INTRODUCTION
Fluoride is one of the very few chemicals that have been shown to cause significant health effects in people through drinking water\(^1\). Credible evidences from scientific literature substantiate beneficial as well as detrimental effects of fluoride on human health with only a narrow margin of safety\(^2\). Research in the past seventy five years in this area suggests that drinking water fluoride concentrations below 1 parts per million (ppm) are beneficial in the prevention of dental caries, but excessive exposure to fluoride in drinking water, or in combination with exposure to fluoride from other sources, can give rise to a number of adverse effects. These range from mild dental fluorosis to crippling skeletal fluorosis as the level and period of exposure increases. Crippling skeletal fluorosis is a significant cause of morbidity in a number of regions of the world\(^1\).

Of late, fluorosis plays havoc in more than 25 nations across the world and in many continents, the number of people suffering from fluoride poisoning is staggering. The most recent proclamation that more than 200 million people across the globe are 'at risk' of fluorosis, raises global alarm and anguish\(^3\).

It is estimated that in India, 80% of domestic needs of water in rural areas and 50% in urban areas are met with ground water sources and these sources are under threat from problems due to excess fluoride, arsenic, iron, nitrate and salinity. Most of the critical quality-related problems of ground water in India are cited as geogenic largely due to major inorganic pollutants.
like fluoride and arsenic. While arsenic problem prevails only in 3136 habitations, fluoride is endemic in 36,988 habitations, depicting its dominance\textsuperscript{2}. The intensity of natural fluoride in groundwater ranges from 0.5 to 48 ppm or even more\textsuperscript{4}. Presence of even low levels of fluoride in groundwater turns disastrous when coupled with malnutrition, especially for children in rural and semi urban areas of the country.

Over the past seven decades, the prevalence and severity of fluorosis has increased quite radically in India, reaching almost epidemic proportions. At present, 20 out of 35 states and Union Territories are under fluoride attack, while more affected areas continue to come to light\textsuperscript{2}. It is estimated that about 66 million people in India are at risk of fluorosis amounting to a third of global population at risk\textsuperscript{4}. Owing to the severity of impacts due to excess fluoride in groundwater, the permissible limit of fluoride in India has been reduced from 1.5 to 1.0 ppm in 1998\textsuperscript{5}.

Since fluoride in drinking water does not change its colour, smell or taste, normally there is no way to detect it unless tested. The victims of fluorosis are often helpless and continue to suffer without their disease being diagnosed and undergo treatment with medicines of different kinds; some even undergo surgical interventions, adding to their desolation with no sign of healing or relief to the pain or disability\textsuperscript{4}. People with stained teeth, paralyzing bone diseases, stooped backs, crooked hands and legs, blindness and other handicaps are a common
sight in fluoride endemic areas of India. In Nalgonda district of Andhra Pradesh alone, fluorosis already crippled more than twenty thousand people and left thousand of others in constant misery. In many fluoride endemic areas of India, children with limbs twisted out of shape hobble forward with the help of walking sticks, and are forced to leave formal schooling. They grin with agony, pain and embarrassment because they cannot run like other children of their age; fluoride poisoning has crippled their limbs and hopes. Touchingly, parents are forced to take their kids suffering from severe skeletal fluorosis to nearby hospitals for getting them certified as 'physically handicapped.' Thus, the severe contamination of drinking water with excess fluoride, acquired the dimensions of a socio-economic rather than a public health problem in India.

In India the disease is known to be prevalent for the past six decades. The highest rates of endemicity are reported in Andhra Pradesh, Haryana, Karnataka, Punjab, Rajasthan, Gujarat, Tamil Nadu and Kerala. The first report in India was from Nellore district in Andhra Pradesh in 1937. The worst affected areas are Nalgonda and Prakasam districts of Andhra Pradesh.

As we are living in the decade of 'Water for Life' (from 2005 to 2015) as proclaimed by the United Nations, it is worth mentioning that, for the millions of people in the rural areas of endemic fluorosis, the right to safe water still remains a promise unfulfilled. So, the studies on the presence and resulting
impacts of excess fluoride in groundwater on human beings are extremely significant the world all over, and are more pertinent in the Indian context.

In Kerala, the districts of Alappuzha and Palakkad are suggested to be endemic to fluorosis on the basis of the increased water fluoride level noticed. A pilot study on the subject revealed that the prevalence of dental fluorosis was 35.6% in the taluk of Ambalapuzha in Alappuzha district. The global and national trend of increasing prevalence and severity of fluorosis warrants updated estimate of the analysis of this problem in our state. The paucity of epidemiological studies on fluorosis in Kerala and the gravity of the problem have paved way for the conceptualization of this study.