Dear Editor,

Reference article “Spectacle compliance amongst rural secondary school children in Pune district, India” we share the following points for authors’ comments.[1]

We could not understand the reason for assuming an absolute precision of exactly 4% (and not 2, 5 or 10%) for a one time observation of a fact (wearing spectacles) with a binary outcome (yes-no) and binomial distribution, when no previous studies stating variability on the subject are available from the area. If a meta-analysis has been used it should be discussed rather than leaving for assumption and confusion in readers’ minds. Design effect used is dependent on the rho and in turn on the intra-cluster and inter-cluster variability. Since, no previous studies from same area are available, how was this variability determined by authors? Design effect and sample size figures need to be interpreted with caution, because number of clusters is less than 30 and cluster size is large. Sample size was calculated with a compliance rate of 35%.[2] Previous studies give rates of compliance at 19.5% from rural central India,[3] 13.4% from Mexico,[4] 30% from Baltimore[5] and 37.7% from rural China.[5] Maybe the rural central India figures would have been more appropriate.

The slopes of the logistic regression of individual factors associated with spectacle compliance [magnitude of refractive error ($P < 0.001$), father’s education ($P = 0.016$), female sex ($P = 0.029$), area of residence ($P < 0.0001$), visual acuity of better eye ($P < 0.001$)] are not mentioned in results or tables. Ophthalmologists would be interested in seeing the contributions of individual factors along with strength of association.

You have mentioned the presence of a linear, directly proportional relationship between probability of ‘complying with spectacle usage’ and ‘poorer visual acuity’ and ‘increasing spherical equivalent’ in your study. This is the classical problem of multicollinearity. It is seen in logistic regression if two parameters share a collinear relationship with the outcome factor. Techniques to study this and methods to report it have been described in statistical literature.

Authors state that patients with visual acuity better than 20/60 were less likely to wear spectacles while those with vision worse than 20/200 were more likely to wear them. However, data in Table 4 of the original article seems to state otherwise. If we look at the 95% confidence intervals we find the odds ratio of 1.00 as part of the range, with the other factors mentioned therein taken into account. This suggests that the observations are a chance finding and no support for the authors’ contention exists. Only for vision less than 10/200 is the observation tenable where probability is not significant ($P = 0.135$) supporting the fact that it is a chance observation.

Tables 3 and 4 of the original article confuse the reader whether analysis is based on better or worse eye or pooled data. Sample size of 1000 is mentioned but Tables 2a and 2b list 912 eyes. Were the remaining eyes lost to follow up due to inability to answer the questionnaire or had other problems like amblyopia or treatable or untreatable causes of blindness? Organic and non-organic causes of decreased vision could be confounding factors or effect modifiers in spectacle compliance. Pooled and subgroup analysis would have given the reader a more intimate understanding about the generalizability of your findings.

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