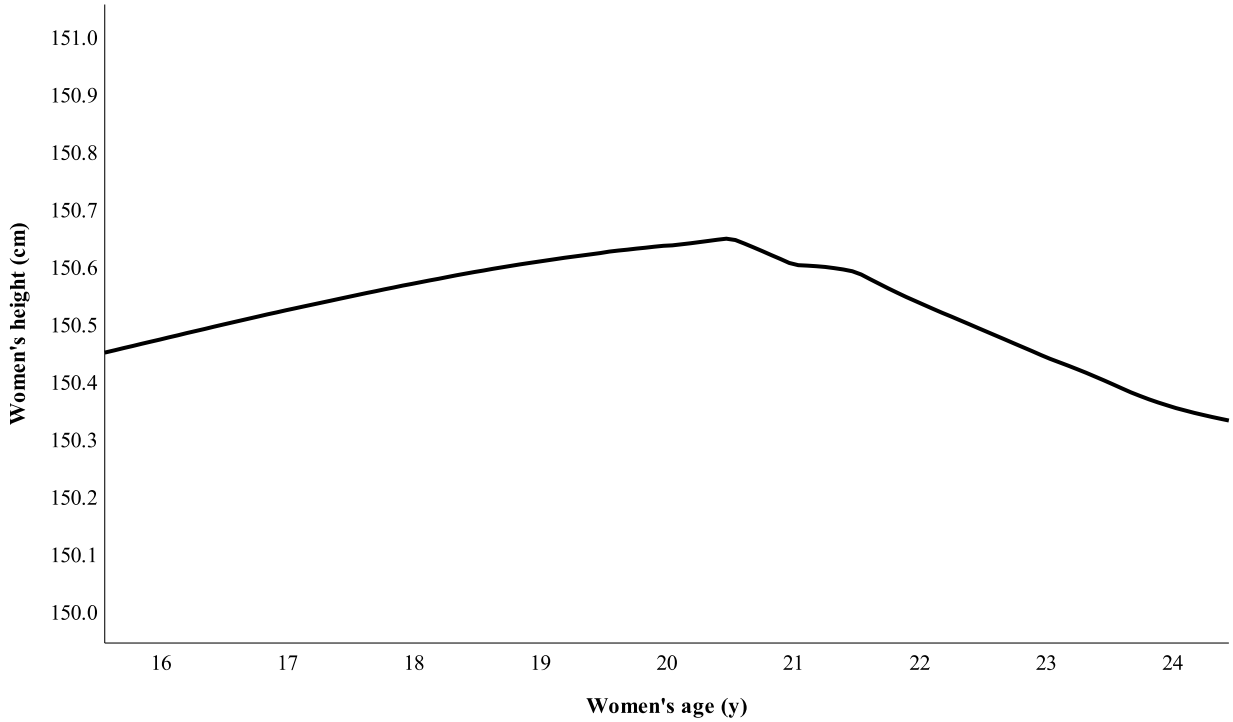
Independent associations of women's age at marriage and first pregnancy with their height in rural lowland Nepal

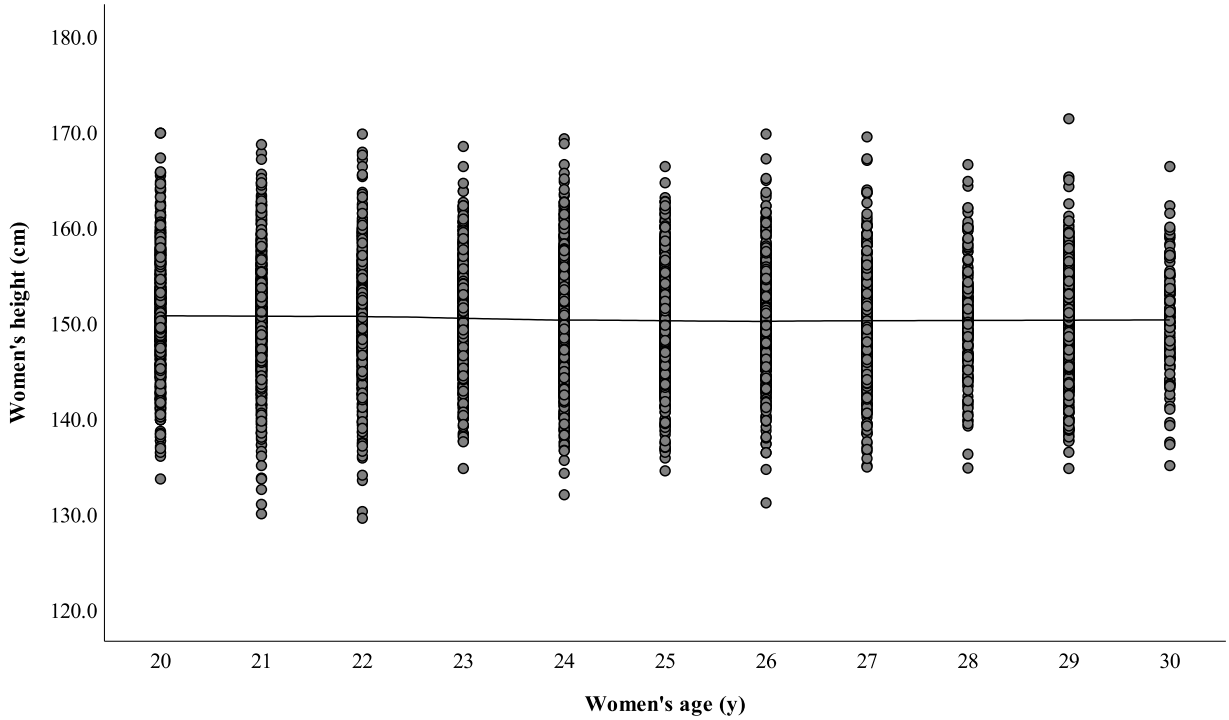
Supporting Information

Supplementary Figure S1. Loess scatterplot smoothers exploring the association of height and age for women aged 14-30 years (*N*=11,562)*



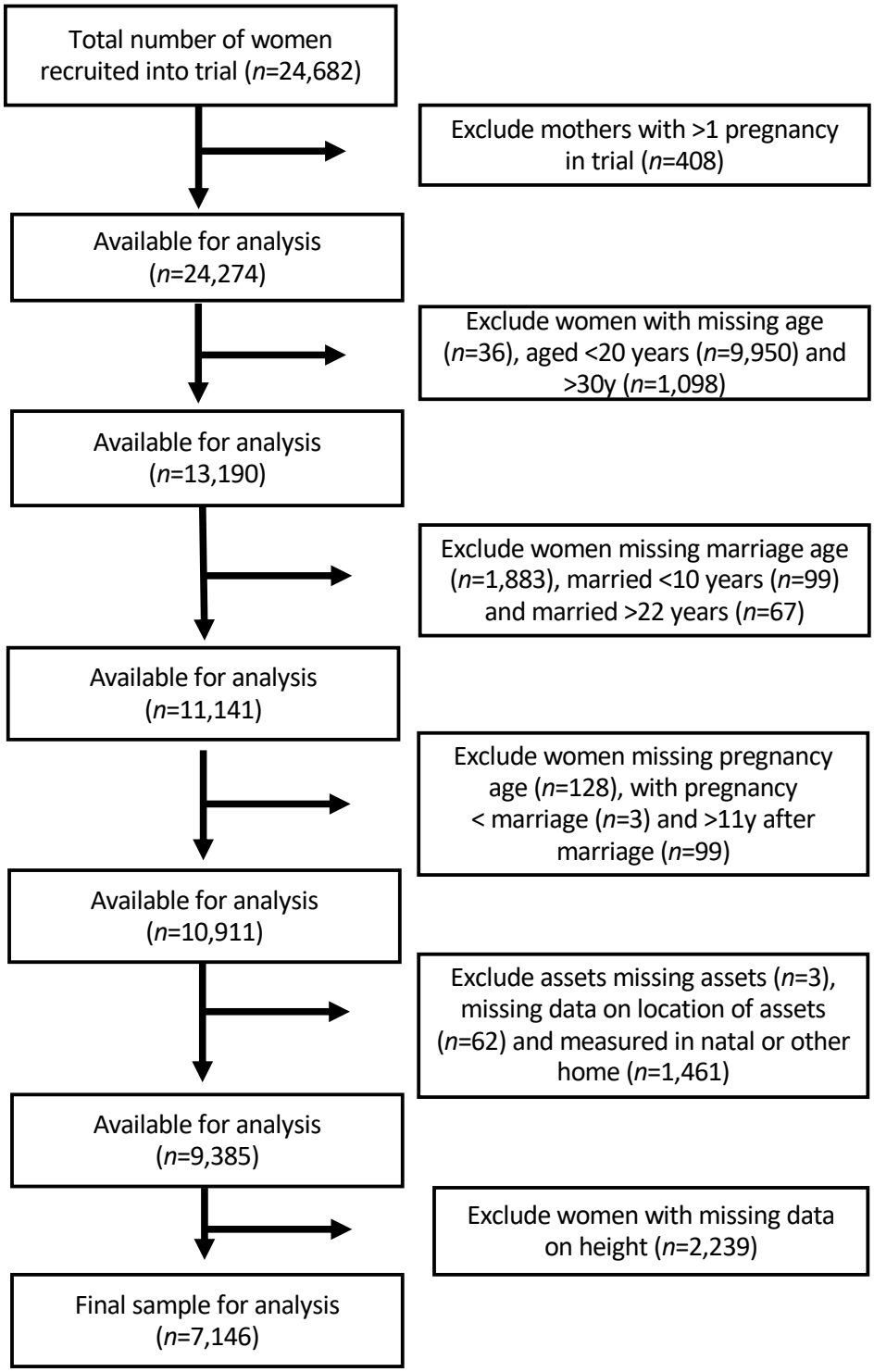
*Scale on graph has been adjusted to 16-24 years only in order to emphasise the age at which height shows an age-associated inflexion in this population. Line represents loess scatterplot smoothers fitted to explore associations between women's height and age.

Supplementary Figure S2. Loess scatterplot smoothers showing the association of height and age for women aged 20-30 years is linear (*N*=7,146)*



*Line represents loess scatterplot smoothers fitted to explore associations between women's height and age. There was a weak linear association between women's age and height (β -0.07 (95% CI -0.12, -0.03).

Supplementary Figure S3. Sample selection



Supplementary Table S1. Differences between women with missing and available data on height for women aged 20-30 years

	Missing data on height (*n*=2,239)		*Available data on height* (*n*=7,146)		
	Median	**IQR**	**Median**	**IQR**	***p*-value**
Women's age (y)	23	4	23	4	0.007
Women's age at marriage (y)	15	3	15	3	<0.001
Women's age at first pregnancy (y)	18	4	17	3	<0.001
Women's education (y)	0	5	0	4	0.374
Husbands' education (y)	0	8	0	8	0.187
Marital household asset score	-0.31	2.6	-0.41	2.4	0.673

IQR, Interquartile range. Difference between missing and available data on height by non-parametric K samples analysis of variance (Kruskal-Wallis test).

Supplementary Table S2. Models of factors associated with women's height, supporting 3D plots illustrated in Figures 1a-d (tested by linear regression)

Figure 1a: (*N*=7,146), (Adjusted R^2=0.016)	***β (95% CI)***	***p*-value**
Women's marriage age (y): ≥18y	Reference	
10-14 years	-0.69 (-1.44, 0.07)	0.074
15 years	-0.60 (-1.27, 0.07)	0.078
16 years	-0.24 (-0.85, 0.37)	0.444
17 years	-0.33 (-0.87, 0.20)	0.222
Husbands' education (y): uneducated	Reference	
1-5 years	0.31 (-0.11, 0.73)	0.150
6-8 years	0.67 (0.17, 1.17)	0.008
≥9 years	1.27 (0.63, 1.91)	<0.001
Interaction, women's marriage age and husbands' education	0.03 (-0.04, 0.10)	0.466
Constant	-0.06 (-0.78, 0.66)	0.871
Figure 1b: (*N*=7,146), (Adjusted R^2=0.017)	***β (95% CI)***	***p*-value**
Women's marriage age (y): ≥18y	Reference	
10-14 years	-1.00 (-1.91, -0.10)	0.030
15 years	-0.81 (-1.57, -0.05)	0.036
16 years	-0.40 (-1.05, 0.25)	0.227
17 years	-0.44 (-0.98, 0.10)	0.112
Marital household assets: First quartile (poorest)	Reference	
Second quartile	0.81 (0.42, 1.20)	<0.001
Third quartile	1.02 (0.52, 1.52)	<0.001
Fourth quartile (richest)	1.66 (1.00, 2.32)	<0.001
Interaction, women's marriage age and marital household assets	0.01 (-0.07,0.08)	0.911
Constant	-0.20 (-1.05, 0.65)	0.648
Figure 1c: (*N*=7,146), (Adjusted R^2=0.017)	***β (95% CI)***	***p*-value**
Women's education (y): uneducated	Reference	
1-5 years	0.90 (0.38, 1.42)	<0.001
6-8 years	1.37 (0.48, 2.27)	0.003
≥9 years	2.20 (0.78, 3.61)	0.002
Husbands' education (y): uneducated	Reference	
1-5 years	0.38 (-0.03, 0.80)	0.072
6-8 years	0.83 (0.32, 1.34)	0.002
≥9 years	1.55 (0.77, 2.33)	<0.001
Interaction, women's education and husbands' education	-0.11 (-0.25, 0.03)	0.116
Constant	-0.49 (-0.70, -0.28)	<0.001
Figure 1d: (*N*=7,146), (Adjusted R^2=0.020)	***β (95% CI)***	***p*-value**
Women's education (y): uneducated	Reference	
1-5 years	0.99 (0.45, 1.53)	<0.001
6-8 years	1.53 (0.61, 2.45)	<0.001
≥9 years	2.38 (0.99, 3.76)	<0.001
Marital household assets: First quartile (poorest)	Reference	
Second quartile	0.84 (0.46, 1.22)	<0.001
Third quartile	1.10 (0.62, 1.58)	<0.001
Fourth quartile (richest)	1.78 (1.06, 2.49)	<0.001
Interaction, women's education and marital household assets	-0.11 (-0.24, 0.03)	0.120
Constant	-0.92 (-1.19, -0.66)	<0.001

N, number. CI Confidence Interval. *β (95% CI)* are height differences in cm. Women's height has been standardized for their age by taking the residuals from a regression of height as the dependent variable against age as the independent variable.