

Frequency of Alloimmunization in Sickle Cell Disease Patients in Africa: A Systematic Review with Meta-analysis

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Abstract : Background and Objectives: Blood transfusion is an effective and proven treatment for some severe complications of sickle cell disease. Recurrent transfusions have put patients with sickle cell disease at risk of developing antibodies against the various antigens they were exposed to. This study aims to investigate the frequency of red blood cell alloimmunization in patients with sickle disease in Africa. Materials and Methods: This is a systematic review of peer-reviewed literature published in English. The review was conducted consistent with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist. Data sources for the review include MEDLINE, PubMed, CINAHL, and Academic Search Complete. Included in this review are articles that reported the frequency/prevalence of red blood cell alloimmunization in sickle cell disease patients in Africa. Eligible studies were subjected to independent full-text screening and data extraction. Risk of bias assessment was conducted with the aid of the mixed method appraisal tool. We employed a random-effects model of meta-analysis to estimate the pooled prevalence. We computed Cochrane's Q statistics and I² and prediction interval to quantify heterogeneity in effect size. Results: The prevalence estimates range from 2.6% to 29%. Pooled prevalence was estimated to be 10.4% (CI 7.7.-13.8); PI = 3.0 - 34.0%), with significant heterogeneity (I² = 84.62; PI = 2.0-32.0%) and publication bias (Egger's t-test = 1.744, p = 0.0965). Conclusion: The frequency of red cell alloantibody varies considerably in Africa. The alloantibodies appeared frequent in this order: the Rhesus, Kell, Lewis, Duffy, MNS, and Lutheran

Keywords : frequency, red blood cell, alloimmunization, sickle cell disease, Africa

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