Electronic Smart Phrase Is Superior to an Online Calculator for Liver Fibrosis Index FIB-4

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INTRODUCTION

- Due to advances in evidence-based medicine, clinical scores have become available for risk stratification and clinical decision making.
- Fibrosis-4 (FIB-4) index, incorporates age, serum aspartate aminotransferase level, serum alanine aminotransferase level, and platelet counts to determine the degree of liver fibrosis.[1] This index has been validated in many liver diseases and is becoming more commonly used in clinical encounters.[2-4]
- Traditionally, physicians use online calculators to calculate FIB-4. This is, however, time consuming and subject to human error in entering data.
- Electronic health records (EHR) may be employed to incorporate calculation of clinical scores using Smart Phrases or Smart Links.

PURPOSE

- The aim of this study is to compare the performance of online calculator for FIB-4 with EPIC Smart Phrase.

METHODS

Study Design

- FIB-4 score calculation as a Smart Phrase in Epic (Epic Systems Corporation, Verona, WI) was incorporated into the EHR.
- A comparative non-clinical trial was performed during March-May 2022.

Study Participants

- Internal medicine residents at a community teaching hospital were randomly invited to participate in the study.

Study Measurements

- Study participants were requested to calculate FIB-4 score for a patient using both traditional online method using MDCalc medical calculator (https://www.mdcalc.com/fibrosis-4-fib-4-index-liver-fibrosis) vs. EHR-based approach. The following were recorded by a single observer for calculating FIB-4 score via both methods for each participants:

(1) Total number of clicks (steps)

(2) Total time spent

(3) Accuracy of calculation

- Ease of calculation was evaluated for both methods by participants on a 0-10 visual analogue scale.

Statistical Analysis

- Data presented as frequency (%) or mean ± standard deviation. T test and Chi square teste were employed to assess the differences among groups. $p < 0.05$ was considered significant.

RESULTS

Study Scheme

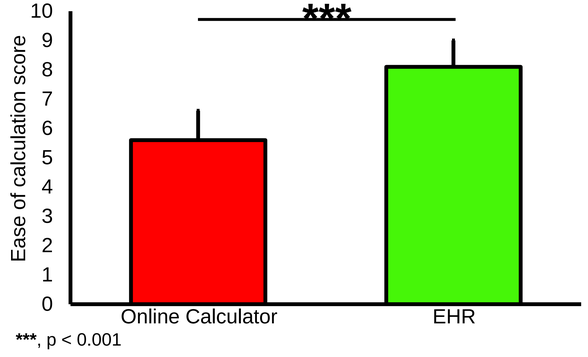
Characteristics of Study Participants

➢ Thirteen (35.1%) of the participants were female and 24 (64.9%) were male.

➢ Thirteen (35.1%) of the participants were in post-graduate year (PGY)-1, 12 (32.4%) were in PGY-2, and 12 (32.4%) were in PGY-3.

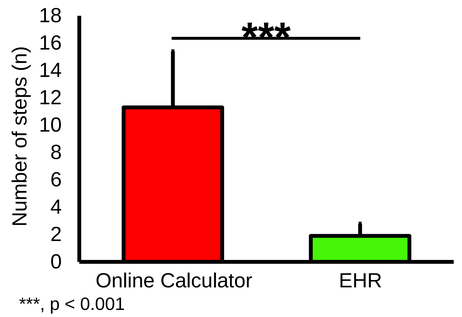
Comparison of Calculating FIB-4 Score Via Online Calculator Versus EHR-based Approach

➢ Subjective evaluation of ease of calculation using a visual analogue scale demonstrates that study participants rated higher scores for ease of calculating the FIB-4 score using EHR-based approach (8.1 ± 0.9) compared to the online calculator (5.6 ± 1.0, $p<0.001$).

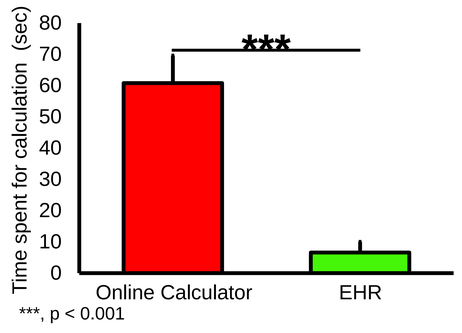


Comparison of Calculating FIB-4 Score Via Online Calculator Versus EHR-based Approach

➢Objective assessment of number of clicks (steps) used for calculation of FIB4 score shows that participants used less steps (1.9 ± 0.9 [clicks]) via using the EHR-based approach in comparison with online calculator (11.3 ± 4.1; $p<0.001$).



➢Objective measurement of total time spent for calculation of FIB4 score demonstrated that participants required less time for calculating FIB-4 score via the EHR-based approach (6.6 ± 3.4 seconds) compared to online calculator (60.1 ± 8.8 seconds; $p<0.001$).



➢Evaluating accuracy of calculations showed that while 6 (16.2%) inaccurate calculations were observed using the online calculator, no inaccurate calculations were noted in calculating the score using the Epic Smart Phrase (p=0.01).

CONCLUSION

- **EPIC Smart Phrase for liver fibrosis index FIB-4 is easier and faster to use compared to online calculator.**

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