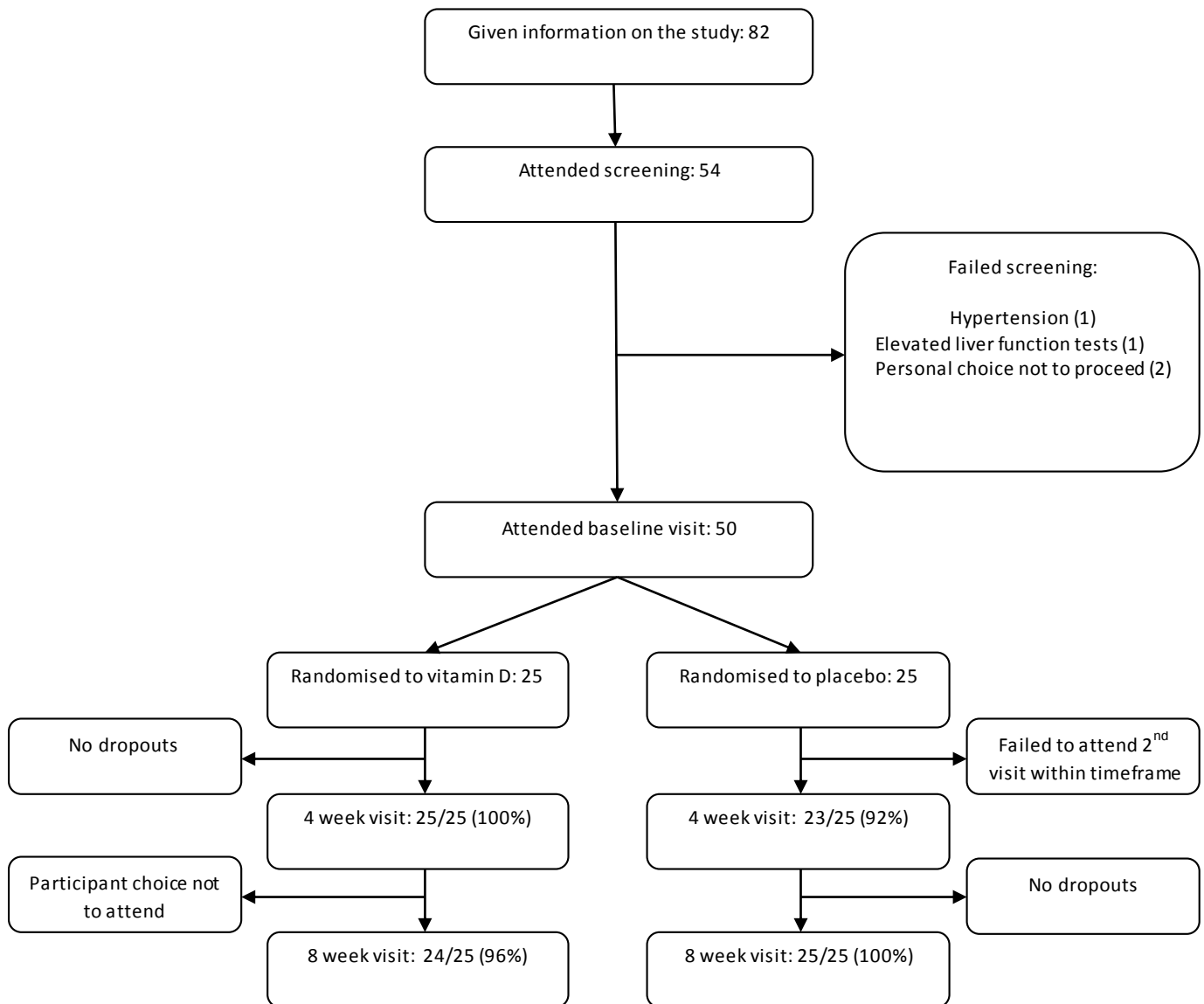


Participant flow



Baseline characteristics

	Vitamin D (n=25)	Placebo (n=25)
Mean age (years) (SD)	41.7 (13.4)	39.4 (11.8)
Mean BMI (Kg ^m ⁻²) (SD)	24.9 (3.3)	28.7 (5.5)*
Current smoker (%)	1/25 (4)	0/25 (0)
Mean systolic blood Pressure (mmHg) (SD)	119 (15)	122 (19)
Mean diastolic blood Pressure (mmHg) (SD)	78 (11)	78 (13)
Mean heart rate (beats/min) (SD)	70 (9)	69 (9)
Mean total cholesterol (mmol/l) (SD)	5.2 (1.4)	4.9 (1.0)
Mean HDL cholesterol (mmol/l) (SD)	1.5 (0.4)	1.5 (0.3)
Mean LDL cholesterol (mmol/l) (SD)	3.2 (1.2)	2.9 (1.0)
Mean Triglycerides (mmol/l) (SD)	1.2 (0.7)	1.1 (0.5)
Mean Glucose (mmol/l) (SD)	5.3 (0.7)	5.8 (2.4)
Median HOMA-IR (IQR)	2.2 (3.3)	2.4 (4.6)
Mean 25OHD (nmol/l) (SD)	27 (13)	27 (15)
Mean adjusted serum calcium (mmol/L) (SD)	2.29 (0.07)	2.28 (0.08)
Mean PTH (pmol/L) (SD)	5.4 (1.9)	6.8 (2.8)*
Mean FMD occlusion response (%) (SD)	8.2 (3.1)	8.7 (2.8)
Mean FMD GTN response (%) (SD)	21.2 (5.5)	19.9 (8.4)
Mean pulse wave velocity (m/s) (SD)	8.0 (1.2)	7.7 (1.7)
Mean Augmentation index (%) (SD)	24 (14)	21 (16)
Median ACh iontophoresis perfusion ratio (IQR)	3.1 (2.2)	2.9 (1.5)
Median SNP iontophoresis perfusion ratio (IQR)	2.2 (1.8)	2.2 (1.2)
Mean IL-6 (pg/ml) (SD)	2.5 (2.2)	3.1 (1.7)
Median TNF (pg/ml) (IQR)	2.6 (2.8)	2.8 (5.8)
Median C-reactive protein (mg/L) (IQR)	1.8 (3.2)	2.2 (4.5)
Mean E-Selectin (ng/ml) (SD)	38 (14)	45 (20)

Mean Adiponectin (ug/ml) (SD)	6.4 (3.4)	7.0 (2.9)
Mean Leptin (ng/ml) (SD)	25.8 (17.2)	35.2 (19.1)
Median PAI-1 (U/ml) (IQR)	6.0 (13.7)	9.2 (13.3)
Median t-PA (ng/ml) (IQR)	1.1 (0.8)	1.0 (0.6)

BMI: Body mass index. HDL: High density lipoprotein. LDL: Low density lipoprotein. 25OHD: 25-hydroxyvitamin D. PTH: Parathyroid hormone. HOMA-IR: Homeostasis Model of Assessment – Insulin Resistance. IL-6: Interleukin 6. TNF: Tumour Necrosis Factor. CRP: C-reactive protein. PAI-1: Plasminogen Activator Inhibitor-1. t-PA: tissue Plasminogen Activator.

Outcome measures

	Change from baseline to follow up				
		Vitamin D (SD)	Placebo (SD)	Between group difference (95% CI)*	p
<i>Primary outcome</i>					
Flow mediated dilatation (%)	0 v 4 wks	0.3 (1.8)	0.2 (1.6)	0.1 (-0.9 to 1.1)	0.84
	0 v 8 wks	0.1 (2.4)	0.1 (2.4)	0.0 (-1.4 to 1.4)	0.98
<i>Secondary outcomes</i>					
Systolic blood pressure (mmHg)	0 v 4 wks	-1.5 (6.9)	-2.8 (10.1)	1.3 (-3.7 to 6.3)	0.60
	0 v 8 wks	2.0 (7.9)	-1.0 (9.1)	3.0 (-1.9 to 8.0)	0.22
Diastolic blood pressure (mmHg)	0 v 4 wks	-1.5 (4.9)	-0.7 (6.1)	-0.9 (-4.1 to 2.3)	0.57
	0 v 4 wks	-0.1 (5.7)	-0.7 (5.2)	0.6 (-2.5 to 3.7)	0.70
Pulse wave velocity (m/s)	0 v 4 wks	0.3 (1.4)	0.2 (1.8)	0.1 (-1.0 to 1.2)	0.91
	0 v 8 wks	0.5 (1.2)	0.2 (1.6)	0.3 (-0.6 to 1.2)	0.46
Augmentation index (%)	0 v 4 wks	-3 (8)	-3 (8)	0 (-5 to 4)	0.86
	0 v 8 wks	-1 (9)	3 (11)	-3 (-9 to 2)	0.24
Change in ACh perfusion ratio	0 v 4 wks	0.5 (2.4)	0.2 (0.7)	0.3 (-0.7 to 1.4)	0.55
	0 v 8 wks	0.2 (1.1)	-0.2 (3.3)	0.4 (-1.1 to 1.9)	0.59
Cholesterol (mmol/l)	0 v 4 wks	-0.3 (1.0)	0.0 (0.5)	-0.4 (-0.9 to 0.1)	0.10
	0 v 8 wks	-0.3 (1.0)	-0.1 (0.5)	-0.2 (-0.7 to 0.2)	0.33
HDL (mmol/l)	0 v 4 wks	0.0 (0.2)	0.0 (0.2)	0.0 (-0.2 to 0.1)	0.52
	0 v 8 wks	0.0 (0.2)	0.0 (0.1)	0.0 (-0.1 to 0.1)	0.70
LDL (mmol/l)	0 v 4 wks	-0.2 (0.9)	0.1 (0.4)	-0.3 (-0.7 to 0.1)	0.12
	0 v 4 wks	-0.3 (0.9)	-0.1 (0.5)	-0.2 (-0.6 to 0.3)	0.39
Triglycerides (mmol/l)	0 v 4 wks	-0.1 (0.5)	0.0 (0.4)	-0.1 (-0.3 to 0.2)	0.60
	0 v 8 wks	-0.1 (0.4)	-0.1 (0.3)	0.0 (-0.3 to 0.2)	0.59
Glucose (mmol/l)	0 v 4 wks	-0.1 (0.5)	-0.6 (1.6)	0.5 (-0.3 to 1.2)	0.19

	0 v 8 wks	-0.1 (0.5)	-0.3 (1.2)	0.3 (-0.3 to 0.8)	0.37
HOMAIR	0 v 4 wks	0.1 (2.3)	-1.2 (2.8)	1.3 (-0.3 to 3.0)	0.12
	0 v 8 wks	-0.2 (2.1)	-1.2 (2.6)	1.0 (-0.5 to 2.6)	0.17
IL-6 (pg/ml)	0 v 4 wks	-0.5 (1.0)	-0.3 (1.6)	-0.2 (-1.0 to 0.5)	0.54
	0 v 8 wks	-0.4 (1.4)	-0.5 (1.3)	0.1 (-0.7 to 0.9)	0.84
TNF (pg/ml)	0 v 4 wks	0.0 (1.5)	-0.7 (2.9)	0.7 (-0.6 to 2.1)	0.26
	0 v 8 wks	-0.2 (1.9)	-0.4 (2.6)	0.2 (-1.1 to 1.6)	0.71
CRP (mg/l)	0 v 4 wks	-0.2 (2.1)	-0.4 (1.9)	0.2 (-1.0 to 1.4)	0.75
	0 v 8 wks	-0.3 (2.2)	0.2 (2.4)	-0.5 (-1.9 to 0.8)	0.45
E-selectin (ng/ml)	0 v 4 wks	-0.5 (4.2)	0.3 (6.0)	-0.8 (-3.9 to 2.2)	0.59
	0 v 8 wks	0.2 (6.8)	0.6 (4.4)	-0.4 (-3.7 to 2.9)	0.80
Adiponectin (ug/ml)	0 v 4 wks	0.1 (2.0)	0.2 (1.3)	0.1 (-1.0 to 1.0)	0.93
	0 v 8 wks	-0.2 (1.6)	0.3 (1.4)	-0.4 (-1.3 to 0.5)	0.34
Leptin (ng/ml)	0 v 4 wks	1.1 (4.8)	-0.2 (4.1)	1.3 (-1.3 to 3.9)	0.32
	0 v 8 wks	1.7 (6.4)	1.5 (6.3)	0.2 (-3.5 to 3.9)	0.92
PAI-1 (U/ml)	0 v 4 wks	4.4 (15.1)	6.4 (13.2)	-2.0 (-10.9 to 6.8)	0.64
	0 v 8 wks	-3.6 (12.1)	4.2 (11.0)	-7.8 (-14.6 to -0.9)	0.03
t-PA (ng/ml)	0 v 4 wks	-0.1 (0.4)	0.1 (0.2)	-0.2 (-0.4 to 0.0)	0.10
	0 v 8 wks	-0.3 (0.6)	0.2 (1.0)	-0.5 (-1.1 to 0.0)	0.05
25 hydroxyvitamin D (nmol/L)	0 v 4 wks	17 (10)	-3 (19)	16 (11 to 21)	<0.001
	0 v 8 wks	11 (7)	-1 (22)	10 (6 to 14)	<0.001
PTH (pmol/L)	0 v 4 wks	-0.3 (1.7)	0.0 (1.7)	-0.3 (-1.3 to 0.8)	0.60
	0 v 8 wks	0.3 (2.0)	0.3 (2.2)	0.0 (-1.3 to 1.4)	0.95

*comparison at each timepoint, adjusted for baseline values

ACh: Acetylcholine. HDL: High density lipoprotein. LDL: Low density lipoprotein. HOMA-IR: Homeostasis Model of Assessment – Insulin Resistance. IL-6: Interleukin 6. TNF: Tumour Necrosis Factor. CRP: C-reactive protein. PAI-1: Plasminogen Activator Inhibitor-1. t-PA: tissue Plasminogen Activator. PTH: Parathyroid hormone

Adverse events

	Vitamin D	Placebo
Headache	3	2
Gastrointestinal	2	4
Musculoskeletal	1	1
Ophthalmological	1	1
Urinary tract	1	0
Reproductive tract	0	1
Sleep disturbance	0	1
Rash	0	1
TOTAL	8	11
Hospitalisation	0	0
Death	0	0

