OPERATIONAL DEFINITIONS IN PRACTICE: FINDING AND EVALUATING ALGORITHMS FOR IDENTIFYING PATIENTS WITH CERVICAL AND UTERINE CANCER FOR REAL-WORLD STUDIES

RWD46

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OBJECTIVE

The development and validation of algorithms for cancer diagnosis, treatment, and procedures is necessary to support real-world evidence studies. However, disparities in the number of validated algorithms across different cancer types remain unknown. This study provides a descriptive analysis of the number of validated algorithms for cervical and uterine cancers to identify trends, gaps, and opportunities for future research.

METHODS

Two systematic reviews using similar search strings were conducted to collate algorithms for the two cancer types. The search was limited to January 2016-July 2024 to focus on International Classification of Diseases (ICD) -10 codes. Articles were included if they identified ICD-10 code sets or algorithms for patient identification. The total number of validated algorithms was compared between cancer types and contributing factors to algorithm validation were analyzed.

ICD-10 Algorithm Information

Figure 1: Total Individual Algorithms and Articles Reporting Validation Results

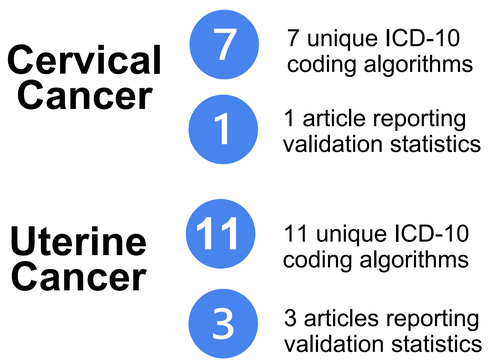

Figure 2: Cervical Cancer ICD-10 Code Cloud

Figure 3: Uterine Cancer ICD-10 Code Cloud

Note: The larger the code, the more algorithms that report using it.

RESULTS

For cervical cancer, 339 articles were screened and 50 articles included for full-text review. 30 articles reported algorithms for patient identification and 21 articles reported ICD-10 code algorithms. Seven unique coding algorithms for patient identification were found and only 1 of these articles reported validation statistics (**Figure 1**).

For uterine cancer, 347 articles were screened, and 46 articles were included for full-text review. 19 articles reported algorithms for patient identification with 12 reporting ICD-10 code sets identifying 11 unique algorithms for patient identification and 3 of those reporting validation statistics (**Figure 1**). The coding sets varied in their level of detail, from only a single code to the more comprehensive algorithms using a combination of diagnosis, procedure and prescription codes (**Figures 2 and 3**).

CONCLUSION

We found only 1 article reported validation statistics for cervical cancer ICD-10 algorithms and only 3 for uterine cancer in the articles reviewed. This illustrates that even when specifically trying to target papers for algorithms that most research papers do not report computable operational definition (CODef) details necessary to reproduce their findings. Also, many reported algorithms don't come with validation statistics.

Further automated AI-screening methods to pre-process the full-text and supplements of research articles are being considered to increase our algorithm hit rate.

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