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# Assessment of second ($I_{2M}$) and third ($I_{3M}$) molar indices for establishing 14 and 16 legal ages and validation of the $I_{3M}$ cut-off for 18 years old in Chilean population

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**Abstract**

This retrospective cross-sectional study has two-fold aims: the first is to assess new cut-offs at the legal age thresholds (LATs) of 14 and 16 years old and the second is to validate the cut-off of third molar index $I_{3M} = 0.08$ for 18 years of age in Chilean people. Orthopantomographs from 822 Chilean children aged from 11 to 22 (472 girls and 350 boys) were analysed. For LAT of 14 years, cut-offs were found using the ROC curves singly for boys and girls. The cut-offs for boys were $I_{2M} = 0.16$ and $I_{3M} = 0.73$ while for girls we obtained $I_{2M} = 0.10$ and $I_{3M} = 0.77$. For LAT of 16 years we obtained the same cut-offs regardless of gender, which were 0.06 and 0.36 for $I_{2M}$ and $I_{3M}$ respectively. Concerning the validity of the Cameriere's $I_{3M}$ cut-off for 18 years old in Chilean population, the proportion of correctly classified individuals was 83% and estimated post-test probability, PPV, was 93.2%, with a 95% confidence interval equals to 91.3%, 94.6%. Hence, the probability that a subject positive on the test was 18 years of age or older was 93.2%, confirming the validation of the $I_{3M}$ cut-off for Chilean population.

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