

## Assessing Framingham cardiovascular risk scores in subjects with diabetes and their correlation with diabetic retinopathy

Sir,

I read with interest the article entitled "Assessing Framingham cardiovascular risk scores in subjects with diabetes and their correlation with diabetic retinopathy" by Damkondwar, *et al.*<sup>[1]</sup> I want to raise certain issues concerning the validity of the results obtained in the said study.

1. Sir, say, A (Framingham scores in type II diabetics), B [Cardiovascular Disease (CVD) risks in type II diabetics] and C (diabetic retinopathy) are three entities and if one wants to correlate B with C by measuring A, then A and B must have undoubted pre-existing correlation. But in the said study, it was admitted "There is no longitudinal study from India which can suggest whether the scores underestimate or overestimate the CVD risk among subjects with type II diabetes". It was even not mentioned whether the cross-sectional data obtained in the study were in conformity with the Framingham study or not. Therefore when the standard (Framingham scores) was not standardized (validated) for CVD risks in Indian diabetic population, how can Framingham scores and/or CVD risks be correlated to diabetic retinopathy?
2. Framingham cardiovascular risk score is notoriously known for its high interethnic variability.<sup>[2,3]</sup> In fact it is often said that Framingham cardiovascular risk score correlates well only in the race from where it is actually evolved. The authors themselves mentioned that in the United Kingdom Prospective Diabetic Study (UKPDS), the Framingham scores underestimated the 10-year risk of CVD in type II diabetics by 32%. Therefore, the said scores though being globally investigated are not globally accepted for application. Hence mentioning Framingham scoring as 'global risk assessment tool' and advocating interaction between treating physician/cardiologist and the ophthalmologist on its basis (in the 'Abstract' of the said article) is probably not warranted.
3. The results of the study were not compared with other compatible Indian cross-sectional study, in which Framingham scoring was used. Authors' estimation of 10-year CVD risks in Sankara Nethralaya – Diabetic Retinopathy Epidemiology and Molecular Genetic Study (SN – DREAMS 1) i.e., in the study in question was 33.5%, whereas that estimated by The Indian Atherosclerosis Research Study (IARS) group was only 5.32%.<sup>[3]</sup> Although the inclusion criteria of

the two studies were different (type II diabetes in SN – DREAMS 1 and genetic predisposition in IARS), however, both the criteria were found to have similar CVD risk potentials in the Framingham's cohort and hence tend to be compatible.<sup>[4,5]</sup>

- Correlating CVD risks with risks of diabetic retinopathy lacks biological plausibility. While cardiovascular diseases in diabetes are macrovascular in origin, retinopathy is microvascular, and each has distinct and different set of major etiological factors. While cardiovascular diseases are predominantly due to atherosclerosis, retinopathy is predominantly due to glucose dysregulation. That diabetes increases the risk of atherosclerotic diseases by two to three folds is an established fact<sup>[5]</sup> but the reverse, that is, role of atherosclerotic factors like cholesterol, LDL etc., in the causation of retinopathy is not as clear. Neither any article showing such correlation was cited in the 'discussion' section. Therefore, while investigation to this effect is laudable, a hypothetical explanation of this association was expected, and in the absence of explanation, needless to say, the strength of association had been weakened further.

### **Parthasarathi Roy**

Department of Ophthalmology, Regional Institute of Ophthalmology,  
Kolkata Medical College, Kolkata, West Bengal, India

**Correspondence to:** Dr. Parthasarathi Roy,  
Department of Ophthalmology, Parthasarathi Roy, Regional  
Institute of Ophthalmology, Kolkata Medical College,  
Kolkata - 700 073, West Bengal, India.  
E-mail: ps\_roy2002@yahoo.com

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