Participant flow


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                    ┌─────────────────────────────────────────┐
                    │   SGA prescreening phase in the hospital  │
                    │            Couples n = 270                │
                    └─────────────────────────────────────────┘
                                      │
                    ┌─────────────────────────────────────────┐
                    │        Expectant couples who              │
                    │      attendend the screening visit        │
                    │            Couples n = 78                 │
                    └─────────────────────────────────────────┘
                                      │            Refuse to participate due to
                                      │            incompatibility with work/
                                      │            address or other reasons:
                                      │                 Couples n = 23
                    ┌─────────────────────────────────────────┐
                    │  Baseline of expectant couples who were   │
                    │              randomized                   │
                    │            Couples n = 55                 │
                    └─────────────────────────────────────────┘
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HRP&BP
Couples n = 27
Babies n = 27

Usual care
Couples n = 28
Babies n = 28

Mothers
T1 n = 27

Fathers
T1 n = 27

Babies
T1 n = 27

Drop out:
Stillbirth n = 4
Neonatal death n = 1
AGA Babies n = 1
Fathers due to
incompatibilities n = 5

Mothers
T1 n = 28

Fathers
T1 n = 28

Babies
T1 n = 28

Drop out:
Stillbirth n = 4
AGA Babies n = 6
Fathers due to
incompatibilities n = 3

Drop out:
Mothers and their
babies n = 3
Fathers due to
incompatibilities n = 2

Mothers
T2 n = 21 (77.8%)

Fathers
T2 n = 16 (59.3%)

Babies
T2 n = 21 (77.8%)

Mothers
T2 n = 18 (64.3%)

Fathers
T2 n = 15 (53.8%)

Babies
T2 n = 18 (64.3%)

Mothers
T3 n = 19 (90.5%)

Fathers
T3 n = 15 (93.7 %)

Babies
T3 n = 19 (90.5%)

Mothers
T3 n = 18 (100%)

Fathers
T3 n = 15 (100%)

Babies
T3 n = 18 (100%)
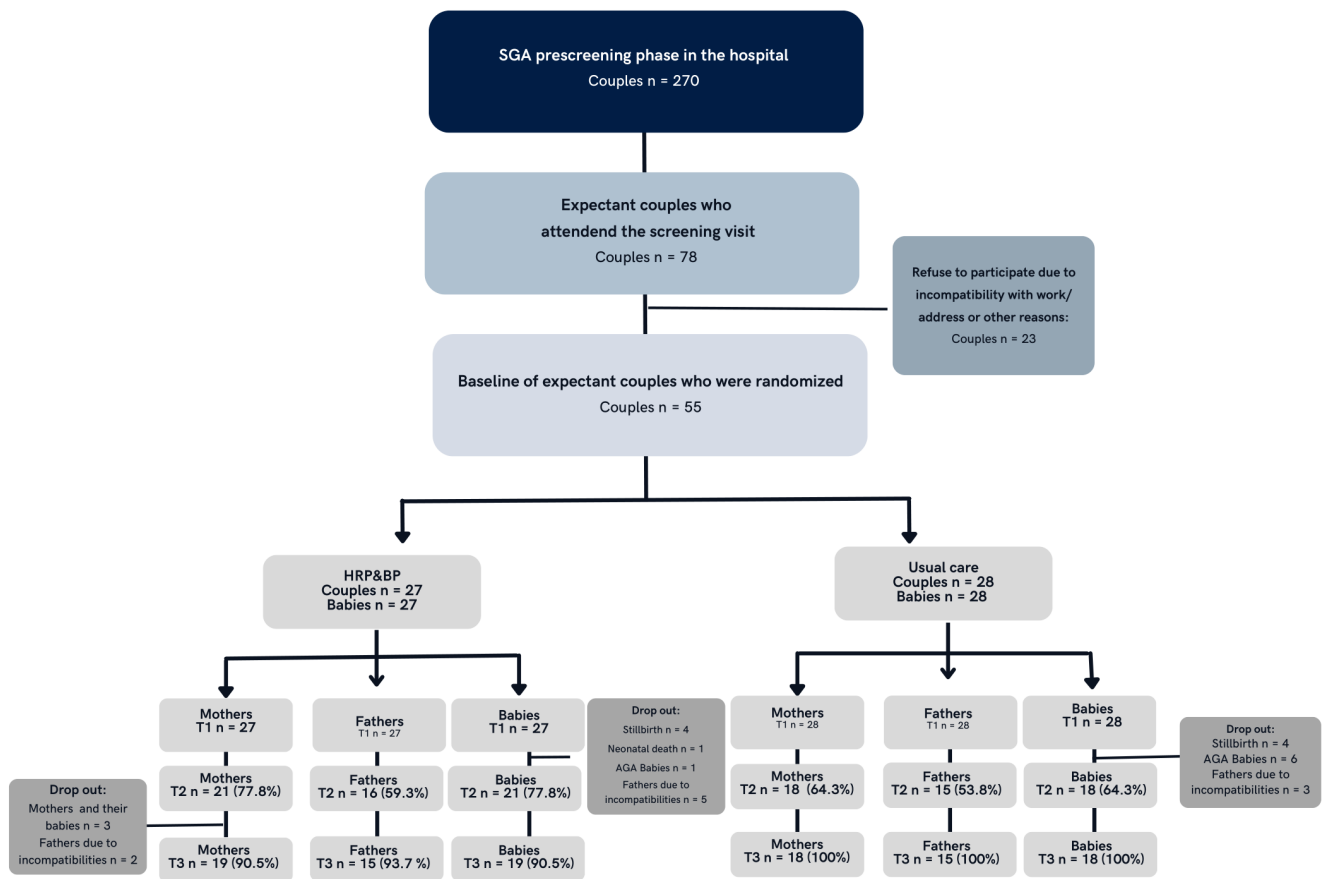
Nota: High-Risk Pregnancy and Baby Parenting programme = HRP&BP programme supported by two mobile phone apps (CAREpregnancy and CAREparenting)

Baseline characteristics

Table 2. Sociodemographic characteristics (mothers and fathers), pregnancy and perinatal outcomes.

	HRP&BP Programme N=27	Usual care N=28	p
Maternal age (years)	32.11 (5.85)	29.89 (5.42)	0.08
Paternal age (years)	32.70 (6.67)	32.11 (7.34)	0.38
Maternal education			
Primary school	8 (29.6)	9 (32.1)	0.79
High school	7 (25.9)	9 (32.1)	
College/university	12 (44.5)	10 (35.8)	
Paternal education			
Primary school	6 (22.2)	6 (21.4)	0.98
High school	13 (48.1)	13 (46.5)	
College/university	8 (29.7)	9 (32.1)	
Pregnancy risk			
PRM	0 (0)	1 (3.6)	0.11
SGA	23 (85.2)	18 (64.3)	
PRM + SGA	4 (14.8)	9 (32.1)	
Miscarriage	0.22 (0.50)	0.29 (0.71)	0.35
Primiparous			
Yes	20 (74.1)	16 (57.1)	0.18
No	7 (25.9)	12 (42.9)	
Gestational age at delivery (weeks)	37.29 (2.36)	37.28 (2.32)	0.49
Birth weight (grams)	2234 (523)	2272 (518)	0.39
Risk to baby			
Still birth	5 (18.5)	2 (7.1)	0.24
Risk-free	1 (3.7)	3 (10.7)	
Premature	0	3 (10.7)	
SGA	17 (63.0)	15 (53.6)	
SGA + premature	4 (14.8)	5 (17.9)	
Hospitalisation (days)	8.25 (7.70)	11.50 (7.29)	0.20
Gender of baby			
Male	16 (59.3)	14 (50.0)	0.49
Female	11 (40.7)	14 (50.0)	

Data are given as n (%), mean (SD). P-values were calculated using Student's t-test and Pearson's chi-square test. p programme vs. Usual care. PRM, Premature rupture of membranes. SGA, Small for gestational age

Outcome measures

1. RM-GLM results for differences at T1, T2 and T3 by treatment (programme vs. usual care) with respect to maternal depression, perceived stress, anxiety and resilience.

HRP&BP programme vs. Usual care Mothers	Measures	Mean (SD)	F	p	Power	$\eta^2_{partial}$
	Depression at T1	8.32 (4.19) / 11.63 (2.94)	17.81	**<0.001**	1.00	0.33
	Depression at T2	5.95 (3.04) / 7.56 (4.47)				
	Depression at T3	5.91 (3.16) / 7.38 (3.98)				
	Depres. Time*treatment	6.72 (0.61) / 8.85 (0.72)	4.93	**0.03**	0.58	0.12
	Perceived stress T1	18.93 (7.08) / 17.45 (11.19)	9.79	**<0.001**	0.98	0.23
	Perceived stress T2	10.93 (4.85) / 16.20 (6.23)				
	Perceived stress T3	13.14 (6.71) / 14.90 (7.45)				
	Stress Time*treatment	15.17 (1.31) / 17.50 (1.08)	0.63	0.43	0.12	0.02
	Anxiety T1	1.19 (0.25) / 1.22 (0.53)	18.24	**<0.001**	1.00	0.40
	Anxiety T2	0.70 (0.42) / 0.79 (0.53)				
	Anxiety T3	0.59 (0.39) / 0.73 (0.50)				
	Anxiety Time*treatment	0.82 (0.11) /0.91 (0.08)	0.39	0.53	0.09	0.01
	Resilience T1	32.17 (6.08) / 26.58(5.24)	9.09	**0.005**	0.83	0.24
	Resilience T2	34.75 (4.84) / 28.58 (6.01)				
	Resilience T3	36.00 (3.56) / 27.21 (5.72)				
	Resilience Time*treatment	34.30 (1.43) / 27.45 (1.13)	14.007	**<0.001**	0.95	0.33

2. RM-GLM results for differences at T1, T2 and T3 by treatment (programme vs. Usual care) with respect to paternal depression, perceived stress, anxiety and resilience.

HRP&BP Programme vs. Usual care Mothers	Measures	Mean (SD)	F	p	Power	$\eta^2_{partial}$
	Depression at T1	8.13 (4.38) / 7.00 (3.64)	13.30	**<0.001**	0.99	0.03
	Depression at T2	3.87 (1.95) / 6.40 (4.58)				
	Depression at T3	3.73 (1.66) / 4.93 (3.77)				
	Depres. Time*treatment	5.24 (0.67) / 6.11 (0.67)	0.83	0.36	0.14	0.07
	Perceived stress T1	15.75 (7.79) / 17.47 (8.79)	16.95	**<0.001**	1.00	0.40
	Perceived stress T2	12.92 (4.88) / 12.87 (7.26)				
	Perceived stress T3	10.00 (4.28) / 11.80 (6.57)				
	Stress Time*treatment	15.17 (1.31) / 17.50 (1.08)	3.65	**0.04**	0.32	0.06
	Anxiety T1	0.10 (0.01) / 0.15 (0.01)	2.02	0.19	0.30	0.33
	Anxiety T2	0.20 (0.05) / 0.67 (0.83)				
	Anxiety T3	0.20 (0.00) / 0.50 (0.00)				
	Anxiety Time*treatment	0.13 (0.29) / 0.39 (0.21)	0.50	0.51	0.09	0.11
	Resilience T1	32.42 (6.54) / 28.87 (6.86)	2.74	0.074	0.51	0.09
	Resilience T2	35.08 (2.96) / 28.87 (5.59)				
	Resilience T3	36.50 (2.39) / 28.93 (6.05)				
	Resilience Time*treatment	34.66 (1.37) / 28.88 (1.23)	9.79	**0.004**	0.85	0.28

3. RM-GLM results for differences at T2 and T3 by treatment (Programme vs. Usual care) in the babies' cognitive, language and motor skills

HRP&BP Programme vs. Usual care Mothers	Measures	Mean (SD)	F	p	Power	$\eta^2_{partial}$
	Cognitive T2	29.62 (2.56) / 28.05 (3.04)	824.00	**<0.001**	1.00	0.96
	Cognitive T3	44.15 (1.34) / 41.26 (3.03)				
	Cognitive Time*treatment	36.88 (0.64) / 34.65 (0.53)	7.06	**0.013**	0.73	0.19
	Receptive language T2	11.23 (1.01) / 10.05 (1.07)	499.4	**<0.001**	1.00	0.94
	Receptive language T3	16.5 (1.12) / 14.00 (0.81)				
	Receptive language Time*treatment	13.88 (0.22) / 912.02 (0.18)	39.36	**<0.001**	1.00	0.56
	Expressive language T2	9.08 (1,49) / 6.53 (0.77)	439.5	**<0.001**	1.00	0.93
	Expressive language T3	15.54 (0.96) / 12.37 (1.67)				
	Expresive language Time*treatment	12.30 (0.27) / 9.44 (0.22)	63.75	**<0.001**	1.00	0.68
	Gross motor skills T2	31.31 (6.30) / 28.05 (2.87)	71.82	**<0.001**	1.00	0.70
	Gross motor skills T3	41.69 (7.64) / 44.42 (1.38)				
	Gross motor Time*treatment	36.5 (0.51) / 36.2 (0.42)	0.15	0.69	0.06	0.005
	Fine motor skills T2	21.38 (3.94) / 18.63 (2.38)	328.3	**<0.001**	1.00	0.86
	Fine motor skills T3	28.31 (3.03) / 27.21 (1.58)				
	Fine motor skills Time*treatment	24.84 (0.46) / 22.92 (0.38)	10.11	**0.003**	0.86	0.25

Note. Direct scores are presented for all measures, except the Total Language and Total Motor Skills composite measures, for which the percentile score is given.

Adverse events

Incidence of adverse events

Adverse event	HRP&BP programme group	Usual care group
Misdiagnosis (finally the fetus was not SGA or IGR at birth)	1	6
Stillbirth and neonatal death	5	4
The operating system version of the mobile phones wasn't compatible with the APP	5	0
Couples with iPhone who had to use a device different from their personal mobile phone, because because the APP was in iOS version	9	0
Couples who came from other regions, due to their pregnancy severity, had difficulties to maintain the postnatal follow-up throughout T1, T2 and T3 because of the distance	3	8
Fathers had problems attending the assessment sessions because have not paternity leave or once their paternity leave was over	7	3