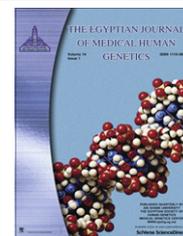




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Letter to the editor: Controversial report on sickle cell trait in Manipur, India

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Dear Madam,

I read with concern the article by Shah et al. [1] entitled 'Gene Frequency of Sickle Cell Trait among Muslim Populations in a Malarial belt of India, i.e., Manipur' published in your esteemed journal. However, I found many ambiguities in it.

I would like to make the following comments on this article and would like to draw the attention of the authors and the editors to certain issues, listed below.

The authors of the paper lack information of the population structure of Manipur state. They mislead the Naga group, as the term Naga is a generic term and under this group more than ten major ethnic groups such as the Tangkhul Naga, Mao Naga, Maram Naga, Kabui Naga, etc. are included. So, it is not clear which Naga ethnic group they selected for their study. The Meiteis, on the other hand, are the numerically dominant ethnic group of Manipur state, India. Manipur was earlier an independent princely state ruled by the Meiteis but formally annexed to the Indian Union on the 15th October 1949. The Meites are, therefore, not a 'tribe' and one should not loosely use the term 'tribe' as it implies social prejudice. The Muslims of Manipur, locally known as *pangal*, stand for the second largest community of the state. The word '*pangal*' is said to be a corrupt form of 'Bengal' [2]. The Muslims of

Manipur, who were originally a Bengali speaking population, are said to have migrated from Sylhet (now in Bangladesh) and Cachar district of Assam in the year 1606 [3,4]. They settled in Manipur by adopting the Manipuri language and marrying the local women.

Haemoglobin E is the most popular haemoglobin variant in Southeast Asia [5] as well as in Northeast India. The only variant haemoglobin occurring in considerable frequencies in Northeast India is Haemoglobin E (HbE), and it is the only abnormal haemoglobin so far detected among the autochthones of this area [6]. Research on abnormal haemoglobin types in Manipur is not a new venture. Reports on prevalence of abnormal haemoglobin types, particularly HbE, among various populations of Manipur are now available. From Manipur, Singh et al. [7] reported the prevalence of haemoglobin E among the Meiteis (0.101) and Brahmins (0.028). The greatest frequency of allele Hb β E, 0.226, among the Phayeng (a scheduled caste section of the Meitei) of Manipur is reported by Singh and Singh [8]. In 2009, Singh and Singh [9] reported the incidence of haemoglobin E gene among six populations of Manipur and the incidence of HbE among them ranges from 0.030 of the Gangte tribe to 0.084 of the Meitei through the Thadou Kuki (0.035), Kabui Naga (0.037), Ningthoukhong Meitei (0.045) and the Muslims (0.059). In another study, Singh et al. [10] reported haemoglobin E distribution in four endogamous populations of Manipur. Their study reveals the prevalence of HbE (0.101) as well as beta thalassaemia (0.004) in the Meitei population. The prevalence of HbE in the remaining three populations namely, the Kabui, the Koirang and the Simte is 0.035, 0.029 and 0.012, respectively. Shah et al. [1] reported a high incidence of sickle cell haemoglobin among the Meitei (0.1531), the Naga (0.08) and different sections of Manipuri Muslims namely, Sheikh (0.1602), Syed (0.1252), Pathan

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(0.1244), and Mughal (0.1696) is really astonishing as sickle cell trait is not reported from Manipur and other Northeastern states of India. However, there is incidence of sickle cell trait among the tea garden labourers of Assam who migrated from central India in recent past [11].

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The values of allelic frequencies calculated by Shah et al. [1] are found to be erroneous. The following are the re-calculated values of allelic frequencies of haemoglobin types.

Populations	HbA			HbS		
	Male	Female	Combined	Male	Female	Combined
Sheikh	0.8679	0.8333	0.8526	0.1321	0.1667	0.1474
Syed	0.9286	0.8571	0.8827	0.0714	0.1429	0.1173
Pathan	0.9615	0.8235	0.8833	0.0385	0.1765	0.1167
Mughal	0.8611	0.8182	0.8448	0.1389	0.1818	0.1552
Meitei	0.8478	0.8696	0.8587	0.1522	0.1304	0.1413
Naga	0.9545	0.8913	0.9177	0.0455	0.1087	0.0823

Note: M, F and C represent male, female and combined, respectively.

The sodium metabisulphite method adopted by Shah et al. [1] for screening sickle cell trait can give false positive result if it is not properly standardized. False positive results may occur if sodium metabisulphite of greater than 2% is used. If the solution they use is not fresh then there is a high chance of error.

The osmotic fragility test is one of the best methods for screening sickle cell trait whereas haemoglobin electrophoresis and HPLC (high-performance liquid chromatography) are the standard methods for screening abnormal haemoglobin types. I, therefore, would like to suggest the authors cross check their study with the above mentioned methods of screening.

I academically challenge their findings. It is, therefore, suggested that they restudy and confirm their findings for greater academic knowledge and proper understanding of the readers.

Yours sincerely,
 Maishnam Rustam Singh

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