

# Prevalence of At-Risk Marriages among Couples Attending Premarital Screening (PMS) Programs: A Systematic Review and Meta-Analysis



Syed, BibiAsma, R.

Supervised by: Dr Karam, T, Adawi.



Graduate Students, Population, Health & Wellness

## Introduction

Hemoglobinopathies are among the most common inherited genetic diseases. The World Health Organization estimates that at least 5% of the world's population are carriers for hemoglobinopathies (2.9% for thalassemia and 2.3% for sickle cell disease). Premarital Screening (PMS) programs have been developed in most Middle East countries on a mandatory basis to reduce at-risk marriages by providing counseling after a confirmed "genetic carrier" state for hemoglobinopathies.

## Aims

- To systematically review the global proportion/prevalence of marriages among at-risk couples after premarital screening program
- To quantify the global prevalence of marriages among at-risk couples using meta-analyses
- To explore the potential factors associated with variation in the prevalence of marriages among at-risk couples

## Methods

Different databases such as PubMed, Science Direct, and Scopus were searched systematically by using key terms and MeSH Terms. All observational studies were screened for potential inclusion. Two reviewers independently conducted quality assessment by using Hoy et al (2012) risk of bias tool. The Quality Effects Model was used due to considerable heterogeneity observed between studies. Subgroup analysis and sensitivity analysis were also performed for assessing the causes of heterogeneity. Publication bias was assessed using Funnel plot and Doi plot

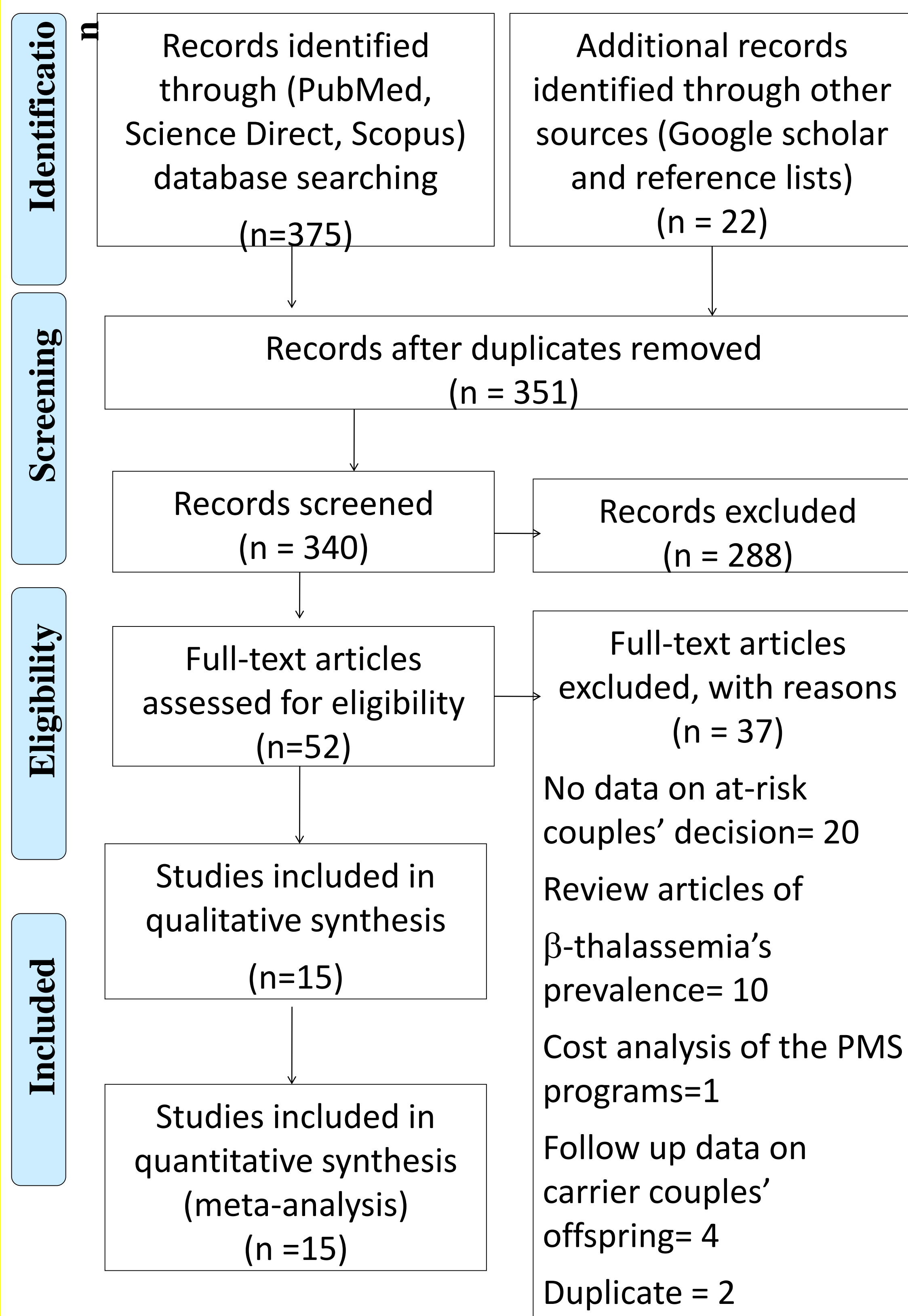


Figure 1: PRISMA Flowchart for Search Strategy

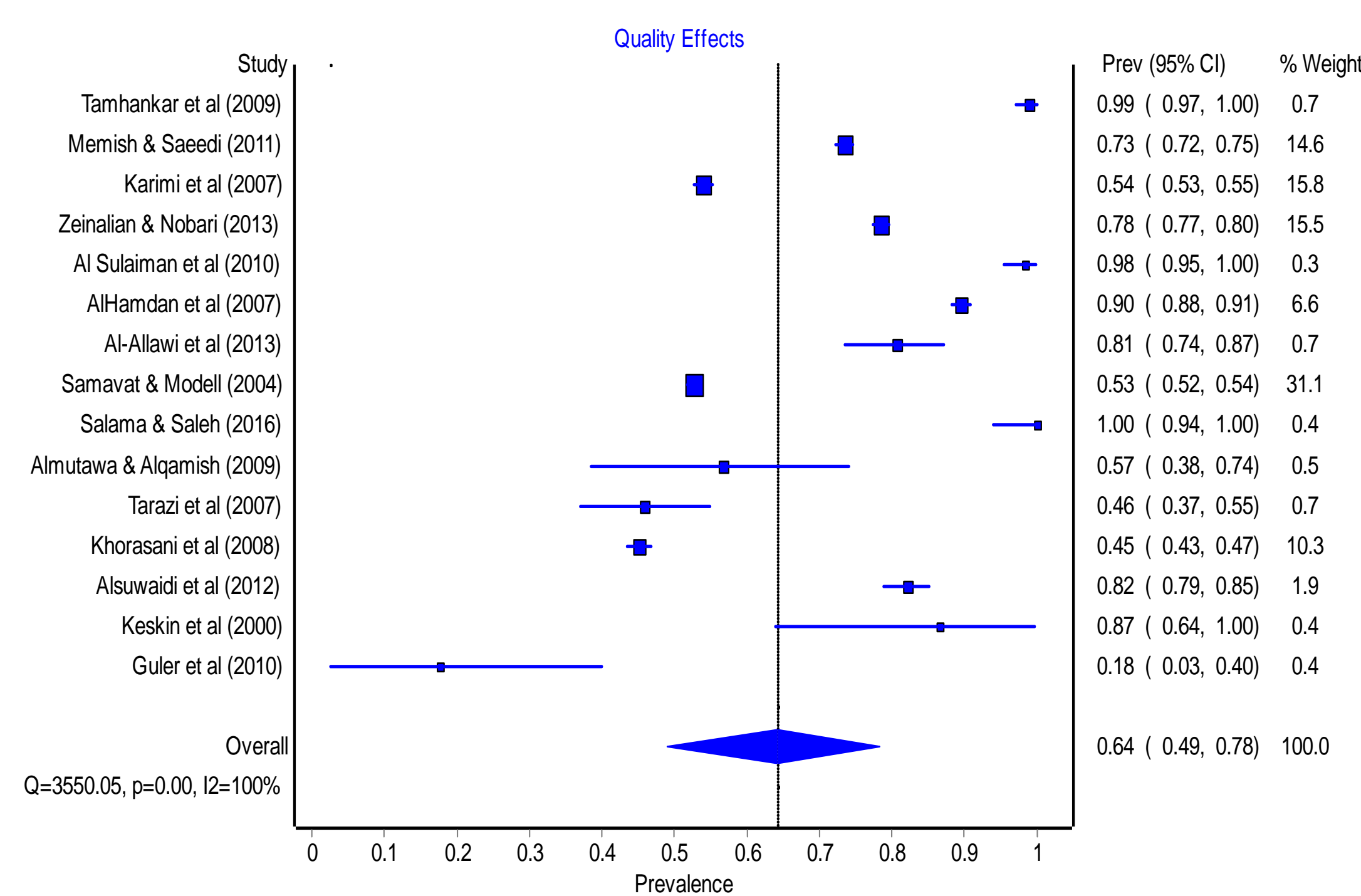


Figure 2: Forest Plot for Pooled Estimate Using Quality Effect Model

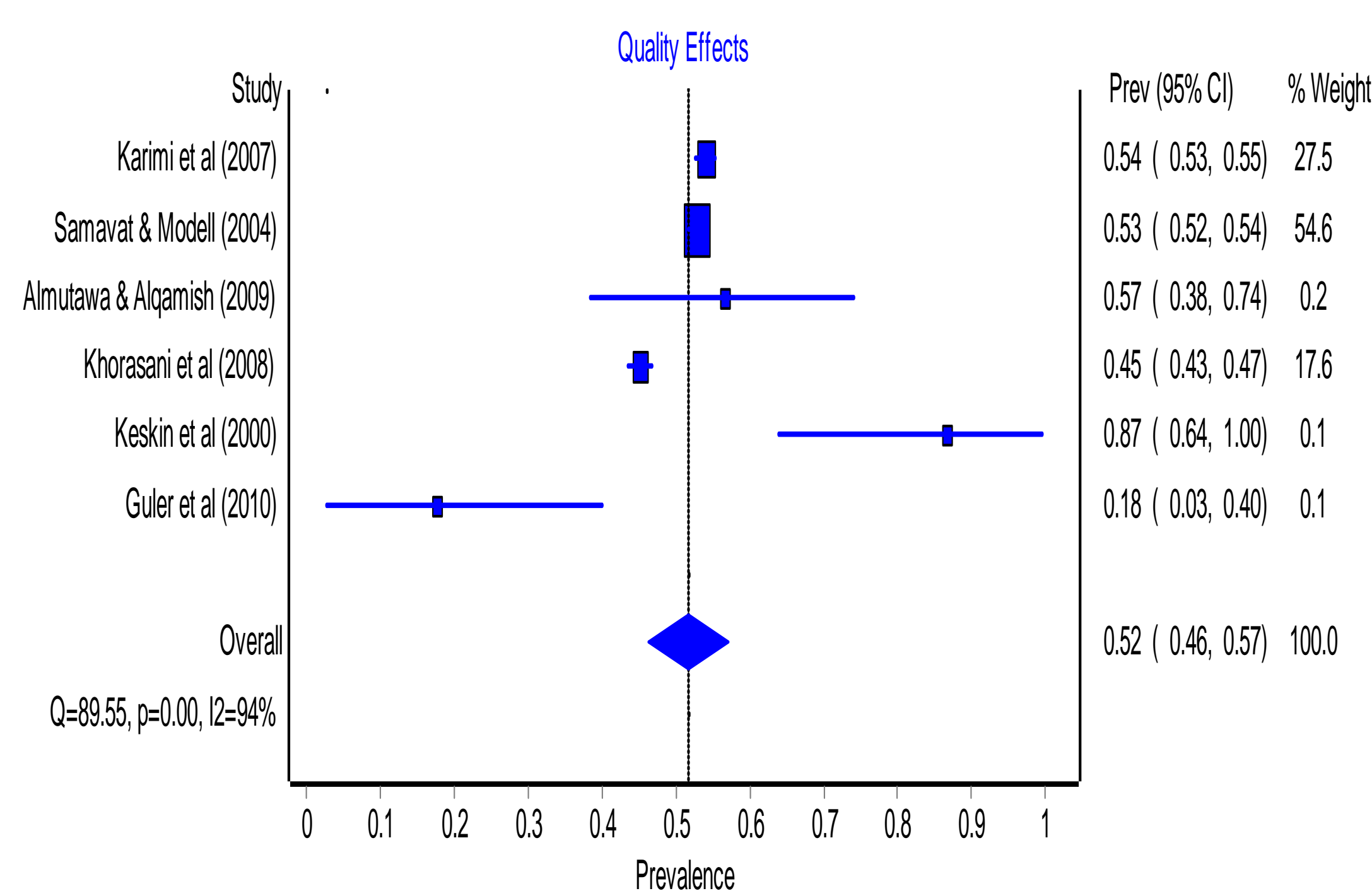


Figure 3: Forest Plot Using Sensitivity Analysis (with Low-Risk Studies)

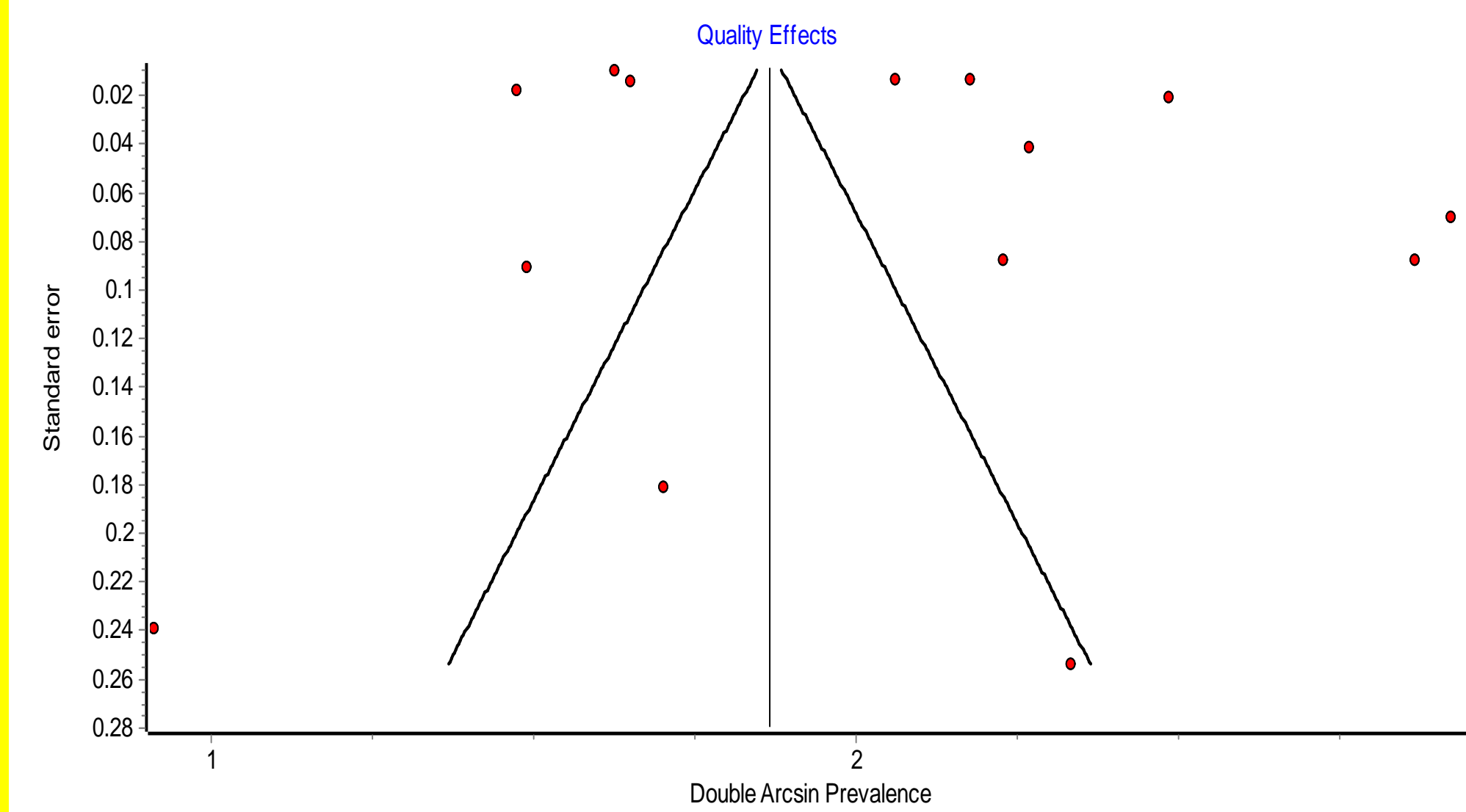


Figure : Funnel Plot Assessing Publication Bias (All 15 Studies)

## Results

A total of 15 studies were included in the systematic review and meta-analysis. The overall pooled prevalence of at-risk marriages among couples at-risk was 64% (95% CI: 49%- 78%). Funnel plot and Doi plot indicated the presence of publication bias. Additionally, subgroup analysis was performed with respect to various important factors. For example, the prevalence of at-risk marriages was higher in Arab countries (79%) compared to non-Arab countries.(58%). Similarly, in countries where the program was implemented before 2005 had a lower prevalence of 58% compared to countries where the program was implemented in 2005 or after (80%).

## Conclusion and Recommendations

There was a considerable prevalence of at-risk marriages globally but concentrated in the Middle East. The pooled estimates varied widely and there was a substantial heterogeneity among studies; therefore, there is a need for more well-designed studies across different countries. Moreover, the importance of counseling sessions should be stressed and combined with efforts in other community sectors, such as high schools where students should attain knowledge regarding genetic diseases before the age of marriage.

## References

- Christianson et al. (2006). March of Dimes Global Report on Birth Defects.  
 Hoy et al. (2012). Assessing Risk of Bias in Prevalence Studies. Journal of Clinical Epidemiology