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STUDY OF SOME SOCIO-DEMOGRAPHIC FACTORS OF SICKLE CELL DISEASE PATIENTS OF CENTRAL INDIA

Community Medicine

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ABSTRACT

Objective: To study some socio- demographic characteristics of sickle cell disease patients from the Vidarbha region of Maharashtra.
Methods: This cross-sectional descriptive study was performed at Regional Hemoglobinopathy Diagnosis and Management Centre of central India.187 individuals with SCD were analyzed. All the patients, or their caregivers, were informed about research procedures, objectives, and answered a standardized questionnaire.
Results: The patients were predominantly younger than 12 years of age; among them maximum were of 2-3 years of age. Out of 187 patients , 110(58.82%) were male and 77(41.17%) were female. 138(73.8%) patients belonged to Mahar (SC),8(4.2%) Gond (ST),7(3.7%)Teli (OBC) community.
Conclusion: Our study suggests that frequency of SCD is common among backward class population of central India requiring special attention in terms of medical treatment, living conditions, and integration into society.

KEYWORDS:

Introduction:
The World Health Organization recognized SCD as a global public health problem, as the overall number of babies born with SCD between 2010 and 2050 is estimated at about 14.24 million.[1] According to CDC statistics data , SCD affects approximately 100,000 Americans. It occurs among about 1 out of every 365 Black or African-American births and 1 out of every 16,300 Hispanic-American births. About 1 in 13 Black or African-American babies is born with sickle cell trait [2].

Sickle hemoglobin is highly prevalent among the tribals of central, southern, and western India with variable frequency ranging from 10 to 23%, though increased prevalence is also reported in the non tribal communities [3]. The prevalence of sickle cell carriers among different tribal groups varies from 1 to 40%. In Maharashtra, the sickle gene is widespread in all the eastern districts, also known as the Vidarbha region, in the Satpura ranges in the north and in some parts of Marathawada [4]

The complications of this disease are numerous and can affect every organ and tissue in the body. Most common complications are pain crises, chronic anemia and its acute exacerbations, stroke, acute chest syndrome, infection, pri-apism, leg ulcerations, osteonecrosis, and cardiac & renal problems.[5] Complications can be acute, producing dramatic clinical findings, or chronic, disabling, and cause premature death. [6]

Knowledge of the demographic and socioeconomic profile of SCD patients is essential to identify their needs, to contribute for improving resource allocation and to create and implement public health policies that benefit this population. [7][8] However, studies that address these aspects of the disease are relatively scarce. Thus, this study aimed to characterize some demographic aspects of SCD patients from the Vidarbha region of Maharashtra state.

Materials and Methods:
After obtaining institutional ethical committee approval, the present cross sectional descriptive study was carried out in Regional Hemoglobinopathy Diagnosis and Management Centre (Dept of Pathology) and Sickle cell OPD from August 2010- October 2012.The study population included 187 homozygous patients of sickle cell anaemia from indoor and outdoor departments irrespective of the age, caste, origin and ethnic background. ANC patients of homozygous sickle cell disease were excluded from the study.

All the patients, or their caregivers, were informed about the research procedures and objectives, and those who agreed to participate in the study, signed an informed consent form and answered a standardized questionnaire. Questionnaire was answered by care givers among patients less than 18 years. Proforma consist of medical history and the sociodemographic data of the patient, including age, religion, caste, residence & age at diagnosis. Complete clinical examination, solubility testing, hemoglobin electrophoresis, HPLC and radiological investigations were also done.

Results and Discussion:

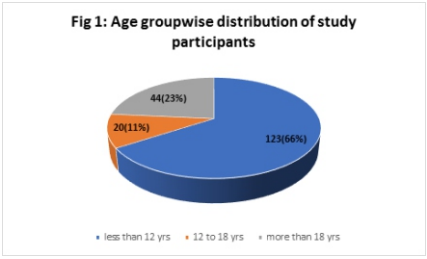


Fig 1 shows age group wise distribution of SCD patients. Out of 187, 123(66%) patients were 0 to 12 years of age , 20(11%) patients were 12 to 18 years of age and 44(23%) patients were more than 18 years of age.

Yadav , Gupta et al , studied 310 patients of SCD and reported that majority of patients were in the age group of 10-15 years(25.16%) followed by 0-5 years(24.19%).[9] Sadarangani M et al studied 130 SS patients and reported maximum patients between 6-8 years(20.76%)[10]. SO Akodu et al conducted a study in Nigeria in which study population belonged to 6 moths to 15 years of age. [11] S. Babhulkar et al conducted a study all were children under five years of age and 2 were aged between two and three years. [12] In the present study, highest percentage of patients were in the pediatric age group. This may be due to SCD is the commonest hereditary disorder in this area and early manifestation of disease.

Age Group	Total(Out of 187)	Male	Female
0-1	2(1.06%)	1	1
1-2	17(9.09%)	9	8
2-3	19(10.16%)	10	9
3-4	13(6.95%)	9	4
4-5	13(6.95%)	5	8
5-6	9(4.80%)	5	4
6-7	9(4.80%)	5	4
7-8	12(6.41%)	7	5
8-9	6(3.20%)	3	3
9-10	10(5.34%)	6	4
10-11	7(3.74%)	6	1
11-12	6(3.20%)	3	3

Table 1: Distribution of study participants according to number of patients in each sub group between 0 to 12 years of age

Table 1 denotes distribution of study participants according to number of patients in each sub group between 0 to 12 years of age. Highest number of patients were in age group of 2- 3 years i.e.,19(10.16%). Following it , 17(9.09%) patients were in age group of 1-2 years. There were only 2 patients in age group of 0-1 years 2(1.06%).

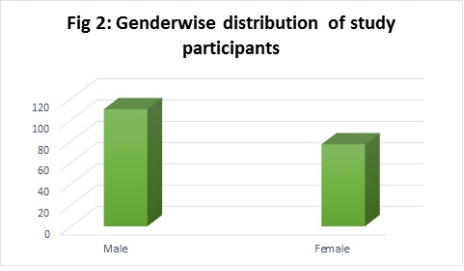


Fig 2 shows genderwise distribution of study participants, Out of 187, 110(58.83%) were male and 77(41.17%) were female patients. In M. N. Khaja et al study the incidence of sickle cell anemia was found to be high in males as compared to females. Sickle cell trait remained more or less equal in both sexes[13] Shrikhande AV et al, reported male to female ratio of 1.18:1[14] . S. Babhulkar et al conducted a study, there were 20 boys and 16 girls with hand foot syndrome in sickle cell disease[12] Garvin [15] noted that morbidity appears to be increased in males. Rekha R. Iyer et al conducted a study where 24 were male and 26 were females with haemoglobin disorders.[16] In the present study , males outnumbered females in the ratio of 1.42:1. This increase in the composition of male population could be attributed to the negative correlations between Hb A_2 and Hb F values between males and females. Marginally high Hb F values in females may attribute to the late onset of symptoms in SCD [14].The social structure in the country is such that there is more availability and accessibility of male population to health care facilities.

Caste of study participants	Number	Percentage(%)
Mahar(SC)	138	73.80
Teli	7	3.75
Gond(ST)	8	4.29
Bhoi(ST)	1	0.53
Pardhan (ST)	2	1.08
Ladkoshti(ST)	1	0.53
Muslim	3	1.60
Sonar	1	0.53
Maali	2	1.08
Varma	1	0.53
Sutar	2	1.07
Thakur	1	0.53
Sahu(OBC)	5	2.67
Christian	4	2.14
Kunbi	6	3.21
Yadav	3	1.60
Naavi(OBC)	1	0.53
Sikh	1	0.53
Total	187	100.00

Table 2: Caste wise distribution of study participants

Out of the study cohort, 138(73.8%) patients belonged to Mahar Scheduled Caste community,8(4.2%) Gond,7(3.7%)Teli,6(3.2%) Kunbi,2(1.08%) Pardhan, 1(0.53%) 1(0.53%) Bhoi, & Ladkoshti, 3(1.6%) Muslim,1(0.53%)Sonar, 2(1.08%) Maali,1(0.53%) Varma, 2(1.07%) Sutar, 1(0.53%) Thakur,5(2.6%) Sahu,4 (2.14%) Christian, 2(1.6%) Yadav, 1(0.53%) Naavi,1(0.53%) Sikh.

S. L. Kate et al conducted a study in which they found highest prevalence (35%) of sickle cell disorder among otkar scheduled tribe population. [14]

K. Chikhlikar et al in their study observed highest prevalence (52.5%) of SCD among scheduled caste community. [17]

A. U. Deore et al conducted a study in which they got highest prevalence of sickle cell disorder among Gond Scheduled tribe community.[18]

Rekha R. Iyer et al conducted a study in which out of 50 cases of haemoglobin disorders, 74% Hindus and 26% Muslims were affected. Amongst the Hindus, the Koli community (Scheduled Tribe) was the most commonly affected followed by the Lohanas(24%); whilst amongst the Muslims, Memons were the most commonly affected(16%). [16]

Kamble M et al observed maximum incidence of sickle haemoglobinopathy in Mahars (70%) followed by Kunbis(8%) and Telis(6%). [9]

Similarly in the present study, more patient were of Mahar community73.80%,followed by 4.28% Gond community.

This high prevalence could be attributed to consanguineous marriage pattern leading to the gene proliferating in the same community. This could also be supported by the fact that intercaste marriages are still considered a taboo. It has been reported that scheduled caste population has high prevalence (13.6%) in some regions of Central India while Scheduled tribes have high prevalence (7.46%) in mountain ranges of Maharashtra, (Gadchiroli, Chanrapur, Nandurbar, Yeotmal). [10],[19]

Conclusion:

Our study suggests that SCD is more common among scheduled caste community of central India predominantly below 12 years of age. Being vulnerable population they deserve special attention from the medical and psychosocial perspectives. Thus, it is necessary to improve public health policies that provide Indian SCD patients with better access to medical treatment, living conditions, and integration into society.

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