

ABSTRACT

Goitre is still considered as one of the major nutritional problem in Indonesia, particularly in East Java. Theoretically, goitre is usually and widely reported to be found in the high mountain range, where the iodine content in soil and water is usually low. Eventhough, iodine supplementation and salt fortification with iodine program have been done widely, but the result of the program has not showed to be optimum. But, in fact, it has been reported that endemic goitre areas have spreaded widely into low land areas, including coastal and city areas.

The purpose of the study about the relationship between the standard of Iodine in urine, Selenium in serum, Zinc (Zn) in hair, Nitrat in blood and Pb in blood factors influencing goitre in elementary school children among goiter endemic area (Gading village) and non-goiter endemic area (Mejayan village), District of Madiun, East Java.

Samples were 40 elementary school children divided into 2 groups, i.e., those with goiter (20 children) and without goiter (20 children). Goitre was identified by palpation (WHO classification), UEI (Urine Excretion Iodine) were measured in IDD Laboratory (Diponegoro Semarang). Yodium in water and soil, Selenium in serum, water and soil, Zn in hair, water and soil, Nitrat in blood, water and soil, Pb in blood, water and soil were measured in National Nuclear Energy Agency (Yogyakarta). Moreover, household characteristics, food consumption and sosio economic data ets, were also collected by using questionnaire.

The result of this study showed that Total Goitre Rate (TGR) in endemic area (Gading village) and non endemic area (Mejayan village) were 31,9 % and 0,05% respectively. 100 % respondents in endemic area (Gading village) had UEI concentration $\geq 100 \mu\text{gr/l}$ and 90 % respondents in non endemic area (Mejayan village) had UEI concentration $\geq 100 \mu\text{gr/l}$. In both area (65 % in endemic area, 55 % in non endemic area) had selenium serum concentration in marginal normal condition (0,1-0,2 $\mu\text{gr/l}$). 100 % respondent in endemic area and 95 % respondent in non endemic area had Zinc in hair normal concentration ($\geq 70 \mu\text{g/gr}$). Unfortunately, most of respondent had nitrat blood concentration more than 0,1 ppm (95 % in endemic area and 65 % in non endemic area). Lead blood concentration in both area were not detection. Goitre in endemic area was more likely caused by goitrogenic (nitrat intoxication) as bloking agent.

Results of statistical test showed that there was a significant relationship in urinary iodine level, nitrat in blood and RDA protein influencing goiter between goiter endemic area and non goiter endemic area. So, iodine supplementation in endemic area are polluted by nitrat. Further analysis revealed that there was a correlation between nitrat in blood and goiter incidence ($p=0,05$), with odd ratio of 0,079, indicating that children had possibility of having goiter level as much as 0,079 times higher if concentration nitrat $< 0,1$ ppm so concentration nitrat in blood must be zero.

Key words: goitre, nitrate