1. PURPOSE

- Reveal the treatment effect of Light therapy on sleep phase shift of shift workers.
- Identify dose-response on phase shift.
- Describe the potential moderators in the treatment effect and dose-response.

2. METHODS

We searched for relevant articles in 10 databases, including PubMed, Medline, Cochrane, Embase; LILACS, Open Grey, PsycINFO, PubPsych, SCOPUS, and CINAHL. Keywords included “light therapy”, “shift work”, and “randomization”. Two reviewers independently screened the articles and extracted the data. No additional data were found after contacting the authors of the eligible studies. We included 9 RCTs from 1819 records. Analyses were performed using the random-effects model.

3. RESULTS

Outcomes were measured by melatonin concentration and phase shift in hour. Light therapy exerted a significant effect on sleep phase shift, with a large pooled effect size (Hedges’ g = 1.476, p < 0.001). However, There was significant high heterogeneity (Q = 55.56, p < 0.001, I² = 85.6) but low publication bias (Begg’s test, p = 0.076; Egger’s test, p = 0.081, no missing study in the funnel plot). There were significantly different effect sizes between the studies with the outcomes of melatonin concentration (k = 4, g = 1.201, p = 0.07) and phase shift in hour (k = 5, g = 1.723, p = 0.004). However, no significant treatment dose-response turn the current findings inconclusive. Further investigation on the possible moderators, such as demographic data, and potential research bias, such as methodological quality, are needed.

4. CONCLUSION

The large effect size suggests that Light therapy is effective in sleep phase shift for shift workers. However, the high heterogeneity, inconsistent effect sizes between different measurements, and non-significant treatment dose-response turn the current findings inconclusive. Further investigation on the possible moderators, such as demographic data, and potential research bias, such as methodological quality, are needed.