

RISTCON 2018

**Proceedings of
5th Ruhuna International Science and
Technology Conference**

February 15, 2018

ISSN: 1391-8796

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Matara 81000, Sri Lanka

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Maternal urinary iodine status and its relationship to newborn's thyroid status in selected MOH divisions of Jaffna district

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Iodine is an essential element in thyroid hormone synthesis, normal growth and development of the brain. The objective of this study was to investigate the maternal iodine status and its relationship to newborn's thyroid status in selected MOH divisions of Jaffna district. A total of 477 mothers and their 477 newborns in Jaffna District were included in the study program during July 2012 to December 2013. Urinary iodide concentration (UIC) was measured in pregnant mothers by Sandell-Kolthoff reaction, and blood spot TSH levels of their newborns were measured by Enzyme-Linked Immunosorbent Assay (ELISA) method within one week of delivery. Descriptive statistical analyses were done with SPSS version 16. Mean weight and height of mothers were 63 ± 11 kg and 154 ± 6 cm respectively. Among the 477 mothers, median UIC was $140.0 \mu\text{g/L}$. Also 65.1% ($n=311$), 22.7% and 11.7% ($n=57$) ($n=109$) of mothers had UIC less than adequate ($<150.0 \mu\text{g/L}$), adequate ($150 - 250 \mu\text{g/L}$) and excess (greater than $250.0 \mu\text{g/L}$) level of iodine excretion in their urine respectively. Among the 477 newborns, 18% ($n=86$) of them had blood spot TSH level greater than 20.0 mIU/L. Neonatal TSH levels ranged $1.50-53.46$, $1.00 - 42.50$ and $2.00 - 45.50$ mIU/L were obtained in corresponding to the maternal UIC levels less than adequate, adequate and excess respectively. Maternal UIC was not significantly correlated with neonatal TSH level ($r = 0.06$, $P = 0.13$). Based on this study, maternal iodine deficiency and excess were observed in mothers at third trimester of gestation. High and low values of neonatal TSH levels were observed among newborns delivered by iodine deficient and excess mothers in Jaffna district, yet maternal UIC was not significantly correlated with neonatal TSH.

Keywords: Jaffna, maternal urinary iodide, neonatal TSH, thyroid-stimulating hormone

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