Leveraging health information technology to collect family cancer history: A systemic review and meta-analysis.

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BACKGROUND

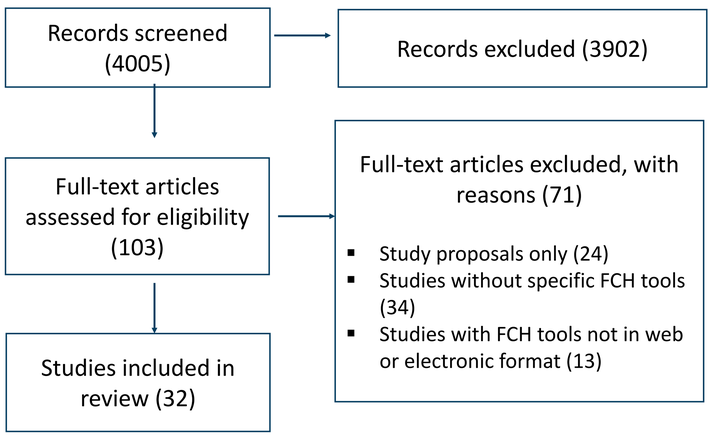
- 4 million individuals carry a pathogenic mutations in a cancer-associated gene
- <20% of affected individuals know their underlying genetic conditions
- Collecting family cancer history (FCH) using information technology (IT) can help identifying individuals with cancer-associated pathogenic mutations
- We sought to:

1) Evaluate the literature for existing strategies that utilize IT to collect FCH

2) Improve detection rate of familial cancer syndromes using health IT

METHODS

- A complete systematic search of studies using health IT for FCH collection was performed
- Statistical heterogeneity was assessed through the chi-square test (i.e. Cochrane Q test) & the inconsistency statistic (I2)
- The pooled proportion was calculated using the Freeman-Tukey Double arcsine transformation & 95% confidence interval (CI) was calculate using Clopper-Pearson interval



RESULTS

- 4005 studies were screened from 1980-2020
- 32 studies were included & 27 distinctive IT tools were identified- categorized into four FCH collection strategies (Figure 1 & 2)
- Median patient age was 51.2 years (range 18-75 years)

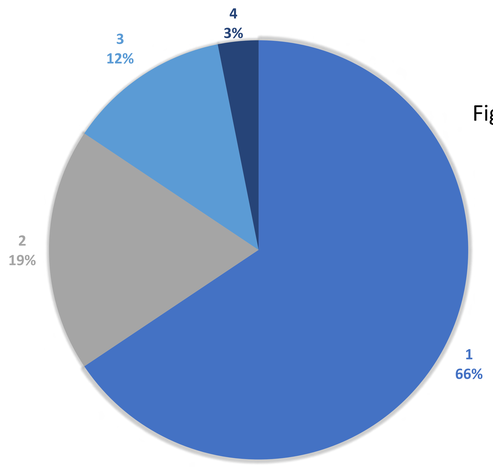


Figure 1: Strategies for FCH collection

1. Electronic survey prior to visit (n= 21)
2. Electronic survey via tablet in the medical office (n=6)
3. Electronic survey via kiosk (n=4)
4. Animated virtual counselor (n=1)

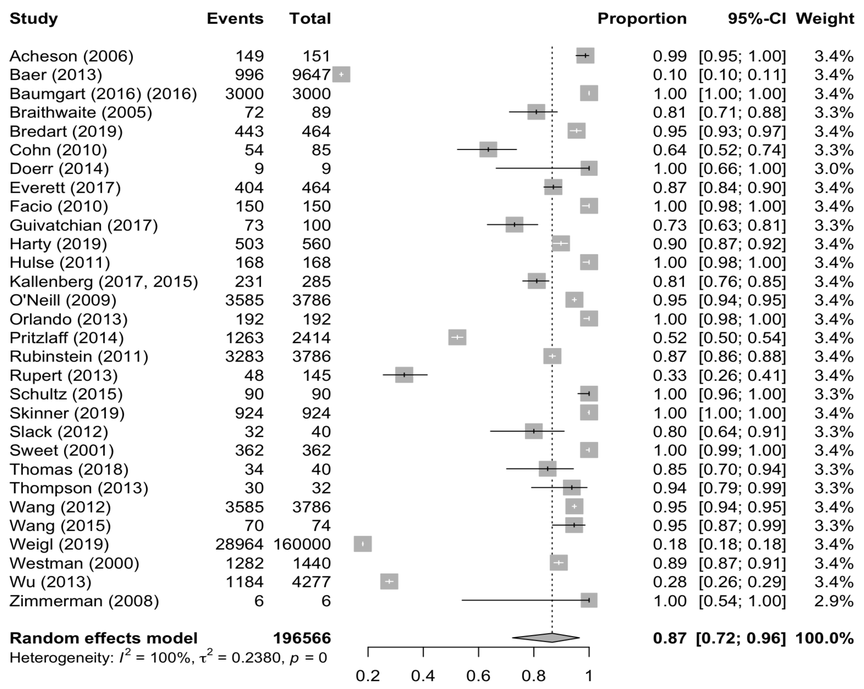


Figure 2. Proportion of patients completing FCH collection tools.
87% [CI 72-96%] of all patients included: n=196,566

RESULTS CONT'D

Table 1. Pooled estimates for FCH collection

Patients completing electronic survey prior to medical visit	85% [CI 66-98%]
Patients completing tablet survey in medical office	89% [CI 74-98%]
Mean time for FCH collection (minutes)	35% [CI 14-56%]
Patients referred to genetic testing	12% [CI 4-23%]

CONCLUSIONS

- There is wide variability in the collection & accuracy of FCH across medical systems
- Collection of FCH is essential for triaging patients to genetic testing and counseling
- Electronic FCH have high patient completion rate, minimal time requirements, high levels of user satisfaction and collection of accurate health information
- IT tools can optimize communication, quality of care and clinical decision during COVID-19 pandemic
- Following family history collection and genetic assessment, IT coordinates care to calculate disease risks for familial cancer syndromes

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