



UNIVERSITY OF
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Association between immigration status & cervical cancer screening: systematic review & meta-analysis

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Background

- Cervical cancer is the fourth cause of death in women worldwide
 - second most frequent cancer in women
 - leading cause of cancer-related death in developing countries
- Most invasive forms of cervical cancer
 - never getting a Pap test or long interval between tests

Research Question

What is the association between immigration status & cervical cancer screening among all eligible women in developed countries?

Population

- All women eligible for cervical cancer screening in developed countries

Exposure

- Immigration Status (as defined by the articles)

Comparator

- Non-immigrant women

Outcome

- Cervical Cancer Screening (Pap test: never or at least once)

Design

- Population based studies (cohort, case control & cross-sectional)

*Outcome measure is categorical (yes/no) for Pap test

Search Strategy

- **Databases**

Medline; EMBASE; CINHAL; PubMed; CancerLit; PsychInfo; ProQuest Dissertations & Thesis

- **Conferences**

European Society for Medical Oncology (ESMO)
American Society of Clinical Oncology (ASCO)

- **Journal**

Journal of Community Health

Search Strategy

- **Websites**

American Cancer Society; Canadian Cancer Society; Gynecologic Cancer Foundation; International Agency for Cancer Research; NICE; Canadian Collaboration for Immigrant & Refugee Health; The Canadian Task Force on Preventive Health Care; United States Preventive Task Force; International Agency for Research on Cancer; Pan-Canadian Cervical Cancer Screening Network

- **Exposure (not used): indexing & terminology issue**

Quality Assessment

- Newcastle-Ottawa Quality Assessment Scale for cohort studies
- Uses a “star system” to evaluate three main criteria
 - Selection
 - Comparability (confounding)
 - Outcome
- Maximum 10 stars can be allocated to study

**Records identified through database searching
n= 13065**

MEDLINE= 3930

PubMed= 2911

CancerLit=2911*

EMBASE= 2877

CINAHL= 91

PsycINFO=198

ProQuest Dissertations & Theses=147

*CancerLit search resulted in identical articles as PubMed

**Records identified through other sources
(hand-searching, journals, conference abstract reviews) n= 67**

Duplicates excluded n=5706

Records after duplicated excluded n=7426

Articles excluded as non-relevant n= 6191

Abstracts Reviewed n=1235

Articles excluded as non-relevant by title n= 863

Full-text Reviewed n=372

Pending Studies n=16
•Full-text unavailable=8
•Contact authors =8

Studies included in systematic review n=10

Studies included in meta-analysis n=8

Full-text Exclusion n= 346

Reasons for Exclusion

- Cervical cancer screening is not the outcome= 67
- Immigration status/population not included= 120
- Studies conducted in developing countries=11
- Aboriginal population only=2
- non-immigrant/immigrant comparison group=95
- Adherence/compliance to Pap testing= 36
- Qualitative Studies= 4
- Study design inappropriate=8
- Over-lapping populations=3

Results

- Eight cross-sectional studies: United States (n=3), Canada (n=2), Australia (n=1), United Kingdom (n=1), Spain (n=1)
- National or Provincial Data
 - (exception UK-one clinic)
- 2009 PRISMA checklist used for data extraction
- Measure of Association: Odds ratio (OR)

Rodriguez, Ward, & Perez-Stable, 2005 (5*)

United States

Schmotzer, 2009 (5*)

Tsui, Saraiya, Thompson, Dey & Richardson, 2007 (5*)

Canada

Amankwah Ngwakongnwi & Quan, 2009(7*)

Drolet et al., 2013 (6*)

Australia

Taylor, Mamoon, Morrell, & Wain, 2001 (6*)

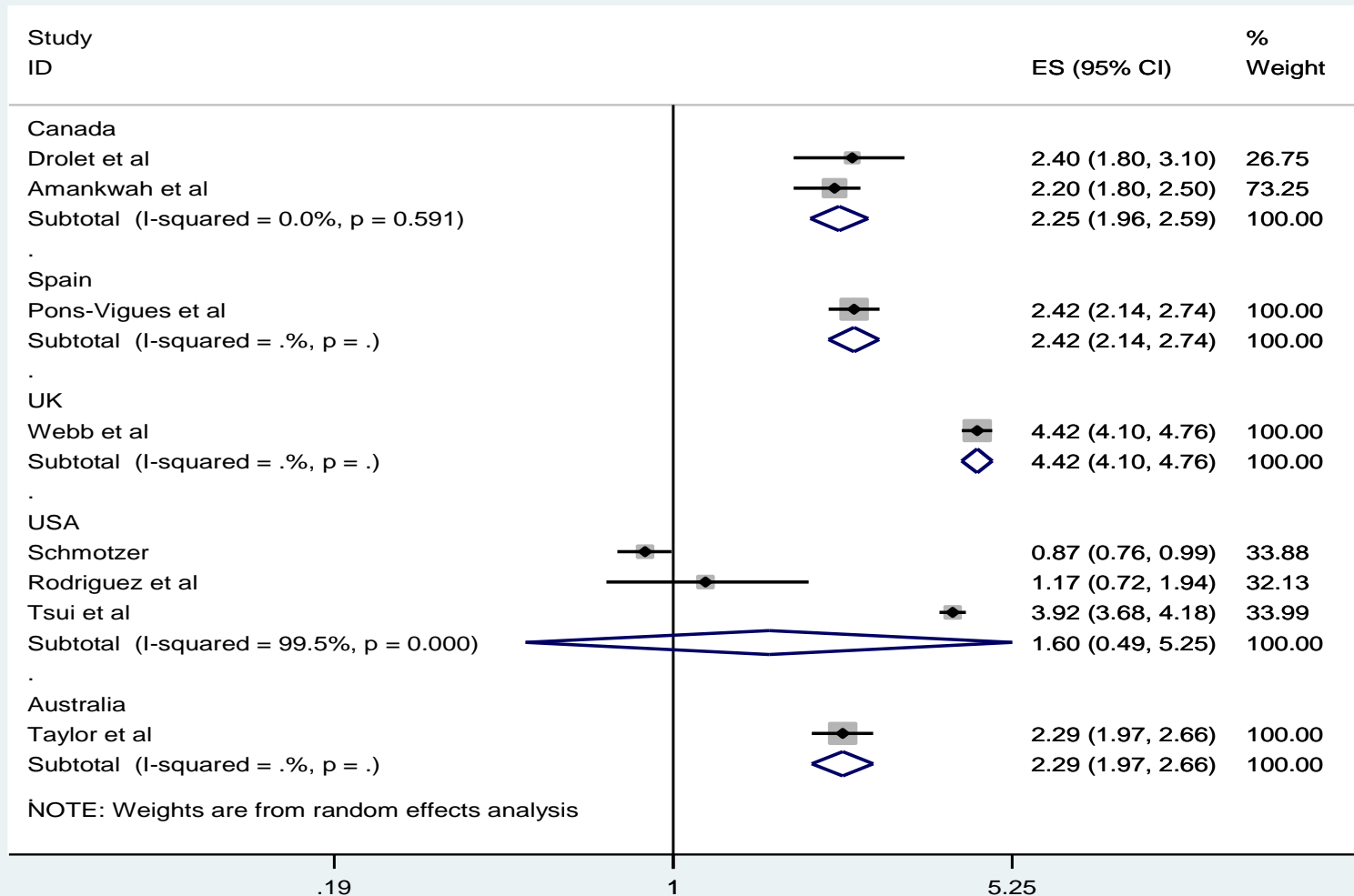
United Kingdom

Webb, Richardson & Pickles, 2004 (6*)

Spain

Pons-Vigues et al., 2011 (5*)

Forest plot of association between immigration status & cervical screening, stratified by country of study

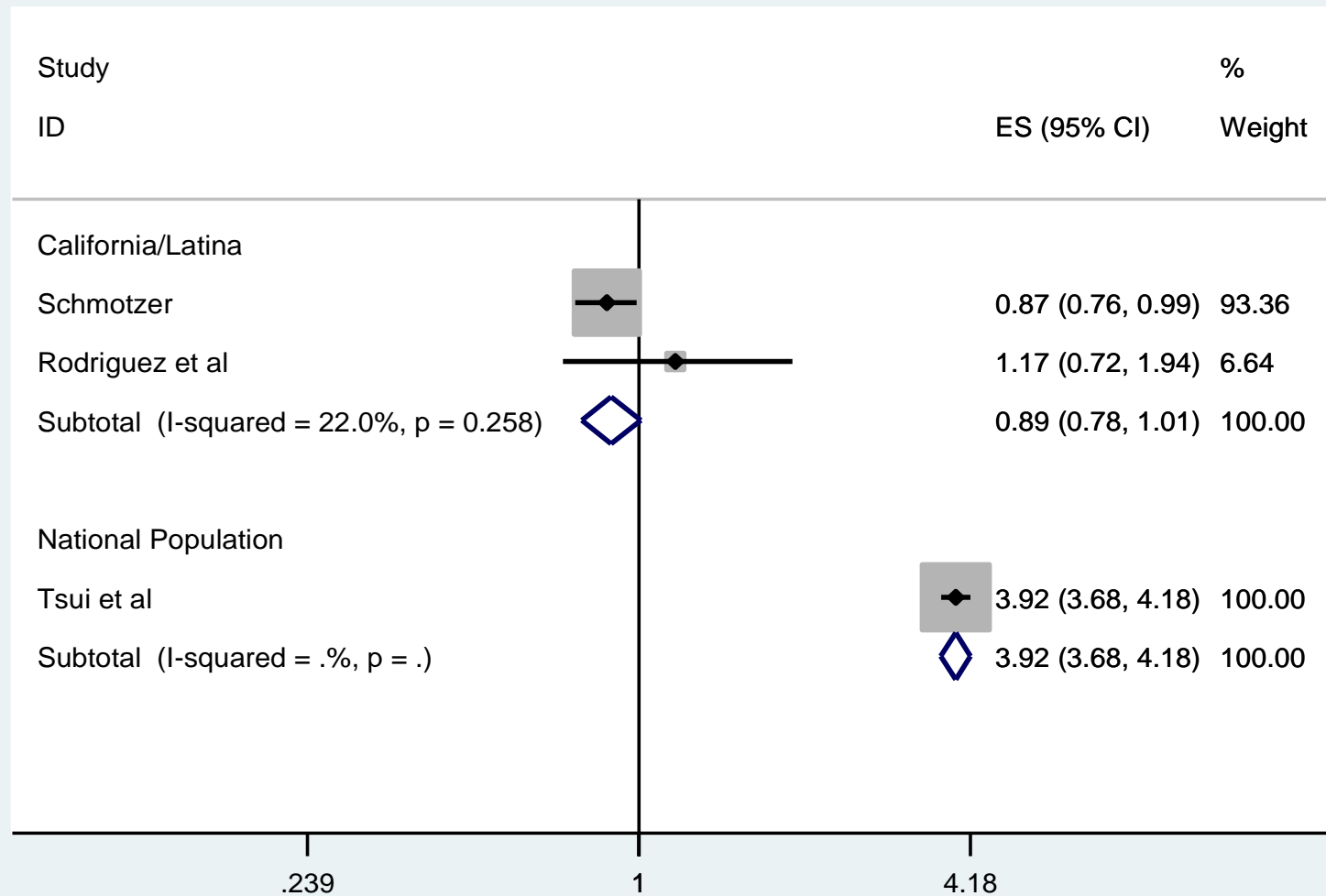


Immigrants MORE likely

Odds Ratio

Immigrants LESS likely

Forest plot of association between immigration status & cervical screening in USA (stratified by ethnicity/location)



Immigrants MORE likely

Odds Ratio

Immigrants LESS likely

Discussion

- Cost of Pap test is not related to screening practices
- Comparing immigrants vs. native born within a single ethnic group can be misleading
- Immigration status could mask the relationship between demographic characteristics & screening practices
- Being an immigrant makes one less likely to practice screening but they are also likely to have other characteristics (i.e. low income)

Conclusion

- Statistically significant association between immigration status & cervical screening
- Efforts to increase cervical screening should focus: newly arrived immigrants, low levels of education, low household annual income, and from Asian background
- Problem exists despite different healthcare system: **personal** characteristics are important!

Limitations

- Issues with reported data
 - immigration status not defined, confounders not accounted, measures of association/data to calculate not reported
- Measure of association or data to calculate it was not provided
 - ORs & 95% CI calculated from raw data: not accounted the effect of confounders
- Several studies looked at only adherence to screening or interventions to influence it

Future Direction

- Stratified analysis on factors that influence screening practices between immigrants and non-immigrants
- Association of measure & confounders should be clearly reported
- Uniform definition to classify immigration status will provide trend over years since immigration
- Distinguish between immigrants who never been screened vs. since immigration
 - Help understand if barriers are beliefs & cultural norms or healthcare system barriers

Thank you!