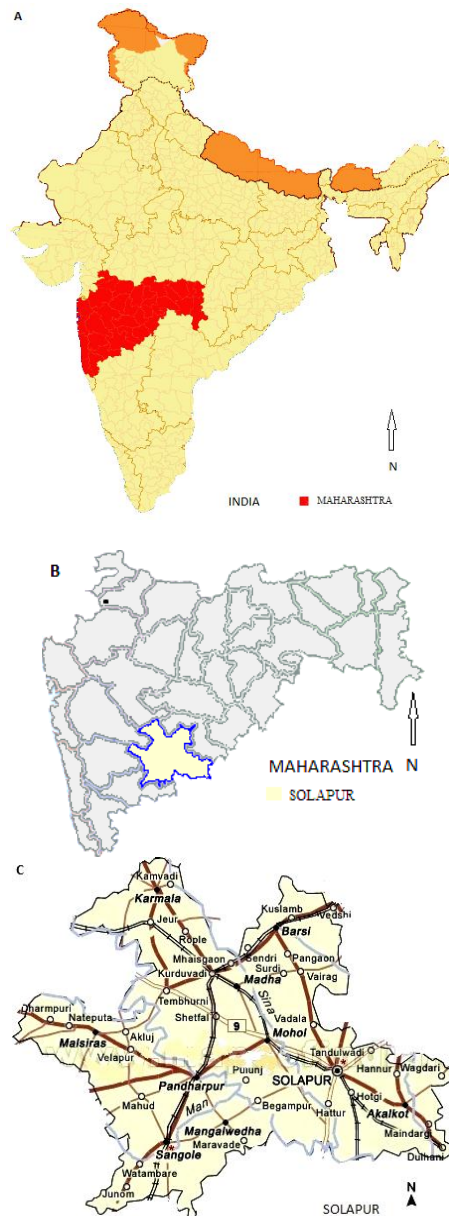


Figure-1. Map. A- India, B- Maharashtra State, C- Solapur District.

RESULTS AND DISCUSSION

Geographical distribution of thalassemia in Solapur District

This study was done on 125 clinically proved cases of thalassemia. They were of the age group between 6 months to 18 years, 73 being male and 52 female. They were from different parts of Solapur District, Maharashtra State (Table 1-2 Figure 2).

Table 1. Shows total number of thalassemia patient, with their code, initials, sex, diagnosis, locality.

Patient Code	Patient Initials	Sex	Taluka	Diagnosis	Patient Code	Patient Initials	Sex	Taluka	Diagnosis
1	BMH	F	Akkalkot	TM	33	MPP	F	Pandharpur	TM
2	MAD	M	Mohol	TM	34	GPO	M	Solapur	TM
3	MPA	F	Solapur	TM	35	TRI	M	Barshi	TM
4	KPR	F	Solapur	TM	36	KNS	M	N. Solapur	TM
5	JSS	F	Solapur	TM	37	VDS	M	Solapur	TM
6	JP	F	S. Solapur	TM	38	PSB	F	Solapur	BTMi
7	GDD	F	S. Solapur	TM	39	RSB	M	Mangalvedha	TM
8	DSS	M	Pandharpur	BTI	40	IVY	F	Pandharpur	TM
9	KLB	F	Solapur	TM	41	ARM	M	S. Solapur	BTI
10	SGS	M	Malshirus	TM	42	GAR	M	Pandharpur	TM
11	MTM	F	Solapur	TM	43	KSM	M	S. Solapur	TM
12	PST	M	Solapur	TM	44	KAV	F	Barshi	TM
13	SSS	M	Mohol	TM	45	PUA	F	Solapur	TM
14	KSS	M	Solapur	TM	46	DRS	M	Pandharpur	TM
15	NA	F	Solapur	TM	47	BMN	M	Solapur	TM
16	MAR	F	Solapur	TM	48	LAB	M	Solapur	TM
17	STS	F	Sangola	TM	49	VDS	M	Solapur	TM
18	SSS	M	Solapur	TM	50	SVP	M	Pandharpur	BTMi
19	CRR	M	Akkalkot	TM	51	KAN	F	Solapur	TM
20	KSS	M	Solapur	TM	52	SSS	F	Mohol	TM
21	GSA	M	Solapur	TM	53	BUT	M	Karmala	TM
22	BSR	F	Pandharpur	TM	54	MA	M	Sangola	BTMi
23	CNT	M	S. Solapur	BTMi	55	RSS	M	Mohol	BTMi
24	BKG	F	S. Solapur	TM	56	BNB	M	Solapur	TM
25	SOS1	M	S. Solapur	TM	57	IAS	M	Solapur	TM
26	SOS2	M	S. Solapur	TM	58	ISY	M	Pandharpur	TM
27	SSS	M	Malshirus	TM	59	TAS	M	Madha	BTI
28	BLM	M	N. Solapur	BTI	60	PAM	F	Solapur	TM
29	JPA	F	Solapur	TM	61	QSA	M	Karmala	BTI
30	TRM	M	Mangalvedha	TM	62	BSR	M	Akkalkot	TM
31	PYR	M	Mangalvedha	BTI	63	RST	F	Solapur	TM
32	RGS	M	Malshirus	BTI	64	QAS	F	Karmala	TM

Table 1. Continued...

Code	Patient Initials	Sex	Taluka	Diagnosis	Code	Patient Initials	Sex	Taluka	Diagnosis
65	GAM	M	Solapur	TM	96	RP	M	Pandharpur	TM
66	PHM	M	Solapur	TM	97	KSM	M	Pandharpur	TM
67	GPS	F	Barshi	TM	98	MRR	F	N. Solapur	TM
68	SV	M	Solapur	TM	99	KPS	F	Solapur	TM
69	NDN	F	Pandharpur	TM	100	MMM	F	Barshi	TM
70	MLD	M	Solapur	TM	101	KBM	F	Mangalvedha	BTI
71	PPV	F	S. Solapur	TM	102	KJ	F	Solapur	TM
72	MVM	M	Madha	TM	103	NPN	F	Pandharpur	BTI
73	KAS	M	Barshi	TM	104	KA	F	Solapur	TM
74	CYS	M	Solapur	SCT	105	PAD	M	Mohol	TM
75	LS	M	Solapur	TM	106	HSD	F	Barshi	TM
76	GSS	F	Solapur	TM	107	GAS	M	Madha	BTI
77	CGR	M	S. Solapur	TM	108	KSS	M	Pandharpur	BTI
78	RS	M	Madha	TM	109	RYS	M	Sangola	TM
79	JSS	F	Akkalkot	TM	110	LSD	F	S. Solapur	BTMi
80	TNJ	F	S. Solapur	TM	111	DML	M	Mohol	BTMi
81	MPT	F	Solapur	TM	112	SS	M	Pandharpur	TM
82	BHH	M	Malshirus	TM	113	PKM	M	Barshi	TM
83	BSM	M	Solapur	TM	114	MGM	M	Madha	BTI
84	NRB	F	Pandharpur	TM	115	OBC	F	Karmala	TM
85	HNK	M	Akkalkot	TM	116	PVD	M	Mohol	TM
86	KVM	M	Mangalvedha	BTI	117	KKM	F	Mangalvedha	BTI
87	NSA	M	Sangola	TM	118	KR	F	Mangalvedha	TM
88	WAS	M	Solapur	BTI	119	JVS	M	Sangola	TM
89	NAP	M	Mangalvedha	TM	120	TAN	F	Solapur	TM
90	MSS	M	Sangola	TM	121	CLP	F	Solapur	BTI
91	LSD	M	S. Solapur	BTMi	122	DAM	M	Mangalvedha	TM
92	ISS	F	Solapur	BTMi	123	RVS	M	Solapur	TM
93	SAN	F	Mohol	TM	124	DRD	F	Barshi	BTMi
94	GSM	F	Solapur	TM	125	JSS	F	S. Solapur	TM
95	RKT	F	Solapur	TM					

The thalassemia patient's code, patient's initials, sex, diagnosis, Taluka wise distribution at Solapur District, shown in Table-1. The Taluka wise geographical distribution of thalassemia patients and their prevalence percentage was shown in Table-2 and Figure-2.

Table 2. Taluka wise geographical distribution and prevalence percentage of thalassemia patients in Solapur District.

Parameter	Sex	SCT	BTI	BTMi	TM	Total Patients %
Akkalkot	M	00	00	00	03	03
	F	00	00	00	02	02
	T	00	00	00	05	05(4.00)
Barshi	M	00	00	00	03	03
	F	00	00	00	05	05
	T	00	00	00	08	08(6.40)
Karmala	M	00	01	00	01	02
	F	00	00	00	02	02
	T	00	01	00	03	04(3.20)
Madha	M	00	03	00	02	05
	F	00	00	00	00	00
	T	00	03	00	02	05(4.00)
Malshirus	M	00	01	00	03	04
	F	00	00	00	00	00
	T	00	01	00	03	04(3.20)
Mangalvedha	M	00	02	00	04	06
	F	00	00	00	03	03
	T	00	02	00	07	09(7.20)
Mohol	M	00	00	2	04	06
	F	00	00	00	02	02
	T	00	00	02	06	08(6.40)
North Solapur	M	00	01	00	01	02
	F	00	00	00	01	01
	T	00	01	00	02	03(2.40)
Pandharpur	M	00	02	01	05	08
	F	00	01	00	06	07
	T	00	03	01	11	15(12.00)
South Solapur	M	00	01	02	04	07
	F	00	00	00	07	07
	T	00	01	02	11	14(11.20)
Sangola	M	00	00	01	04	05
	F	00	00	00	01	01
	T	00	00	01	05	06(4.80)
Solapur City	M	01	01	00	19	21(28.76)
	F	00	00	00	23	23(44.23)
	T	01	01	00	42	44(35.20)

The Taluka wise distribution of thalassemia patients as follows:

- Akkalkot: thalassemia major patients were five; total (4.00%)
- Barshi: thalassemia major patients were five; total (6.40%)
- Karmala: one BTI and TM three, total four patients (3.20%)
- Madha: BTI three and TM two, total five patients (4.00%)
- Malshirus: BTI one and TM three, total four (3.20%)
- Mangalvedha: BTI two and TM four, Total six ((7.20%)
- Mohol: BTMi two and TM four, total six (6.40%)
- North Solapur: BTI one and TM two, total three (2.40%)
- Pandharpur: BTI one, BTMi one and TM fifteen (12.00%)
- South Solapur: BTI one, BTMi two and TM eleven, total fourteen (11.20%)
- Sangola: BTMi one and TM four, Total five (4.80%)
- Solapur city: SCT one, BTI one, TM 19, total forty two (35.20%).

Over 125 patients affected by thalassemia live in Solapur District, Maharashtra, India. Thalassemia is a blood disease and is common in both sexes. Thalassemia was suspected in all these patients with age six months to eighteen years, the prevalence percentage of TM was more than the BTI, BTMi and SCT. The prevalence percentage of thalassemia in specific ethnic groups. In Solapur District the high frequency of thalassemic patients were observed in the area of Solapur City, Pandharpur Taluka and in South Solapur as compared to other Talukas.

Type of thalassemic patients in Solapur District

In our study, Sickle cell thalassemia was: male 1(1.36%), female 0(00%), Total 1(0.8%); BTI was: male 12(16.43%), female 4(7.69%), Total 16(12.8%); BTMi was: male 06(8.21%), female 4(7.69%), Total 10(8.0%); TM was: male 54(73.97%), female 44(84.61%), Total 98(78.4%); (Table- 2 and Figure- 2). The results compared the frequency of β -thalassemia trait and other hemoglobinopathies in northern and western India with the reports of Nishi *et al.*, (2010). There was maximum number of 98(98.4%) cases of TM as compared to BTMi 10(8.0%), BTI 16(12.8%) cases and SCT 1(0.8%) was observed. No cases of α thalassemia were observed in our research work. The results showed that the high prevalence of thalassemia was observed in the Solapur District. Screening of children, pregnant women, and individuals visiting public health facilities is effective in identifying individuals at risk who require further testing.

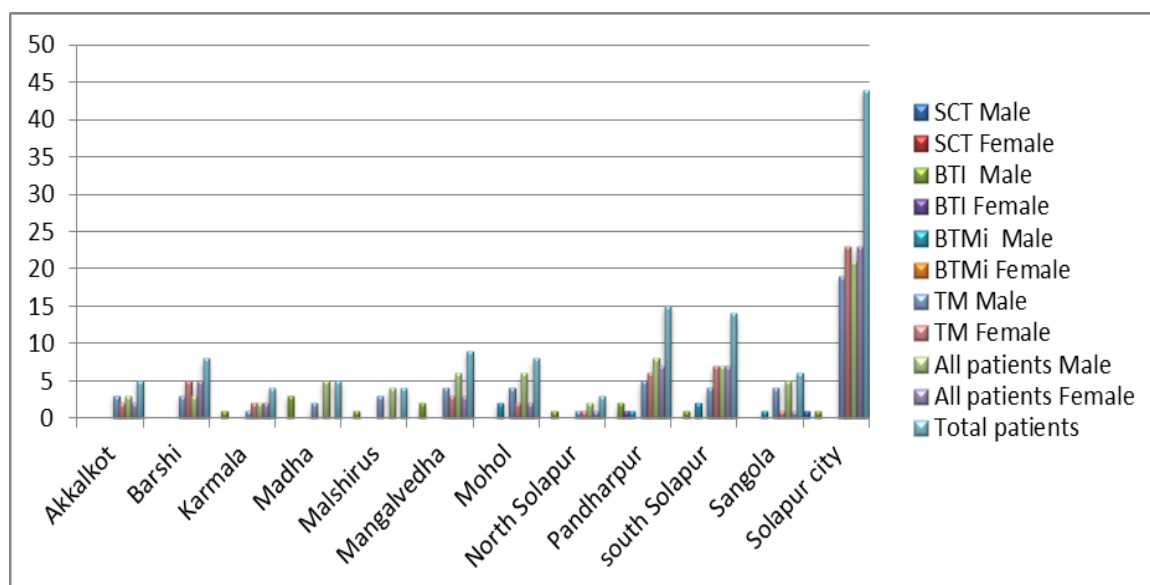


Figure-2. Showing the Taluka wise geographical distribution and prevalence percentage of the thalassemic patients in Solapur District.

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