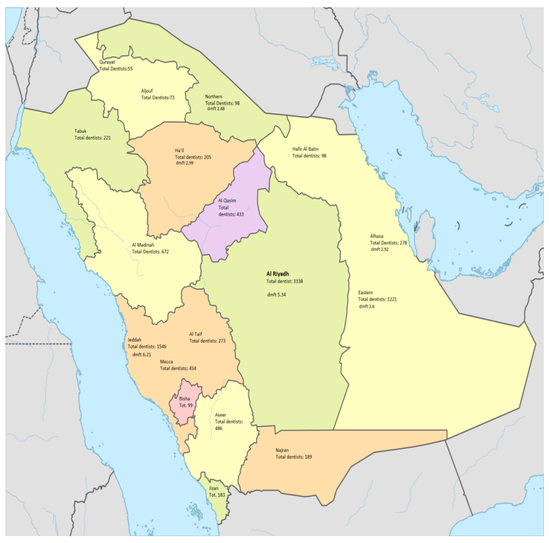
Prevalence of Dental Caries in Saudi Arabia.

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Introduction

The WHO have reported that 60 to 80 % of children in the world suffered from dental caries and 100% of adults in some countries have dental caries (WHO, 2012). In Saudi Arabia, there have been several studies that measured dental caries prevalence. However, most of the studies reported wide variation regarding to dental caries prevalence across Saudi Arabia.

Figure 1: Map of Saudi Arabia showing distribution of dentists and reported dfmt



Aims

To carry out a systematic review with meta analysing of studies evaluating the prevalence and incidence of dental caries in adults and children living in Saudi Arabia. This review will help to improve the understanding of caries prevalence in this country.

Methods

Owing to the wide variation in reported dental caries prevalence across Saudi Arabia, a systemic review conducted to identify all relevant reports and it risk factors (socio-economic stats, water fluoridation, behaviour, diet and education level). Each of these reports was critically appraised regarding to their risk of bias. This was achieved by using a modification of the Newcastle-Ottawa Scale (NOS) appraisal tool and tabulated (Wells et al. 2011) (Table 1).

Table 1: Modified Newcastle-Ottawa Scale (NOS)

Sampling	Was an appropriate sampling strategy used?	**Y** Truly representative sample of target population (i.e all or random sampling) **N** Selected group **?** No description/unclear description of sampling strategy
Sample Size	Was the sample size justified?	**Y** Justified and satisfactory **N** Not justified
Non-respondents	Were responders comparable to non-responders?	**Y** Comparability is satisfactory **N** The response rate is unsatisfactory, or the comparability not established **?** Unclear
Outcomes - valid	Were the outcomes measured in a valid way?	**Y** Validated measurement tool (or non-validated tool, but the tool is clearly described/available) **N** Non-validated measurement tool/not described
Outcomes - reliable	Were the outcomes measured in a reliable way?	**Y** Trained and calibrated examiners with inter/intra-rater reliability reported (Kappa >=0.7) **N** No training/calibration of examiners and no assessment of inter/intra-rater reliability reported (or Kappa<0.7) **?** No description of training/calibration or inter/intra-rater reliability
Confounders - measured	Were confounding factors identified?	**Y** Clear discussion/measurement of relevant confounding factors (diet, SES, water fluoridation, ethnicity) **N** No mention of confounding factors **?** Unclear
Confounders – accounted for	Were strategies to deal with confounding factors stated and appropriate?	**Y** Strategies to deal with effects of confounding factors may be dealt within the study design (e.g matching, stratification…) or in data analysis (e.g multivariate regression analysis). **N** No accounting for confounders **?** Unclear

Results

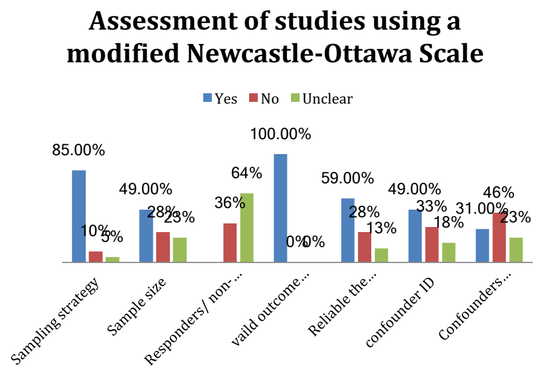
The review included all reports of dental caries prevalence in participants of all ages (adults and children) across Saudi Arabia (KSA). The final number of studies included in the review was 39 (Table 2). All of these studies were cross-sectional in design.

Table 2: Number of studies based on location.

Location of the study	Number of Studies
Across Saudi	2
Riyadh & Qaseem	2
Riyadh and Jeddah	1
Riyadh	11
Jeddah	12
Dammam	3
Madina	1
Jizan	2
Al-Hassa	2
Alkharj	1
Qaseem	1

All the included reports were evaluated against a modified Newcastle Ottawa Scale (NOS) (Wells et al. 2011)

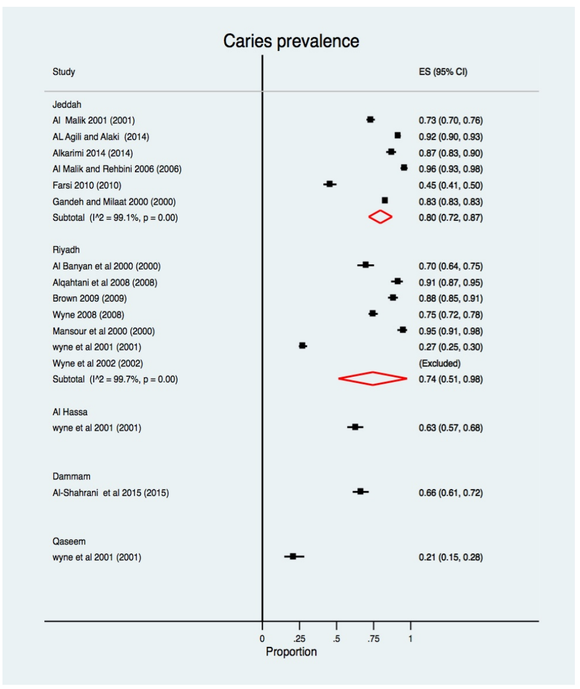
Figure 2: Assessment of studies using a modified Newcastle-Ottawa Scale.



Caries data

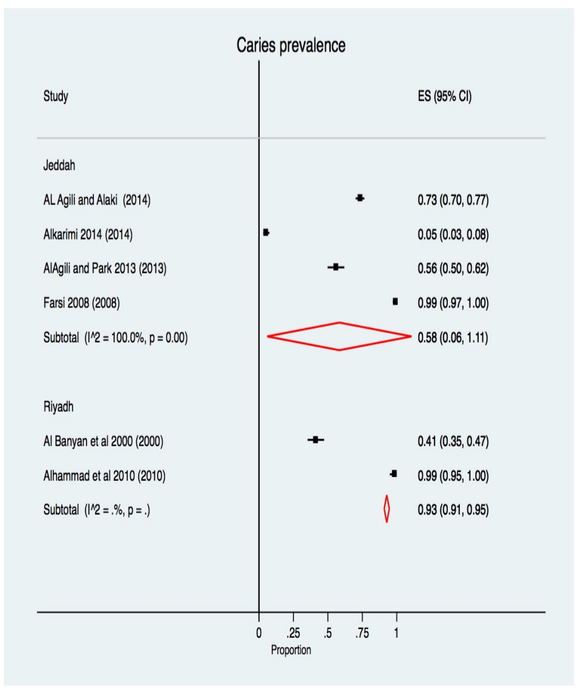
Primary dentition
Sixteen studies presented data for primary dentition, across five geographical locations (Jeddah, Riyadh, AL Hassa, Damman, Qasseem).
The effect estimates for caries prevalence are presented in Figure 3 and range from 0.21 to 0.96. There is substantial heterogeneity in the effect estimates.

Figure 3: Effect estimates for caries prevalence in primary dentition. .



Permanent dentition
Six studies presented data for permanent dentition, across two cities locations (Jeddah, Riyadh).
The effect estimates for caries prevalence are presented in Figure 4 and range from 0.05 to 0.99. Again, there is substantial heterogeneity in the effect estimates.

Figure 4: Effect estimates for caries prevalence in permanent dentition. .



Conclusions

Current data does not provide a complete assessment of dental caries across Saudi Arabia. Existing studies are limited in terms of the populations covered. Although the studies included in this review have methodological flaws, it would appear that there is a need to improve oral hygiene practices and reduce sugar consumption as means of improving caries levels in Saudi Arabia.

References

Wells, G., Shea, B., O'connell, D., Peterson, J., Welch, V., Losos, M. and Tugwell, P. (2011). The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Ottawa: Ottawa Hospital Research Institute; 2011, oxford. asp.

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