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Cotinine and trans-3-hydroxycotinine as surrogate markers for ETS exposure in children

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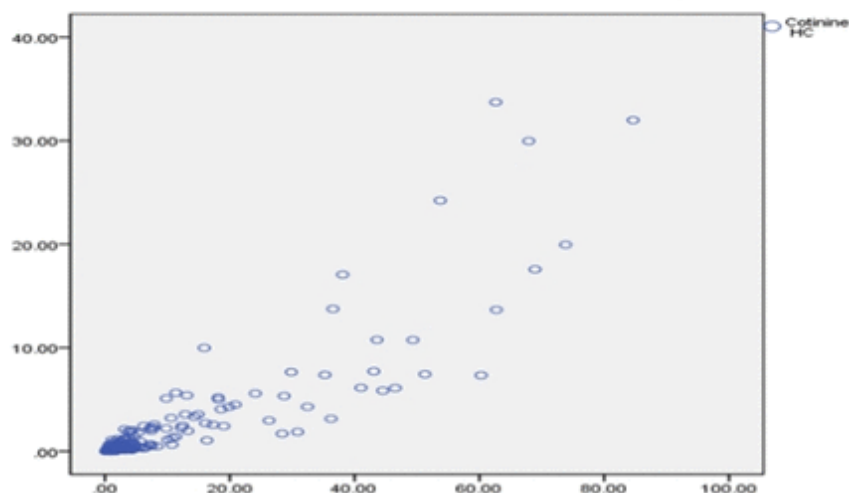
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Abstract

Aims and Objectives: Second hand smoking is a major risk factor for respiratory disease in children since they spend most of their time within the domestic environment. This study has focused on the use of urine samples for cotinine and trans-3-hydroxycotinine (3HC) as surrogate markers for ETS exposure in children and whether these metabolites could be utilized in respiratory disease preventive strategies as an objective assessment of ETS exposure.

Methods: A total of 191 children in the 9 to 11 year old age group were selected from five state schools in Malta. Both children and their parents were asked about the presence of smokers at home and morning urine samples were analysed for cotinine and 3HC.

Results: Students in schools 1 and 4 had the highest mean levels of both metabolites. There was a significant positive correlation between urinary cotinine and 3 HC levels within the whole cohort ($r = 0.87$; $p = 0.001$).

Figure 1. Correlation between urine cotinine and 3 HC levels ($r = 0.87$; $p < 0.001$)
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Both metabolites were significantly associated with the presence of smokers within the domestic environment ($p = 0.001$).

Conclusion: Urine cotinine and 3 HC are useful as objective markers of ETS exposure in children. Domestic exposure to ETS was significant in this cohort suggesting that more awareness and education is needed among parents. The negative short and long term health impacts of ETS in children need better understanding.

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