Prospective associations between multidimensional religiosity/spirituality and cardiovascular risk factors in the English longitudinal study of ageing

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**Background:** Religiosity/Spirituality (R/S) is usually associated with improved cardiovascular disease (CVD) outcomes. If such findings are genuine, they may be explained by the relationship between different R/S dimensions and CVD behavioural and biological risk factors. However, previous studies were mostly cross-sectional, used attendance as main R/S measure and dealt with confounders inadequately. Hence, more longitudinal research is needed.

**Purpose:** This study explored whether multidimensional R/S predicted improvements in future CVD behavioural and physiological risk factors.

**Methods:** Participants were 6,844 adults aged 50+ from the English Longitudinal Study of Ageing. Smoking, exercising, drinking, eating fruits/vegetables and R/S were evaluated by self-report at waves 5 (2010/11) and 7 (2014/15). Physical examination and blood samples at waves 4 (2008/09) and 6 (2012/13) involved measurement of blood pressure (BP), body-mass index (BMI), C-reactive Protein (CRP), fibrinogen and HbA1c. Hierarchical multiple regressions controlled for age, gender, wealth, education and ethnicity. Models assessing biomarkers were further adjusted for the four health behaviours and BMI. Data on HbA1c, drinking and eating fruits/vegetables were log-transformed to ensure normal distribution.

**Results:** Greater reported spirituality (β=−0.018; CI: −0.035, −0.002; p=0.029), praying/meditating daily (β=−0.017; CI: −0.033, −0.002; p=0.025) and involvement in organised religion (β=−0.018; CI: −0.033, −0.003; p=0.017) were independently associated with lower fibrinogen at wave 6. Daily prayer/meditation also predicted a higher intake of fruits and vegetables at wave 7 (β=0.004; CI: 0.000, 0.008; p=0.049). However, frequent attendance (OR=0.846; CI: 0.730, 0.982; p=0.027), importance of faith (OR=0.935; CI: 0.879, 0.994; p=0.031) and religious purpose (OR=0.939; CI: 0.884, 0.997; p=0.040) independently reduced the odds of meeting exercise recommendations at wave 7. Similarly, frequent attendance predicted higher HbA1c at wave 6 (β=0.002; CI: 0.000, 0.005; p=0.033). R/S was associated with lower systolic and diastolic BP, lower alcohol consumption and greater sedentary behaviour, but these relationships were explained by covariates. Smoking and CRP were unrelated to R/S.

**Conclusions:** We found that higher R/S offered partial future cardiovascular protection as it was independently associated with lower fibrinogen and greater intake of fruits and vegetables. However, somewhat unexpectedly, higher R/S also aggravated some CVD risk factors such as HbA1c and engagement in moderate/vigorous exercise. Besides, R/S was associated with lower BP and alcohol consumption at follow-up, but this relationship did not survive adjustment for covariates. Finally, we found no prospective association between R/S and smoking status and CRP. R/S is complicated, and further research should include measures of adverse aspects of religious involvement to clarify the drivers of these detrimental effects of R/S on CVD risk factors.