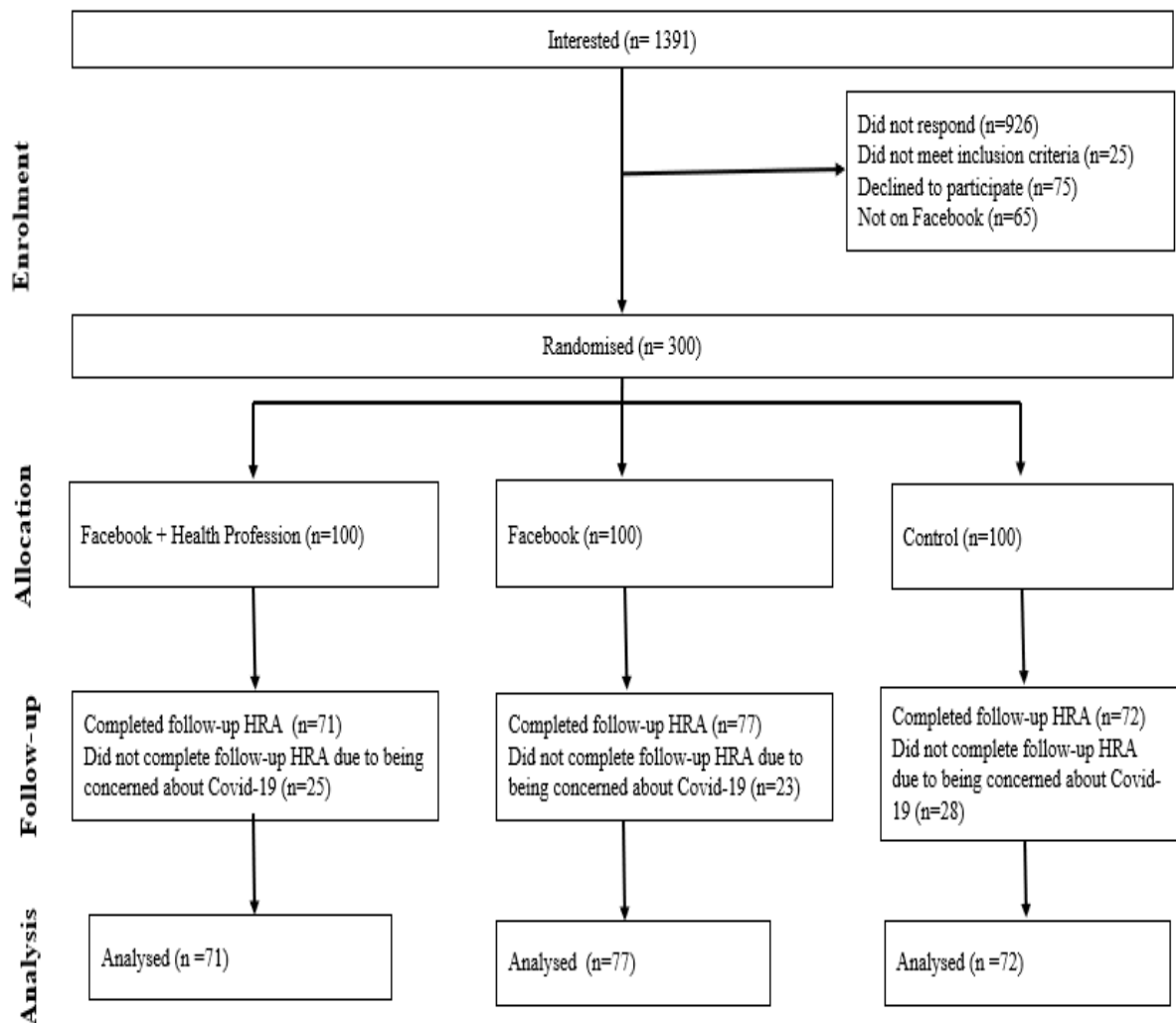


## RESULTS

### Study population

Of the 1391 potential participants who inquired about Project SWAY, 300 (21.5%) consented and enrolled to participate, 926 (66.6%) did not respond to the follow-up emails and phone calls, 25 (1.8%) did not meet the inclusion criteria, 75 (5.4%) declined to participate and 65 (4.7%) did not have a Facebook account as shown in CONSORT flow diagram (Figure 1).

Figure 1: CONSORT flow diagram - recruitment, enrolment, follow-up and data analysis



## Baseline characteristics

The mean age of the participants was 36.9 years and almost two thirds (65%) were women.

Demographic and descriptive information of the groups are outlined in Table 1.

**Table 1: Baseline characteristics by group in Project SWAY**

	FB+HP (n=100)		FB (n=100)		C (n=100)	
	Mean (SD)	%	Mean (SD)	%	Mean (SD)	%
<b>Non-Modifiable Risk Factors</b>						
Age (years)	36.6 (8.5)		35.4 (8.1)		38.8 (8.8)	
Gender (% females)		65		62		67
<b>Anthropometric Measurements</b>						
Body Mass Index (kg/m <sup>2</sup> )	28.7 (6.4)		29.5 (6.3)		29.6 (6.7)	
% Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> )		70		78		73
Waist circumference (cm)	89 (13.0)		93 (16)		92 (15)	
% Central obesity (waist circumference (Men > 102 cm, Women > 88cm))		33		44		45
<b>Clinical Measurements</b>						
Systolic blood pressure (mmHg)	121 (14)		123 (15)		126 (16)	
Diastolic blood pressure (mmHg)	79 (9)		80 (10)		81 (10)	
% Hypertension (BP $\geq$ 140/90 or Medication)		16		24		25
Random blood glucose (mmol/L)	5.7 (1.0)		5.6 (0.8)		5.6 (1.3)	
% Diabetes Risk (Blood glucose: $\geq$ 6.4 mmol/l)		20		13		17
Total cholesterol (mmol/L)	4.4 (1.1)		4 (1.0)		4.2 (1.0)	
% Hypercholesterolemia (> 5.2 mmol/l)		22		14		13
<b>Behavioural Risk Factors</b>						
Average physical activity (min/wk)	130 (162)		98 (109)		106 (132)	
% Insufficient physical activity (< 150 minutes per week)		65		69		71
F&V intake (servings/day)	2.5 (1.3)		2.3 (1.2)		2.3 (1.2)	
% Inadequate F& V intake (< 5 servings of F&V per day)		94		96		92
Current smoker (% yes)		22		14		14
Framingham risk score (%)	3.9 (4.6)		3.8 (4.8)		5.2 (61)	
Framingham Risk Score $\geq$ 10%		8		6		14

F&V: Fruit and vegetable, FB+HP: Facebook plus Health Professionals, FB: Facebook, C: Control

## Retention of participants

The baseline characteristics of completers and non-completers are summarized in Table 2. Of the 300 enrolled participants, 224 (68%) completed the follow-up HRA. Retention rates did not differ between groups (FB+HP: 75%, FB: 77% and C: 72%;  $p=0.372$ ). However, FB+HP non-

completers were younger ( $p=0.034$ ) and smoked less ( $p=0.045$ ) than completers. Control non-completers reported higher physical activity levels compared to completers ( $p=0.012$ ).

**Table 2: Baseline characteristics of completers and non-completers by intervention arm**

	FB+HP (n=100)			FB (n=100)			C (n=100)		
	FB+HP Incomplete (n=29)	FB +HP Complete (n=71)	Incomplete vs. complete	FB Incomplete (n=23)	FB Complete (n=77)	Incomplete vs. complete	C Incomplete (n=28)	C Complete (n=72)	Incomplete vs. complete
	Mean/Number	Mean/Number		Mean/Number	Mean/Number		Mean/Number	Mean/Number	
	% (SD)	% (SD)	p-value	% (SD)	% (SD)	p-value	% (SD)	% (SD)	p-value
Age (years)	33.8 (8.2)	37.8 (8.4)	0.034*	33.8 (6.8)	35.9 (8.4)	0.289	38.9 (7.2)	38.7 (9.4)	0.928
Gender (% females)	16 (55.2)	49 (69.0)	0.191	14 (60.9)	48 (62.3)	0.898	17 (60.7)	50 (69.4)	0.415
Current medication for hypertension	0 (0)	4 (5.6)	0.229	1 (4.4)	4 (5.2)	0.867	1 (3.6)	4 (5.6)	0.675
Current diabetes medication	1 (3.5)	2 (2.8)	0.867	3 (13)	6 (7.8)	0.445	1 (3.6)	4 (5.6)	0.685
Current smoker (% yes)	3 (10.3)	19 (26.8)	0.045*	3 (13)	11 (14.3)	0.888	5 (17.9)	9 (12.5)	0.518
Body Mass Index (kg/m <sup>2</sup> )	28 (3.6)	28.9 (7.2)	0.535	30.2 (5.5)	29.3 (6.5)	0.545	30.9 (7.6)	29.2 (6.4)	0.242
Waist circumference (cm)	87.4 (9.1)	89.2 (14.2)	0.588	91.4 (11.6)	93.1 (17.3)	0.615	95.6 (15.5)	90.5 (13.9)	0.115
Systolic blood pressure (mmHg)	121.8 (10.6)	120.5 (15.5)	0.698	127.7 (16.5)	121 (13.9)	0.062	130.3 (18.7)	124.7 (15.3)	0.094
Diastolic blood pressure (mmHg)	79.8 (6.3)	78.4 (10)	0.522	80 (9)	79.9 (10.6)	0.964	84 (9.1)	80 (9.6)	0.067
Glucose (mmol/L)	5.7 (0.8)	5.7 (1.1)	0.811	5.8 (1)	5.5 (0.8)	0.342	5.7 (1.5)	5.6 (1.2)	0.483
Total cholesterol (mmol/L)	4.5 (1.2)	4.3 (1)	0.465	4 (1.1)	4 (1)	0.943	4.4 (0.7)	4.1 (1.1)	0.278
Average physical activity (min/wk)	161.7 (175.2)	117.5 (156.2)	0.136	116.1 (132.1)	92.8 (101.4)	0.467	159.8 (159.1)	84.3 (114.5)	0.012*
F&V intake (servings/day)	2.6 (1.2)	2.4 (1.3)	0.545	2.3 (0.9)	2.3 (1.2)	0.862	2.7 (1.4)	2.2 (1.1)	0.054
Framingham risk score (%)	3.8 (3.1)	5.3 (6.8)	0.316	4.4 (3.5)	4.2 (5.8)	0.922	7.3 (8.2)	6.1 (8.9)	0.416

F&V: Fruit and vegetable, FB: Facebook, FB+HP: Facebook plus Health Professionals, C: Control

\*: Significantly different between complete and incomplete within an intervention arm

## Primary Outcomes: Changes in Framingham risk score and Framingham risk category

The changes in FRS (mean, 95%CI) and Framingham risk category (% , 95%CI) between baseline and follow-up are shown in Table 3. There was no significant change in mean FRS within all three groups: FB+HP (-0.1%; p=0.776), FB (-0.3%, p=0.511) and C (0.8%, p=0.069). Additionally, there were no significant differences in mean FRS changes between groups.

**Table 3: The Framingham Risk Score (mean, 95%CI) and Framingham risk categories (% , 95%CI) and the changes in the FRS and FRS categories between baseline and follow-up.**

	FB+HP			FB			C			Changes between groups		
	Baseline	Follow-up	Change	Baseline	Follow-up	Change	Baseline	Follow-up	Change			
	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	Mean/% (95% CI)	C vs FB	C vs FB+HP	FB vs FB+HP
			p-value			p-value			p-value	p-value	p-value	p-value
Framingham Risk Score (mean)	4.3 (3.4,5.2)	4.2 (3.2,5.2)	-0.1 (-0.9,0.7)	4.7 (3.8,5.6)	4.4 (3.4,5.4)	-0.3 (-1.1,0.5)	4.7 (3.8,5.6)	5.5 (4.4,6.5)	0.8 (-0.1,1.6)	0.077	0.137	0.801
			0.776			0.511			0.069			
Intermediate risk: 10-year CVD risk (≥10%)	9.7 (4.7,14.7)	9.8 (4.2,15.3)	0.1 (-4.7,4.9)	9.8 (4.7,14.8)	9.2 (3.8,14.6)	-0.6 (-5.2,4.0)	11.9 (6.9,16.9)	8.3 (2.7,13.8)	-3.6 (-8.3,1.1)	0.370	0.282	0.844
			0.973			0.804			0.137			

## Secondary Outcomes

### *Changes in the prevalence (%) of individual NCD risk factors*

The change in the prevalence (%) of individual NCD risk factors is depicted in Table 4. Inadequate fruit and vegetable intake was significantly reduced by 9.4% (p <0.001) in FB but no significant changes in FB+HP (-0.4%, p=0.916) and C (3.6%, p=0.293). Smoking prevalence significantly increased in C (14.9%, p <0.001) while the percentage of smokers did not change in FB+HP (4.2%, p=0.331) and FB (-0.7%, p=0.861). Diabetes risks improved significantly by 10.7% (p=0.030) in FB+HP and increased non-significantly in FB (6.7%, p=0.162) and C (0.2%, p=0.971). Overweight prevalence significantly decreased in FB+HP (-7.4%, p=0.024) and with central obesity prevalence significantly decreasing in FB (-10.5%, p=0.004) and C (-8.3 %, p=0.028). There were no significant changes between groups in the percentage of participants with hypercholesterolemia, hypertension, and insufficient physical activity.

There was a significant decrease in the percentage of FB+HP participants with  $\geq 3$  NCD risk factors and no significant change in FB and C (Table 4).

**Table 4: Percentage change (%) in individual NCD risk factors within groups**

	FB+HP			FB			C		
	Baseline	Follow-up	Change	Baseline	Follow-up	Change	Baseline	Follow-up	Change
NCD risk factors	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
			p-value			p-value			p-value
Insufficient physical activity (<150 minutes per week)	65.2 (56.0,74.4)	57.0 (46.7,67.3)	-8.2 (-17.3,0.9)	69.5 (60.2,78.8)	64.4 (54.4,74.4)	-5.1 (-13.9,3.8)	70.7 (61.5,79.9)	68.8 (58.5,79.1)	-1.9 (-10.9,7.1)
			0.078			0.261			0.679
Inadequate fruit and vegetable intake (<5 servings of fruit and vegetable per day)	93.6 (88.6,98.6)	93.2 (87.4,99.1)	-0.4 (-7.1,6.4)	95.1 (90.1,100.1)	85.7 (80.1,91.3)	-9.4 (-15.9,-2.9)	92.5 (87.6,97.5)	96.1 (90.3,101.9)	3.6 (-3.1,10.3)
			0.916			0.005			0.293
Smoking (Yes)	21.7 (14.1,29.3)	25.9 (17.2,34.5)	4.2 (-4.3,12.6)	13.2 (5.6,20.9)	12.5 (4.2,20.9)	-0.7 (-8.9,7.4)	14.4 (6.8,22.0)	29.4 (20.7,38.0)	14.9 (6.6,23.3)
			0.331			0.861			<0.001
Overweight (BMI $\geq 25$ kg/m <sup>2</sup> )	70.5 (62.0,79.1)	63.1 (54.0,72.3)	-7.4 (-13.9,-0.9)	79.2 (70.6,87.9)	79.1 (70.1,88.1)	-0.2 (-6.4,6.1)	72.3 (63.7,80.9)	78.0 (68.7,87.2)	5.6 (-0.8,12.0)
			0.024			0.961			0.084
Central obesity (waist circumference (Men >102 cm, Women >88cm))	34.2 (25.0,43.5)	30.0 (19.9,39.9)	-4.4 (-11.8,3.1)	46.8 (37.5,56.1)	36.3 (26.5,46.1)	-10.5 (-17.7,-3.4)	43.4 (34.2,52.7)	35.2 (25.1,45.2)	-8.3 (-15.7,-0.9)
			0.251			0.004			0.028
Hypertension (BP $\geq$ 140/90 or Medication)	16.7 (9.0,24.4)	12.3 (3.3,21.4)	-4.4 (-14.7,5.9)	25.6 (17.9,33.4)	16.4 (7.7,25.1)	-9.3 (-19.3,0.7)	24.1 (16.4,31.8)	23.2 (14.2,32.2)	-0.9 (-11.1,9.3)
			0.404			0.069			0.862
Hypercholesterolemia (>5.2 mmol/l)	22.6 (15.6,29.7)	16.1 (8.0,24.2)	-6.6 (-15.0,1.9)	15.4 (8.3,22.5)	13.4 (5.6,21.3)	-2.0 (-10.2,6.2)	12.2 (5.1,19.3)	15.4 (7.3,23.6)	3.2 (-5.1,11.6)
			0.127			0.633			0.448
Diabetes risk (Blood glucose $\geq 6.4$ mmol/l)	20.4 (13.2,27.5)	9.6 (1.2,18.0)	-10.7 (-20.4,-1.0)	13.8 (6.6,21.0)	20.5 (12.4,28.6)	6.7 (-2.7,16.1)	16.6 (9.4,23.7)	16.7 (8.3,25.1)	0.2 (-9.5,9.8)
			0.030			0.162			0.971
Number of risk factors $\geq 3$	77.7 (69.1,86.2)	62.7 (53.0,72.4)	-15.0 (-24.4,-5.5)	75.5 (66.9,84.1)	70.3 (60.9,79.7)	-5.3 (-14.3,3.9)	74.2 (65.6,82.7)	79.1 (69.4,88.8)	4.9 (-4.4,14.3)
			0.002			0.259			0.299

### *Changes in the prevalence (%) of individual NCD risk factors between groups*

Table 5 shows the % changes in the prevalence of NCD risk factors between groups. There were significant differences in the prevalence of inadequate fruit and vegetable consumption between FB and C (-9.4%, vs 3.6%,  $p=0.006$ ). Likewise, changes in the prevalence of smoking were significantly different between FB and C (-0.7%, vs 14.9%,  $p=0.009$ ). There were significant differences in overweight prevalence between FB+HP and C (-7.4% vs -5.6%,  $p=0.005$ ). For diabetes risk, there were significant differences in change in prevalence between FB+HP and C (-10.7% vs 0.2%;  $p=0.011$ ). There were no significant differences in the change in prevalence of insufficient physical activity, central obesity, hypertension, and hypercholesterolemia between all three groups. For the variable multiple risk factors ( $\geq 3$  risk factors), there was a significant difference in the prevalence of participants in FB+HP with three or more risk factors compared to C ( $p=0.003$ ) (Table 5).

**Table 5: Changes in the prevalence (%) of individual NCD risk factors between groups**

Risk factor	FB+HP % change (95% CI)	FB % change (95% CI)	C % change (95% CI)	Differences of changes between group p-values		
				FB+ HP vs FB	FB+HP vs C	FB vs C
Insufficient Physical activity	-8.2 (-17.3,0.9)	-5.1 (-13.9,3.8)	-1.9 (-11.0,7.1)	0.626	0.336	0.625
Inadequate fruit and vegetable intake	-0.4 (-7.1,6.4)	-9.3 (-15.9,-2.9)	3.6 (-3.1,10.3)	0.059	0.414	0.006
Smoker	4.2 (-4.3,12.6)	-0.7 (-8.9,7.4)	14.9 (6.6,23.3)	0.410	0.076	0.009
Overweight	-7.4 (-13.9,-0.9)	-0.2 (-6.4,6.1)	5.6 (-0.8,12.0)	0.110	0.005	0.201
Central obesity	-4.4 (-11.8,3.1)	-10.5 (-17.7,-3.4)	-8.3 (-15.7,-0.9)	0.240	0.459	0.671
Hypertension	-4.4 (-14.7,5.9)	-9.3 (-19.3,0.7)	-0.9 (-11.1,9.3)	0.505	0.638	0.252
Hypercholesterolemia	-6.8 (-15.1,9)	-2.0 (-10.2,6.2)	3.2 (-5.1,11.6)	0.443	0.105	0.380
Diabetes risk	-10.7 (-20.4,-1.0)	6.7 (-2.7,16.1)	0.2 (-9.5,9.8)	0.011	0.117	0.341
Number of risk factors: $\geq 3$	-14.9 (-24.4,-5.5)	-5.3 (-14.4,3.9)	4.9 (-4.4,14.3)	0.110	0.003	0.125

### **Adverse events**

No adverse events.