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Letter to the Editor

Cultivating a universal understanding of ART adherence: Comments on “A meta-analysis of effectiveness of interventions to improve adherence in pregnant women receiving antiretroviral therapy in sub-Saharan Africa”


Dear Editor-in-Chief,

Thank you for giving us the opportunity to respond to the comments provided by Filiatreau and colleagues in relation to our study entitled: “A meta-analysis of effectiveness of interventions to improve adherence in pregnant women receiving antiretroviral therapy in sub-Saharan Africa” (Omonaiye et al., 2018a).

Regarding the first comment about including studies spanning multiple antiretroviral treatment eras, we recognise the need for the systematic review and meta-analysis to reflect current care and treatment options. Based on the studies that were included in our previous meta-analysis, we have completed a stratified analysis of interventions according to the two treatment eras. The treatment eras were classified as the pre-option B+ era and post-option B+ era. In the pre-option B+ era, there was a statistically significant subgroup effect for nine types of interventions, $\chi^2 (8) = 101.21$; $p = 0.00001$ (Figure 1). Collectively, in the meta-analysis, the various intervention types made a significant impact on improving adherence to antiretroviral therapy (ART). The overall effect estimate for risk ratio (RR) was: RR = 1.12 (95% CI = 1.03, 1.21, $p = 0.009$). The following risk ratio results were obtained for three types of interventions that showed significant impact on adherence; namely social support and structural intervention, RR = 1.58 (95% CI = 1.36, 1.84, $p < 0.00001$); education, social support and structural intervention, RR = 2.60 (95% CI = 1.95, 3.45, $p < 0.00001$); and mobile phone device reminder, RR = 1.13 (95% CI = 1.05, 1.20, $p = 0.0004$).

Under the option B+ era, the test for the subgroup differences showed that there was a statistically significant subgroup effect among the three types of interventions, $\chi^2 (2) = 1378.51$; $p < 0.00001$ (Figure 2). Collectively, in the meta-analysis, the various intervention types did not make a significant impact on improving adherence to ART. The overall effect estimate was RR = 2.21 (95% CI = 0.27, 18.42, $p = 0.46$). Of the three types of interventions, only a structural intervention showed significant impact on adherence, RR = 10.60 (95% CI = 10.01, 11.22, $p < 0.00001$). The RR results for the other two interventions made no impact on ART adherence, namely, education, social support and enhanced standard of care, RR = 1.00 (95% CI = 0.86, 1.17, $p = 0.99$); and incentives, RR = 1.02 (95% CI = 0.87, 1.19, $p = 0.81$).

Filiatreau and colleagues have also put forward a second comment about the definition or what constitutes ART adherence

in the different eras and their likely impact on the pooled estimates on ART adherence. Our views regarding the need to segregate outcomes in terms of medication adherence and ART initiation or treatment uptake differ from Filiatreau and colleagues' views. First, all measurements of adherence have their limitations and these limitations are well documented in the literature (Anghel et al., 2019; Lam & Fresco, 2015). Second, perfect adherence can only be reliably measured if patients are directly observed when taking their medications for example each woman swallowing her ART in the physical presence of a health care personnel. This ability to observe ART consumption is not feasible in real life. In the context of sub-Saharan Africa, when women accept their HIV status and attend the health facility for the purpose of receiving treatment or receiving prevention of mother-to-child transmission services, such as initiating ART, these activities are reasonable proxies for adherence to ART. It is a huge commitment on the women's part to seek out treatment within sub-Saharan Africa. Women are confronted with enormous socio-economic barriers in order to physically attend the treatment facilities. Some of these socio-economic barriers include cost of transportation, and stigma and discrimination associated with having a HIV diagnosis (Hodgson et al., 2014; Omonaiye et al., 2018b).

Summary

Overall, interventions carried out under the pre-option B+ era had significant impact in improving ART adherence. Conversely, interventions identified under the option B+ era had no significant impact in improving ART adherence. However, the structural intervention type within the option B+ era showed significant impact on improving adherence. Thus, structured interventions which comprise integration of ART into routine pregnancy and infant care in antenatal care clinics have the potential to improve adherence among pregnant women (Omonaiye et al., 2018a). In view of the lack of significant impact of the other interventions examined in the option B+ era, more research needs to be undertaken in understanding how they may influence ART adherence.

Our segregation of results in terms of the pre option B+ and option B+ eras provides further evidence about the impact of different intervention types on adherence among pregnant women receiving ART in sub-Saharan Africa. Due to the complexity of how medication adherence occurs in sub-Saharan Africa, we believe that it is reasonable to combine results relating to medication adherence, ART initiation and treatment uptake. We thank Filiatreau and colleagues for contributing to the dialogue on the important issue of improving HIV care for pregnant women living with HIV in sub-Saharan Africa.

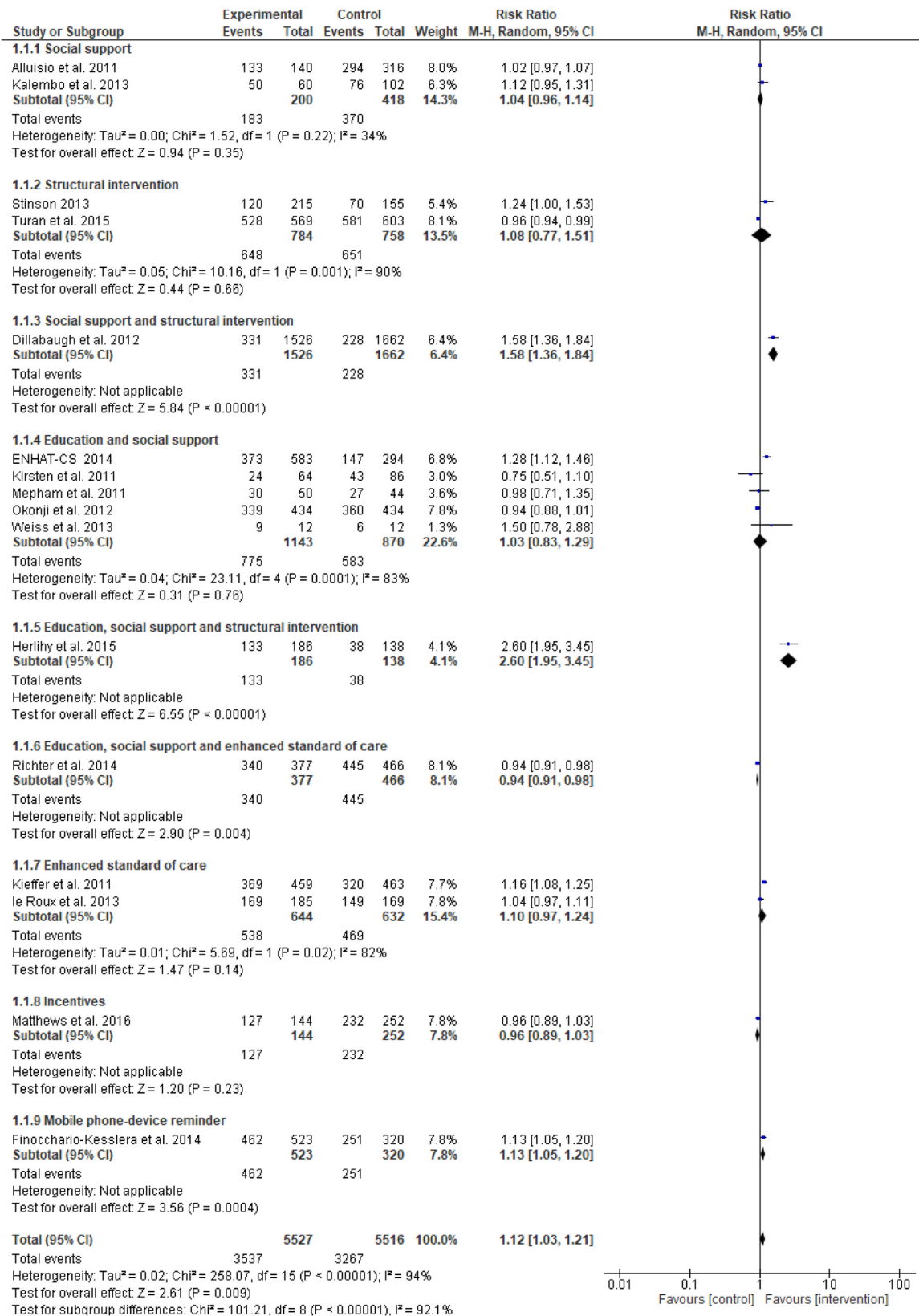


Figure 1. Risk ratio meta-analysis of subgroups of intervention types during pre-opton B+ era.

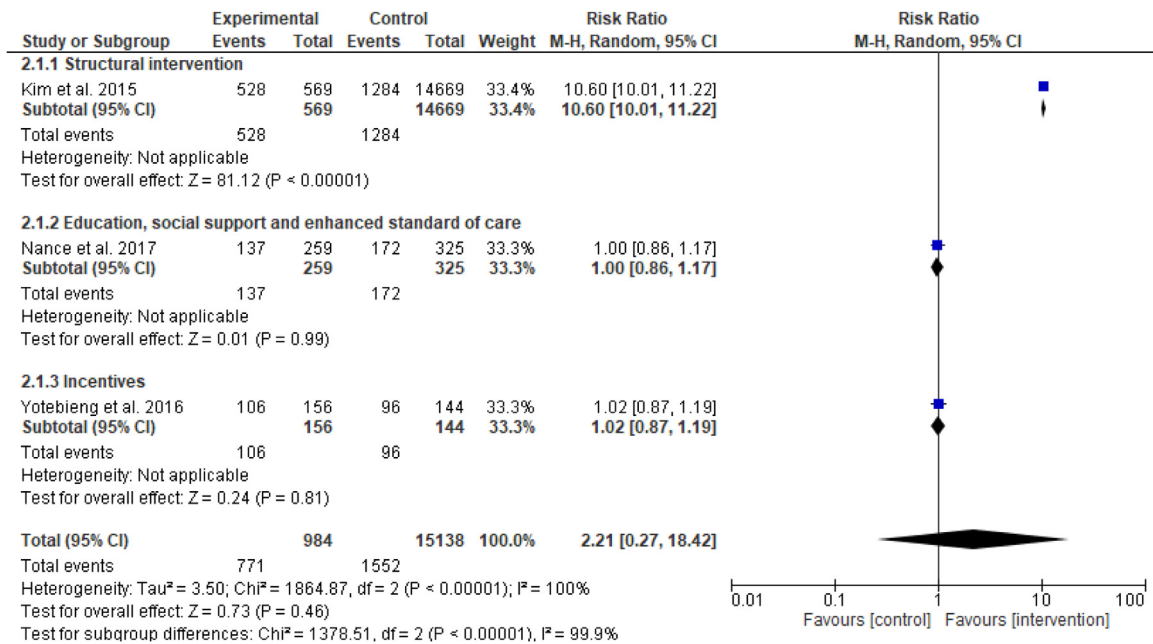


Figure 2. Risk ratio meta-analysis of subgroups of intervention types during in option B+ era.

References

- Anghel LA, Farcas AM, Oprean RN. An overview of the common methods used to measure treatment adherence. *Med Pharm Rep* 2019;92(2):117–22. doi:<http://dx.doi.org/10.15386/mpr-1201>.
- Hodgson I, Plummer ML, Konopka SN, Colvin CJ, Jonas E, Albertini J, et al. A systematic review of individual and contextual factors affecting ART initiation, adherence, and retention for HIV-infected pregnant and postpartum women. *PLoS ONE* 2014;9(11):e111421. doi:<http://dx.doi.org/10.1371/journal.pone.0111421>.
- Lam WY, Fresco P. Medication adherence measures: an overview. *Biomed Res Int* 2015;2015:217047. doi:<http://dx.doi.org/10.1155/2015/217047>.
- Omonaiye O, Nicholson P, Kusljic S, Manias E. A meta-analysis of effectiveness of interventions to improve adherence in pregnant women receiving antiretroviral therapy in sub-Saharan Africa. *Int J Infect Dis* 2018a;74:71–82. doi:<http://dx.doi.org/10.1016/j.ijid.2018.07.004>.
- Omonaiye O, Kusljic S, Nicholson P, Manias E. Medication adherence in pregnant women with human immunodeficiency virus receiving antiretroviral therapy in sub-Saharan Africa: a systematic review. *BMC Public Health* 2018b;18(1):805. doi:<http://dx.doi.org/10.1186/s12889-018-5651-y>.

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