Supplementary Online Content

Acharya R, Kafle S, Shrestha DB, et al. Use of computed tomography of the head in patients with acute atraumatic altered mental status: a systematic review and meta-analysis. *JAMA Netw Open*. 2022;5(11):e2242805. doi:10.1001/jamanetworkopen.2022.42805

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This supplementary material has been provided by the authors to give readers additional information about their work.

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eTable 1. Database Search Strategy

Building block approach to search database Altered mental status: "altered mental status"[tw] OR confusion[tw] OR disorientation OR unconscious*[tw] OR AMS[tw] CT head: "Tomography, X-ray Computed"[Mesh] OR “CT Head” OR CTH
PubMed/MEDLINE, PubMed Central ("altered mental status"[tw] OR confusion[tw] OR disorientation OR unconscious*[tw] OR AMS[tw]) AND ("Tomography, X-Ray Computed"[Mesh] OR "CT Head"[tw] OR CTH[tw]) **PubMed/Medline: 2308 Hits** https://pubmed.ncbi.nlm.nih.gov/?term=%28%22altered+mental+status%22%5Btw%5D+OR+confusion%5Btw%5D+OR+disorientation+OR+unconscious*%5Btw%5D+OR+AMS%5Btw%5D%29+AND+%28%22Tomography%2C+X-Ray+Computed%22%5BMesh%5D+OR+%22CT+Head%22%5Btw%5D+OR+CTH%5Btw%5D%29&size=200 **PubMed Central: 4671 Hits** https://www.ncbi.nlm.nih.gov/pmc/?term=(%22altered+mental+status%22%5Btw%5D+OR+confusion%5Btw%5D+OR+disorientation+OR+unconscious*%5Btw%5D+OR+AMS%5Btw%5D)+AND+(%22Tomography%2C+X-Ray+Computed%22%5BMesh%5D+OR+%22CT+Head%22%5Btw%5D+OR+CTH%5Btw%5D)
CINAHL: 628 Hits ("altered mental status" OR confusion OR delirium OR disorientation OR unconscious OR AMS) AND ("Tomography, X-Ray Computed" OR "CT Head" OR CTH) https://web-p-ebscohost-com.proxy.campbell.edu/ehost/results?vid=1&sid=315f5b5a-d468-4b0d-9b3c-ca1abed29ccb%40redis&bquery=(%22altered+mental+status%22+OR+confusion+OR+delirium+OR+disorientation+OR+unconscious+OR+AMS)+AND+(%22Tomography%2c+X-Ray+Computed%22+OR+%22CT+Head%22+OR+CTH)&bdata=JmRiPWNjbSZ0eXBlPTAmc2VhcmNoTW9kZT1TdGFuZGFyZCZzaXRlPWVob3N0LWxpdmU%3d
EMBASE: 1731 hits ('altered mental status'/exp OR 'altered mental status' OR 'confusion'/exp OR confusion OR 'delirium'/exp OR delirium OR 'disorientation'/exp OR disorientation OR 'unconscious'/exp OR unconscious OR ams) AND ('tomography, x-ray computed'/exp OR 'tomography, x-ray computed' OR 'ct head' OR cth) https://www.embase.com/?phase=continueToApp#advancedSearch/resultspage/history.1/page.1/25.items/orderby.date/source.

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eTable 2. The Joanna Briggs Institute's (JBI) critical appraisal checklist for case-control study. Total quality scores ≤ 4, 5 to 7, and ≥ 8 were considered as low, moderate and high quality respectively

Study	Were the groups comparable other than the presence of disease in cases or the absence of disease in controls?	Were cases and controls matched appropriately?	Were the same criteria used for identification of cases and controls?	Was exposure measured in a standard, valid and reliable way?	Was exposure measured in the same way for cases and controls?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were outcomes assessed in a standard, valid and reliable way for cases and controls?	Was the exposure period of interest long enough to be meaningful?	Was appropriate statistical analysis used?	Score	Quality
Callen A et al. (2020)	yes	n/a	yes	yes	yes	n/a	n/a	yes	yes	yes	7	moderate
Chen H et al. (2020)	yes	Yes	yes	yes	yes	yes	yes	yes	yes	yes	10	high
Detweiler M et al. (2020)	yes	Yes	yes	yes	yes	yes	no	yes	yes	yes	9	high
Detweiler M et al. (2017)	yes	Yes	yes	yes	yes	yes	no	yes	yes	yes	9	high
Finkelmeier F et al. (2019)	no	n/a	yes	yes	yes	unclear	yes	yes	yes	yes	7	moderate
Lai M et al. (2010)	yes	No	yes	yes	yes	yes	yes	yes	yes	yes	9	high
Patel M et al. (2012)	yes	Yes	yes	yes	yes	unclear	yes	yes	yes	yes	8	high
Rahimi R et al. (2016)	yes	Yes	yes	yes	yes	unclear	yes	yes	yes	yes	9	high
Segard J et al. (2013)	no	Yes	yes	yes	yes	unclear	yes	yes	yes	yes	8	high

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eTable 3. The Joanna Briggs Institute's (JBI) critical appraisal checklist for cohort study. Total quality scores ≤ 4, 5 to 7, and ≥ 8 were considered as low, moderate and high quality respectively.

Study	Were the two groups similar and recruited from the same population?	Were the exposures measured similarly to assign people to both exposed and unexposed groups?	Was the exposure measured in a valid and reliable way?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the groups /participants free of the outcome at the start of the study (or at the moment of exposure)?	Were the outcomes measured in a valid and reliable way?	Was the follow up time reported and sufficient to be long enough for outcomes to occur?	Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	Were strategies to address incomplete follow up utilized?	Was appropriate statistical analysis used?	Score	Quality
Bent C et al. (2015)	n/a	n/a	yes	yes	no	yes	yes	yes	yes	n/a	yes	7	moderate
Chokshi F et al. (2016)	n/a	n/a	yes	no	n/a	yes	yes	yes	yes	n/a	yes	6	moderate
Donovan L et al. (2015)	yes	n/a	yes	no	n/a	yes	yes	yes	yes	n/a	yes	7	moderate
Hanna A et al (2021)	n/a	n/a	yes	yes	yes	yes	yes	yes	yes	n/a	yes	7	moderate
Hufschmidt A et al. (2008)	yes	yes	yes	unclear	unclear	yes	yes	yes	yes	n/a	yes	8	high
Khan S et al. (2014)	yes	yes	yes	yes	yes	yes	yes	yes	yes	n/a	yes	10	high
Lim BL et al. (2009)	yes	yes	yes	unclear	unclear	yes	yes	yes	yes	n/a	yes	8	high
Nesselroth D et al. (2021)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	6	moderate
Patel R et al. (2019)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	6	moderate
Shuaib W et al (2014)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	6	moderate

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Sinclair D et al. (1993)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	6	moderate
Thacker P et al. (2021)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	6	moderate
Theisen-Toupal J et al. (2014)	n/a	n/a	yes	unclear	unclear	yes	yes	yes	yes	n/a	yes	6	moderate
Tu L et al (2021)	n/a	n/a	yes	n/a	n/a	yes	yes	yes	yes	n/a	yes	5	moderate
Wang X et al. (2013)	yes	yes	yes	unclear	yes	yes	yes	yes	yes	n/a	yes	9	high
Wong J et al. (2014)	yes	yes	yes	no	n/a	yes	yes	yes	yes	n/a	yes	8	moderate

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eTable 4. The Joanna Briggs Institute's (JBI) critical appraisal checklist for quasi-experimental study. Total quality scores ≤ 4, 5 to 7 and ≥ 8 were regarded as low, moderate, and high quality, respectively.

Study	Is it clear in the study what is the 'cause' and what is the 'effect' (i.e. there is no confusion about which variable comes first)?	Were the participants included in any comparisons similar?	Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Was there a control group?	Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	Were the outcomes of participants included in any comparisons measured in the same way?	Were outcomes measured in a reliable way?	Was appropriate statistical analysis used?	Score	Quality
Covino M eta l. (2019)	yes	yes	n/a	n/a	yes	Yes	yes	yes	yes	7	moderate

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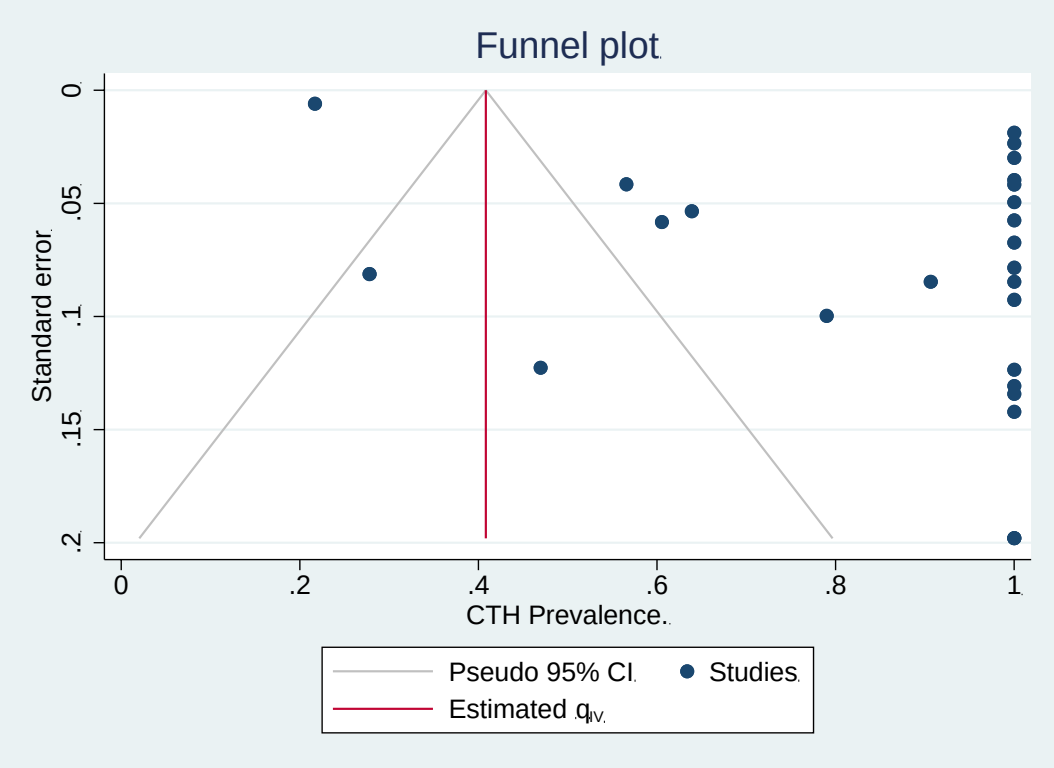

eFigure 1. Funnel Plot Showing the Asymmetric Distribution of Studies Suggesting Significant Publication Bias for Computerized Tomography of Head (CTH) Events

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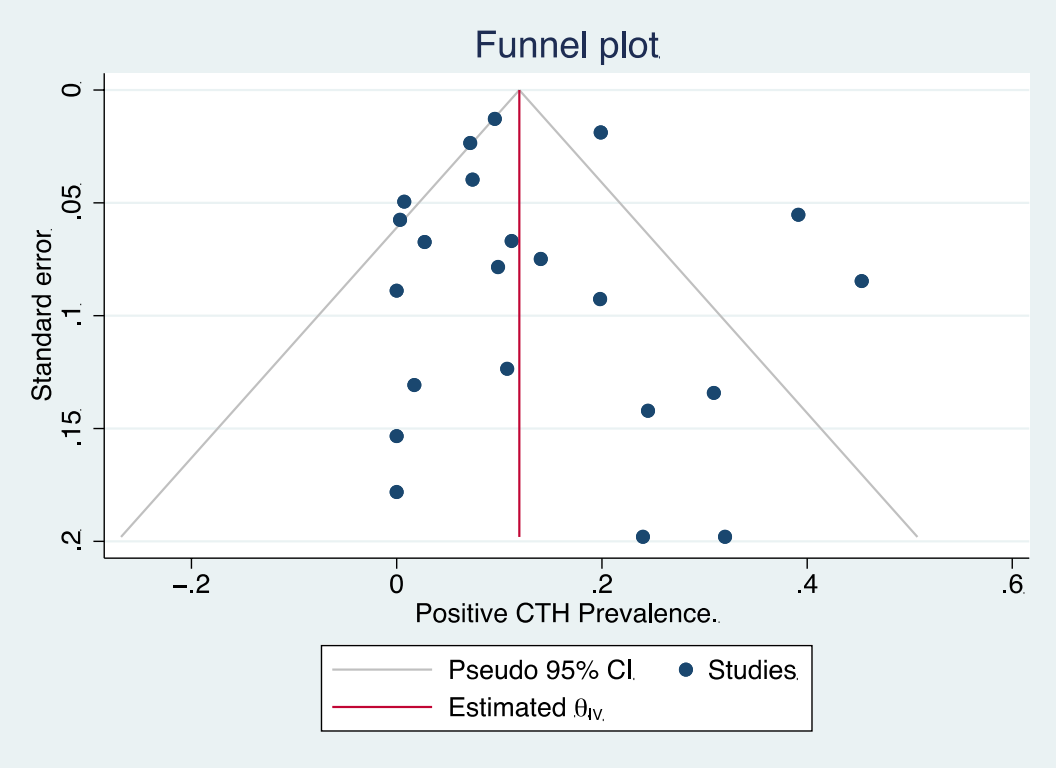

eFigure 2. Funnel Plot Showing the Asymmetric Distribution of Studies Suggesting Significant Publication Bias for Positive Computerized Tomography of Head (CTH) Events

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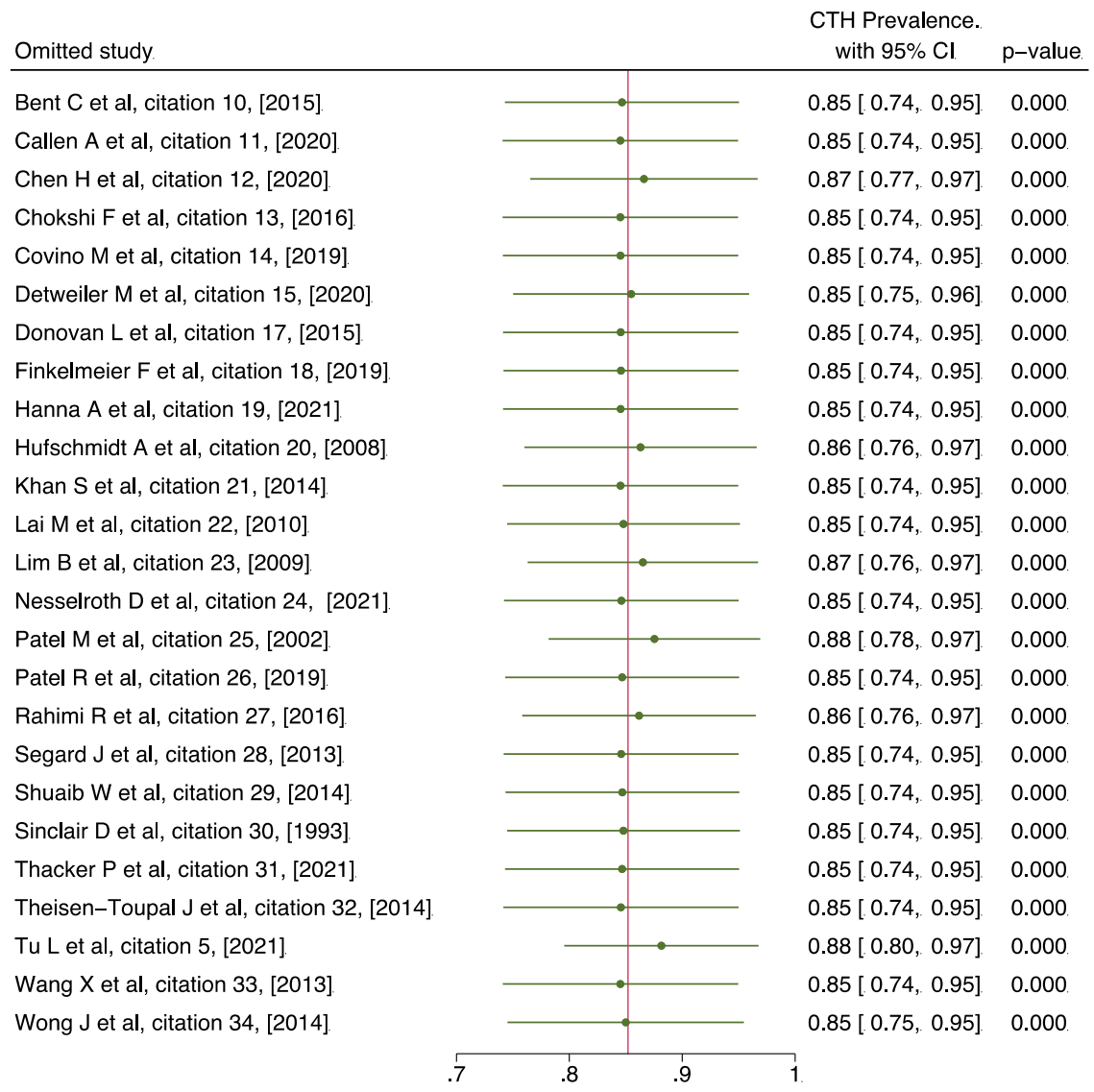

eFigure 3. Sensitivity Analysis of Studies for Computerized Tomography of Head (CTH) Event

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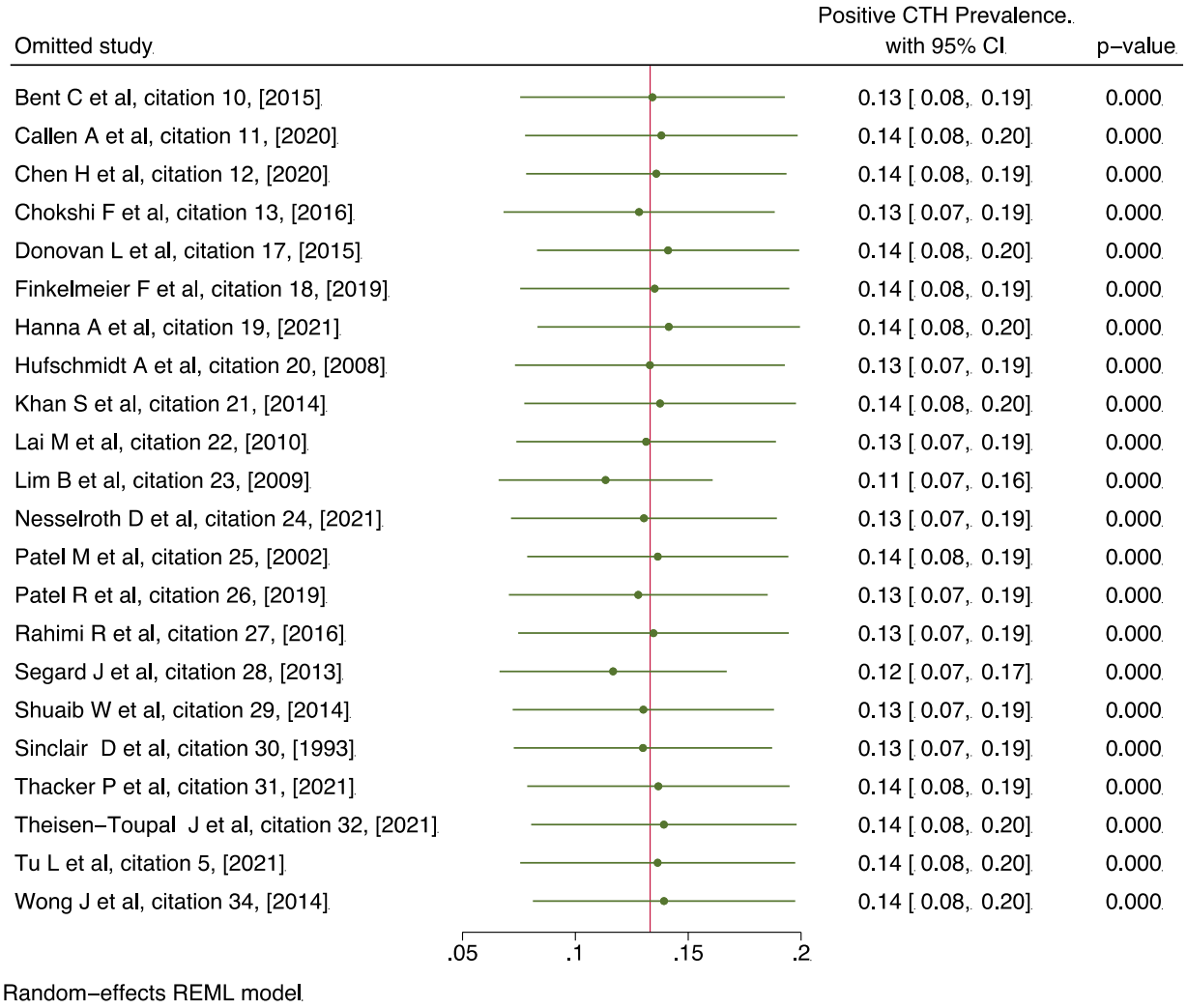

eFigure 4. Sensitivity Analysis of Studies for Positive Computerized Tomography of Head (CTH) Events

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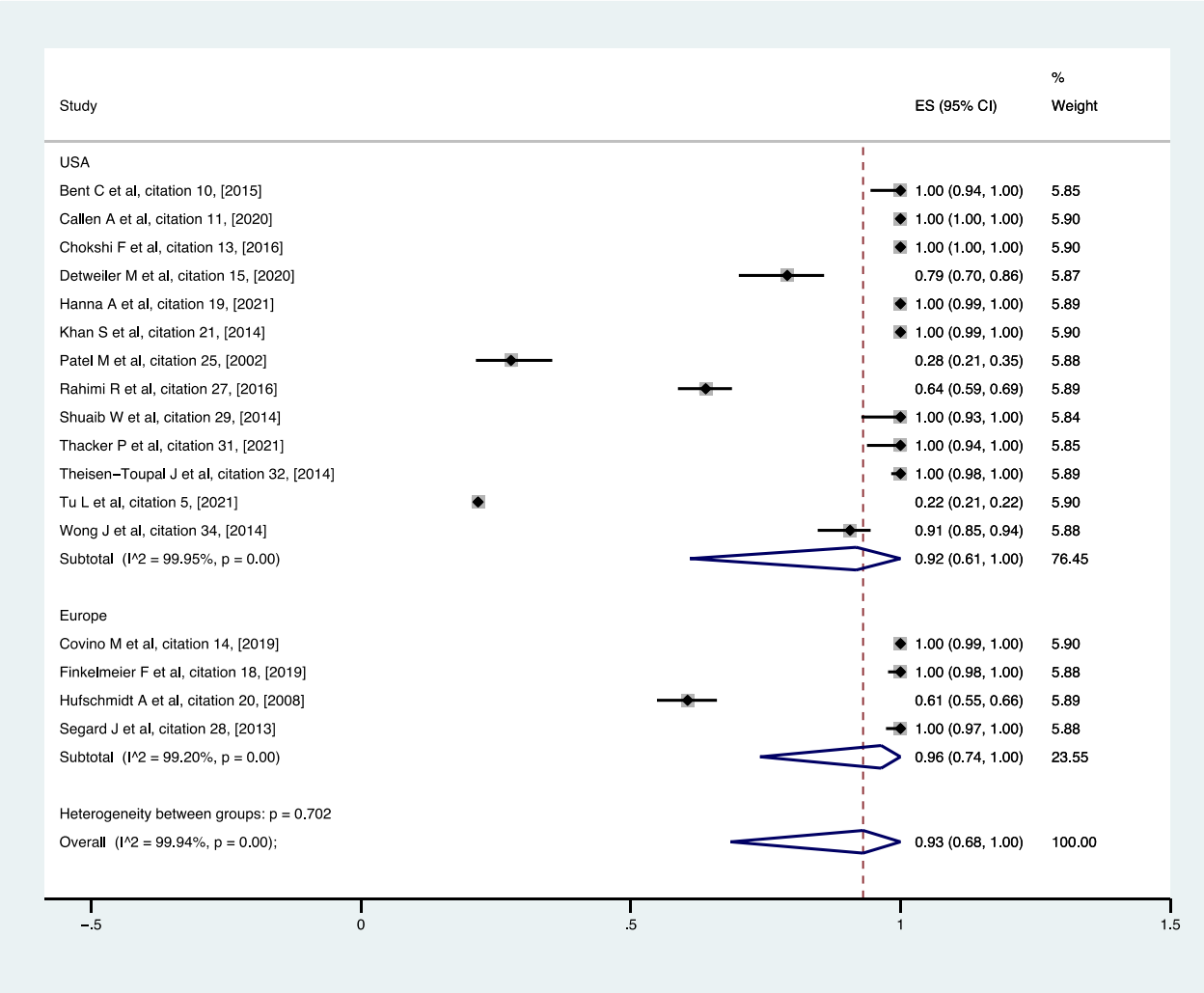

eFigure 5. The Proportion of Computerized Tomography of Head (CTH) in Patients With Altered Mental Status (AMS) Among Studies
ES= Effect size representing the proportion of CTH in AMS patients. The model used is the random effect model. USA= United States of America

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