A systematic review and meta-analysis of interval cancer of stool testing for colorectal cancer screening

EPH71

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Background

- Colorectal cancer (CRC) is a heavy burden worldwide, and CRC screening has been implemented nationally in developed countries.
- The guaiac fecal occult blood test (gFOBT) has been the primary screening modality for CRC screening, but it has recently been replaced with fecal immunochemical testing (FIT).

What is Interval Cancer？

- Interval cancer rate is a critical factor in evaluating the effectiveness of cancer screening programs.
- Interval cancer is diagnosed between the last negative screening and the next scheduled screening.

Methods

- The interval CRC rate between gFOBT and FIT was compared based on a systematic review and meta-analysis.
- A literature search was conducted in the Ovid-MEDLINE, Embase, and Ichushi-Web databases for citations related to CRC screening based on stool tests, covering primarily the period from inception to April 2024.
- Population-based screening for asymptomatic individuals aged 40 years and above was also included. Screenings were divided into three types: prevalence screening, incidence screening, and combined screening.
- Interval CRC rates per 100,000 person-years following negative results were calculated for each round of CRC screening and compared between gFOBT and FIT.

Results

- Of 7,971 articles, 35 studies remained and were included in the meta-analysis. There were 11 studies on gFOBT and 27 studies on FIT. Twenty-nine studies were reported from Western countries, and 6 were from Asia.
- Although the CRC detection rate of FIT was twice as high as in gFOBT, the positive rate was also higher in FIT than in gFOBT (Figure 1&2).
- The incidence rates of interval CRC following gFOBT were **66.7 (95%CI:57.6-77.3) for prevalence screening** and 63.8 (95%CI: 47.5-85.6) for incidence screening. For FIT, the rates were **34.1 (95%CI: 27.1-42.9) for prevalence screening** and 32.3 (95%CI: 24.0-43.6) for incidence screening. (Figure 3)

Conclusion

- Although these studies could not be directly compared due to their varying contexts, including differences in devices and cut-off values for stool testing, interval CRC rates were lower in FIT than in gFOBT.
- This result also supports the superiority of test accuracy in FIT for CRC screening.

Figure 1. Comparison of Positive rates

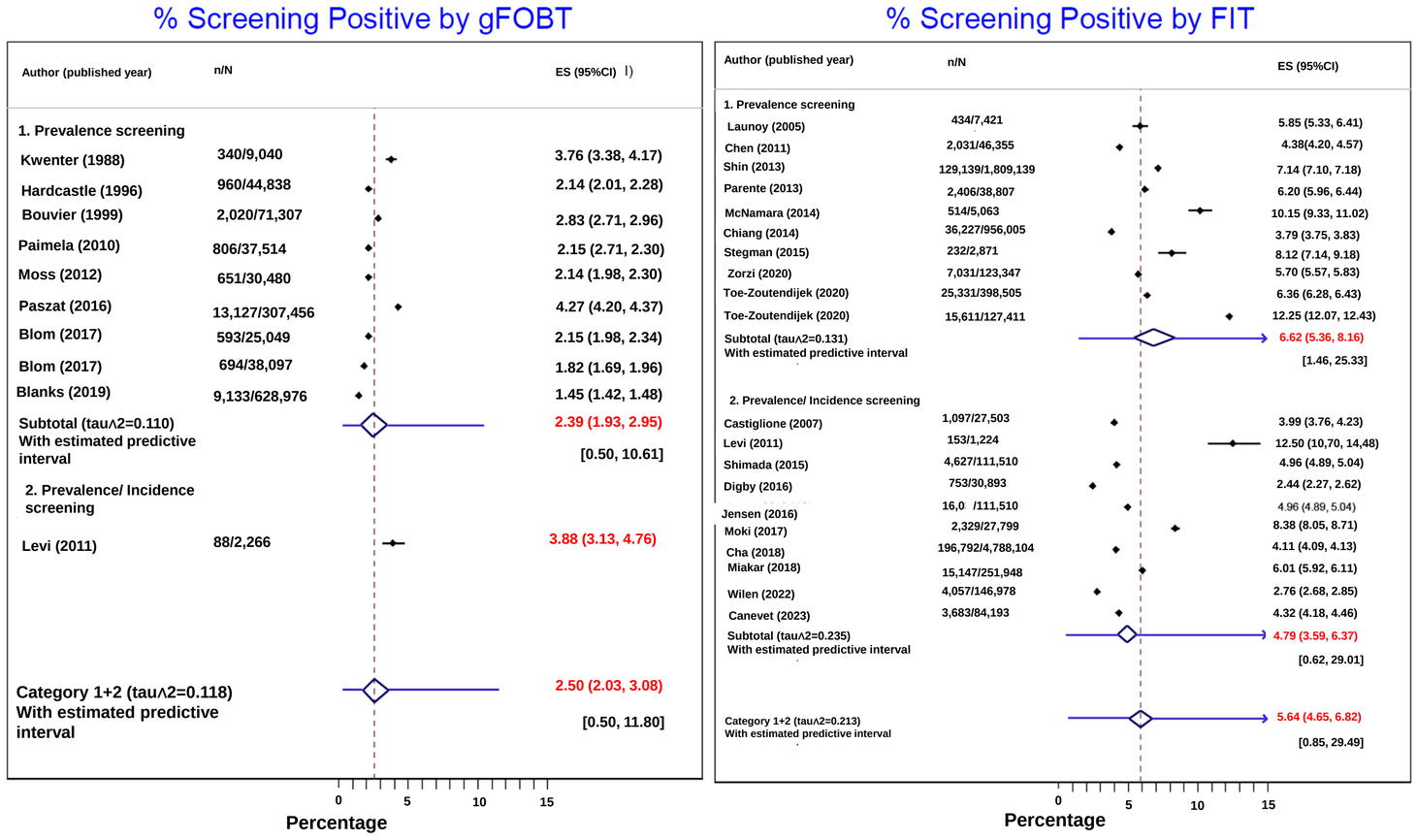

Figure 2. Comparison of CRC detection rates

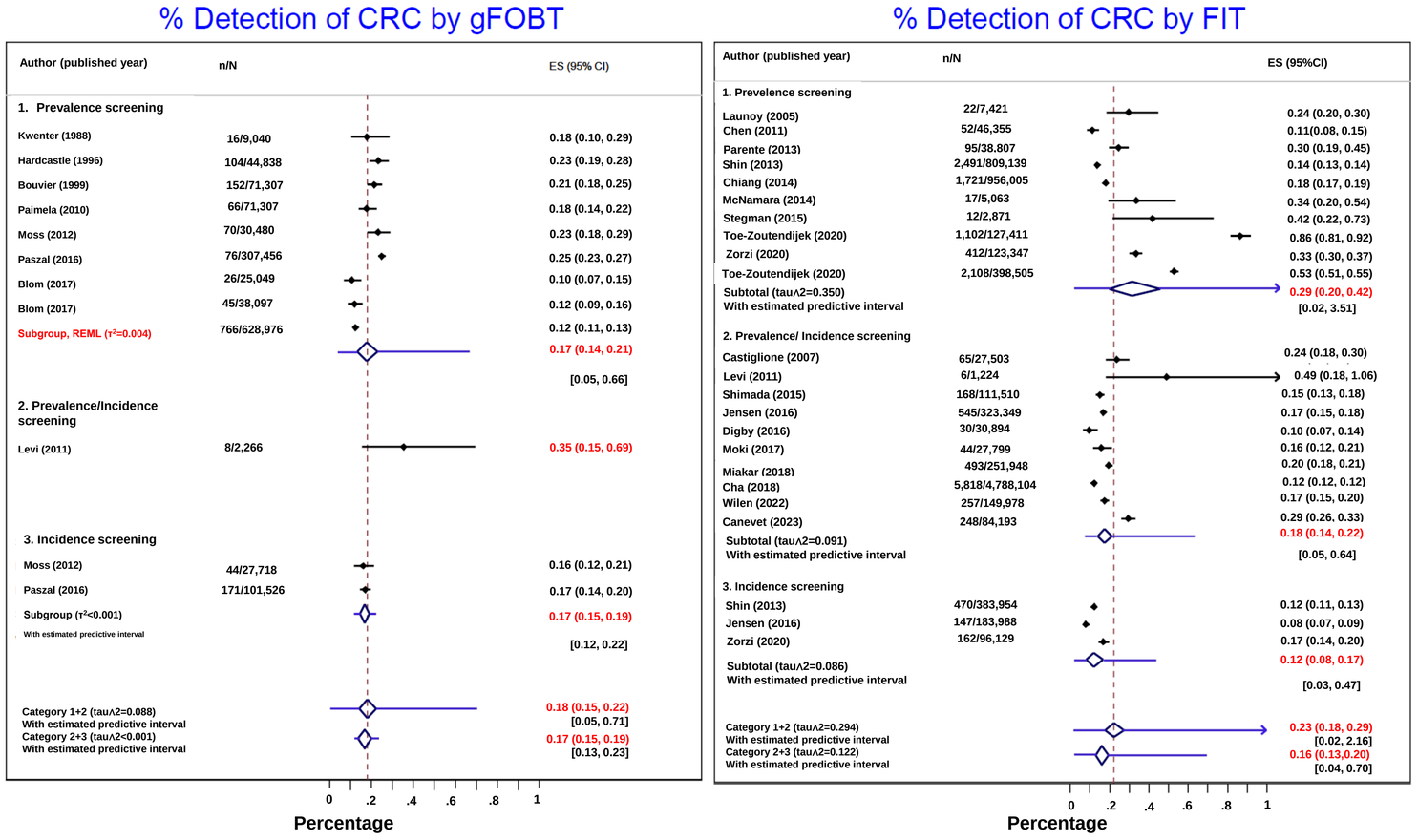

Figure 3. Comparison of Interval Cancer rates