Effect of Moringa leaves extract on occupational stress and nutritional status of pregnant women informal sector workers

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ABSTRACT
Moringa leaves are the leaves of the Moringa tree containing various macro and micro nutrients and active ingredients that act as antioxidants. We assess the effect of Moringa leaf extracts in pregnant women informal workers to the level of occupational stress and nutritional status include hemoglobin levels and Middle Upper Arm Circumference (MUAC). This study design was randomized, double-blind, controlled trials. Sample obtained from four health centers in the District Manggala, Makassar. They were divided randomly into two groups: the treatment group (TG) received the extract of Moringa leaves for two times 2 capsules @ 800mg every day (TG, n = 35) and control group (CG) received a placebo (CG, n = 33). Both groups continued to receive Fe tablet every day. The treatment was done for three months.

Statistical analysis using paired and independent t-tests. Characteristics of the subjects before the intervention did not differ significantly except for the variables age, gravid, and hemoglobin (p = 0.037, p = 0.045, and p = 0.001, respectively). After the intervention, the level of stress visible decline significantly in TG (66.7 ± 11.9 to 57.4 ± 8.3, p = 0.001) but not in CG (72.5 ± 22.2 to 77.8 ± 15.3, p = 0.07). Significant differences seen big changes in the level of stress between the two groups (-12.3 ± 5.5 vs. 18.2 ± 17.6, p = 0.001). Besides that, it looks good on TG MUAC increase (26.2 ± 2.8 to 26.7 ± 2.8, p = 0.130) but not significant differences seen for MUAC changes between the two groups (0.3 ± 0.4 vs 0.19 ± 0.3, p = 0.001). Hb levels in the intervention group there was no increase, TG (11.8 ± 0.94 to 11.77 ± 1.29, p = 0.909) but not in CG (11.57 ± 1.20 to 11.88 ± 1.50, p = 0.337). Not significant difference seen big changes in hemoglobin levels between the two groups (-0.02 ± 1.32 vs. 0.30 ± 1.80, p = 0.389). It is concluded that the leaf extract of Moringa in pregnant women informal workers can reduce stress and increase MUAC, but cannot increase hemoglobin levels.

Introduction
Physical occupational stress and psychological influence can disrupt during pregnancy. Occupational stress increases the risk of miscarriage, preterm labor, premature birth, low birth weight, and preeclampsia (Katz, 2012). Occupational stress experienced in the first 20 weeks of pregnancy associated with preeclampsia that can have serious effects can even lead to death in the mother and baby (Collingwood, 2011). Anemic pregnant women in Indonesia are still a serious public health problem that is equal to 37.1%. In addition to anemia, malnutrition problem faced is an increase in the proportion of pregnant women aged 15–19 years with malnutrition from 31.3% in 2010 to 38.5% in 2013 (Agency for Health Research and