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Prevalence, awareness, treatment and control of hypertension among South African adults

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Hypertension is the most important preventable cause of cardiovascular mortality worldwide. Yet, local data on hypertension awareness, treatment and control are scarce among South African adults, especially the rural dwellers and low-income earners. We examined the awareness, treatment and control of hypertension among adults attending health facilities in Buffalo City Municipality (BCM). A cross sectional survey of 998 adults (≥ 18 years) across 3 large outpatient clinics in BCM was done. Participants were interviewed using the WHO STEPwise questionnaire. Blood pressure (BP) measurement was obtained in accordance with standard protocols. Hypertension was defined as a BP of $\geq 140/90$ mmHg or previous diagnosis of hypertension. Participants who reported being informed of their hypertensive status by health professional(s) were considered aware of the condition. Controlled hypertension was defined among those on treatment in accordance with the Eight Joint National Committee (2014) as BP $< 140/90$ mmHg. Prevalence and awareness of hypertension among the participants were 49.2% and 69.1%, respectively. Hypertension unawareness ($n=152$) were common among men (38.3%), monthly income greater than R 2000 (40.0%), singles (39.4%), age less than 45 years (55.1%), unemployed (45.4%), cigarette smokers (50.0%) and alcohol users (48.9%). Of the participants who knew they were hypertensive, 91.7% were already on treatment and only 38.6% of them had achieved controlled hypertension. Monthly income less than R 2000 and diabetes were associated with uncontrolled hypertension. Prevalence and treatment of hypertension is very high in the study population. However, suboptimal control of BP among treated individuals suggests substantial room for improvement in the treatment of hypertension.

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Coronary angiogenic effect of long term administration of *Nigella sativa*

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Background: Coronary angiogenesis was reported as one of the preferable cardiac adaptive responses of aerobic exercise training. Induction of coronary angiogenesis might provide a protective effect against ischemic cardiac insults. Previously, long term administration of *Nigella sativa* showed inotropic and hypertrophic cardiac effects. No previous studies explore the coronary angiogenic effect of *Nigella sativa*. Therefore, in the current study, long term administration of *Nigella sativa* is compared to exercise training regarding the induction of coronary angiogenesis.

Method: 20 Wistar adult male rats were divided into four groups: Control, *Nigella* fed, exercise trained, *Nigella* fed-exercise trained groups. 800 mg/Kg *Nigella sativa* was administered orally to the *nigella*-fed rats for 8 weeks. Exercise rats were trained on 5-lane treadmill with speed 18 m/min and grade 30° for one hour daily for 8 weeks. By the end of the experiment, hearts were extracted and immunohistological slides were prepared using rat vascular endothelial growth factor (VEGF), platelet endothelial cell adhesion molecule-1 (PECAM-1), Von Willebrand factor (VWF) and nitric oxide synthase-2 (NOS-2) antibodies (Ab). Photomicrographs were analyzed using Image J software. Percentage Ab-labeled-area of ten fields per specimen was recorded.

Results: Using analysis of variance and LSD post hoc test, VEGF was significantly higher in *Nigella* fed and exercise trained rats compared to the control ($p < 0.01$). Von Willebrand factor was significantly lower in all groups compared to controls ($p < 0.01$). Exercise trained group only exhibited higher PECAM-1 ($p < 0.01$) and lower NOS-2 ($p < 0.05$), compared to controls.

Conclusion: The present demonstrated increase in VEGF and decrease of VWF in *Nigella* fed and exercise trained rats might reflect the potentiality of induction of coronary angiogenesis by these two interventions. Therefore, *Nigella sativa* treatment might also provide novel protective strategy to cardiac ischemia in vulnerable subjects.

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