

Original Paper

## Comparison of the accuracy of various methods of measuring body temperature in three months to five years old children

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### Abstract

**Background and Objective:** Several methods are available for measuring fever in children. This study was done to compare the accuracy of three method of measuring body temperature using left and right tympanic, axillary and rectal methods in three months to five years old children.

**Methods:** This descriptive-analytic study was done on 126 children (63 without fever and 63 children with fever) with 3 months to 5 years age in Mofid hospital, Tehran, Iran. Rectal temperature lower than 38°C was considered as Gold standard to determine fever. Body temperature was also recorded for subjects through right and left tympanic and axillary methods.

**Results:** Body temperature was recorded in axillary method 37.1°C (sensitivity: 92.1%, specificity: 90.5%), right tympanic 36.9°C (sensitivity: 74.6%, specificity: 84.13%) and left tympanic 37.3°C (sensitivity: 93.65%, specificity: 84.13%). The mean temperature in the axillary method 0.77°C, right tympanic 1.02°C and left tympanic 0.48°C was lower than the mean rectal method (P<0.05). The correlation between right, left tympanic and axillary with rectal method was 0.84, 0.894 and 0.925, respectively (P<0.05). The area under the receiver operating characteristic (ROC) curve for left and right tympanic and axillary were 0.95, 0.87, 0.965, respectively.

**Conclusion:** The difference between rectal and left tympanic method was at the lowest level due to the ease of measuring temperature through tympanic membrane in three months to five years old children.

**Keywords:** Fever, Rectal method, Axillary method, Tympanic method, Child

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Received 23 May 2015

Revised 18 Jun 2016

Accepted 10 Sep 2016