

Invalidation of the Start of Lunar Calendars Based on Sighting of Crescent: A Survey of 101 Years of Data between 1938 and 2038

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Abstract : The purpose of this paper is to invalidate decisions made by the Islamic conference led at Istanbul in 2016, which had defined two basic criteria to determine the start of the lunar month: (1) they are all based on the sighting of the crescent, be it observed or computed with modern methods, and (2) they've strongly recommended the adoption of the principle of 'unification of sighting', by which any occurrence of sighting anywhere would be applicable everywhere. To demonstrate the invalidation of those statements, a survey of 101 years of data, from 1938 to 2038, have been analyzed to compare the probability density function (PDF) of time difference between different types of fajr and new moon. Two groups of fajr have been considered: the 'natural fajr', which is the very first fajr following new moon, and the 'biased fajr', which is defined by human being inclusively of all chosen definitions. The parametric and non-parametric statistical comparisons between the different groups have shown that all the biased PDFs are significantly different from the unbiased (natural) PDF with probability value (p-value) less than 0.001. The significance level was fixed to 0.05. Conclusion: the on-going reference to sighting of crescent is inducing a significant bias in defining lunar calendar. Therefore, 'natural' calendar would be more applicable requiring a more contextualized revision of issue in fiqh.

Keywords : biased fajr, lunar calendar, natural fajr, probability density function, sighting of crescent, time difference between fajr and new moon

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