The effects of diabetes self-management interventions on physiological outcomes in diabetic patients living in Africa: A systematic review and meta-analysis

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ABSTRACT

Background: Africa faced challenges in diabetes management and self-management practice was poor. International guidelines have recommended diabetes self-management (DSM) interventions for diabetes monitoring. Yet, the effectiveness of DSM interventions as compared with usual care on physiological outcomes in diabetic patients in Africa is unknown which needs investigation. The review aimed to examine the effect of DSM interventions on physiological outcomes among diabetic patients in Africa when compared with patients receiving usual care.

Methods: Relevant databases including MEDLINE, PubMed, CINAHL Complete, Scopus, Cochrane Library, and Google Scholar were searched from inception to September 28, 2019, for randomized controlled trials involved adult diabetic patients in Africa. Nine RCTs were included in the review and the quality of the studies was assessed using Cochrane's collaboration risk of bias tools.

Results: A meta-analyses of the outcomes showed that DSM interventions significantly reduced systolic blood pressure by 4.24 mmHg [95% CI: -6.85, -1.62], $p<0.01$, reduced diastolic blood pressure 3.27 mmHg [95% CI: -0.62, -5.92], $p=0.02$, total cholesterol by 0.14 mmol/L [95% CI: -0.26, -0.02], $p=0.03$, and body mass index by 0.92 kg/m^2 [95% CI: -1.39, -0.45], $p<0.0001$. However, the meta-analysis showed a non-significant reduction in waist circumference by 3.25 cm [95% CI: -6.82, 0.32], $p=0.07$ and glycosylated hemoglobin (HbA1c) was inconclusive. A nurse-led and extensive diabetes self-management education had greater impact on reduction on blood pressure.

Conclusions: Diabetes self-management interventions are effective in improving blood pressure, total cholesterol, and body mass index, and ineffective in the reduction of waist circumference and inconclusive in HbA1c. Further study is needed to determine the effect of self-management interventions in a community setting by engaging the family as an integral component in this resource-limited setting.

Keywords: Diabetes, Diabetes self-management intervention, DSME, Diabetes education, Africa