

**Revisiting the J shaped curve, exploring the association between cardiovascular risk factors and concurrent depressive symptoms in patients with cardiometabolic disease: Findings from a large cross-sectional study.**

**Supplement 1 - Additional Analysis**

**Table 1 Title: Comparison of demographic characteristics and distribution of clinical risk factors between total population (n=125143) with the subset which underwent depression screening (n=35537)**

<i>Mean (SD) and median (IQR) are presented for continuous variables and count (%) for categorical.</i>			
		Total Population n=125143	Screened Population n=35537
<b>Age (years)</b>	18-64	47711 (38.13%)	11553 (32.52%)
	65-90	77390 (62.87%)	23973 (67.48%)
	missing	42	11
<b>Sex</b>	Female	57566 (46.03%)	14861 (41.84%)
	Male	67507 (53.97%)	20658 (58.16%)
	missing	70	18
<b>Socio-economic status</b>	Deprived	82267 (67.46%)	22726 (65.30%)
	Affluent	39680 (33.54%)	12079 (34.70%)
	missing	3196	732
<b>Comorbid Condition</b>	One	101219 (80.88%)	27356 (76.99%)
	Two	21666 (17.32%)	7410 (20.85%)
	Three	2258 (1.80%)	771 (2.16%)
	missing	0	0
<b>Systolic Blood Pressure</b>	Mean (SD)	133.9 (18.30)	133 (17.54)
	Median (IQR)	133 (23)	132 (22)
	missing		
<b>Diastolic Blood Pressure</b>	Mean (SD)	75.57 (10.74)	74.57 (10.32)
	Median (IQR)	76 (11)	75 (11)
	missing		
<b>Body Mass Index</b>	Mean (SD)	29.06 (6.22)	28.95 (6.02)
	Median (IQR)	28.26 (7.37)	28.09 (7.10)
	missing		
<b>Total Cholesterol</b>	Mean (SD)	4.43 (1.12)	4.31 (1.05)
	Median (IQR)	4.30 (1.3)	4.2 (1.2)
	missing		
<b>HbA1c</b>	Mean (SD)	7.72 (1.82)	7.52 (1.68)
	Median (IQR)	7.30 (2.2)	7.1 (1.8)
	missing		

**Systolic Blood Pressure (SBP)-Additional Analysis**

**Table 2: Title: Comparison of results of multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D>7) with and without extreme values for Systolic Blood Pressure.** Legend: SBP: Systolic Blood Pressure. Regression 1a shows the regression of analyzed data after excluding extreme values for SBP (SBP <90 mm Hg and SBP >240 mm Hg). Regression 1b shows results of data including extreme values.

Variable	Regression 1a- Analyzed Data without extreme values N=32029		Regression 1b- All available data including extreme values N=32139	
	Odds Ratio with 95% Confidence Interval	p-value	Odds Ratio with 95% Confidence Interval	p-value
<b>SBP</b>	0.96 (0.94-0.97)	<0.001	0.96 (0.94-0.97)	<0.001
<b>SBP ^2</b>	1.00013 (1.00008-1.00018)	<0.001	1.00013 (1.00008-1.00018)	<0.001
<b>Age Group(65-90)</b>	0.57 (0.53-0.60)	<0.001	0.57 (0.53-0.60)	<0.001
<b>Sex (Male)</b>	0.82 (0.77-0.87)	<0.001	0.82 (0.77-0.87)	<0.001
<b>Deprivation Status (Affluent)</b>	0.50 (0.46-0.53)	<0.001	0.50 (0.46-0.53)	<0.001
<b>Co-morbid Conditions</b>				
<b>Two</b>	1.45 (1.36-1.56)	<0.001	1.45 (1.36-1.55)	<0.001
<b>Three</b>	1.65 (1.37-1.94)	<0.001	1.65 (1.38-1.96)	<0.001

**Table 3: Title: Statistical significance of interaction between Systolic Blood Pressure and various demographic factors in multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D >7).** Legend: SBP: Systolic Blood Pressure

	Regression 1a- Analyzed Data without extreme values N=32029
<b>Interaction</b>	p-value
<b>SBP: Age Group</b>	0.42
<b>SBP: Deprivation Status</b>	0.06
<b>SBP: Sex</b>	0.12
<b>SBP: Co-morbid Condition</b>	
<b>Two</b>	0.67
<b>Three</b>	0.70

**Diastolic Blood Pressure (DBP)-Additional Analysis**

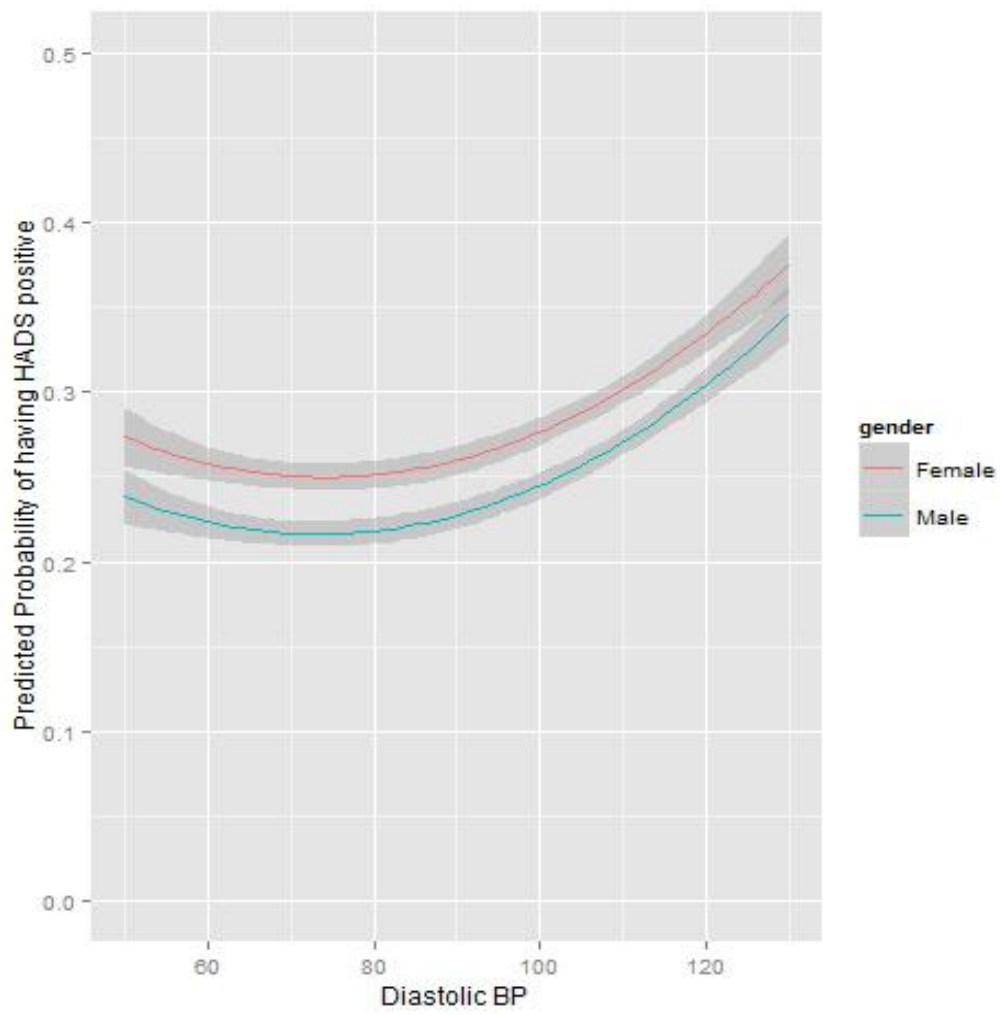
**Table 4: Title: Comparison of results of multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D>7) with and without extreme values for Diastolic Blood Pressure.** Legend: DBP: Diastolic Blood Pressure. Regression 2a shows the regression of analyzed data after excluding extreme values for DBP (SBP <50 mm Hg and SBP >130 mm Hg). Regression 2b shows results of data including extreme values.

Variable	Regression 2a- Analyzed Data without extreme values N=31972		Regression 2b- All available data including extreme values N=32139	
	Odds Ratio with 95% Confidence Interval	p-value	Odds Ratio with 95% Confidence Interval	p-value
<b>DBP</b>	0.95 (0.93-0.98)	0.001	0.96 (0.94-0.99)	0.005
<b>DBP ^2</b>	1.0002 (1.0001-1.0004)	0.001	1.0002 (1.00007-1.0003)	0.003
<b>Age Group(65-90)</b>	0.56 (0.53-0.60)	<0.001	0.56 (0.53-0.60)	<0.001
<b>Sex (Male)</b>	0.82 (0.77-0.87)	<0.001	0.82 (0.77-0.87)	<0.001
<b>Deprivation Status (Affluent)</b>	0.49 (0.46-0.53)	<0.001	0.50 (0.46-0.53)	<0.001
<b>Co-morbid Conditions</b>				
<b>Two</b>	1.46 (1.36-1.56)	<0.001	1.47 (1.37-1.57)	<0.001
<b>Three</b>	1.64 (1.38-1.95)	<0.001	1.64 (1.37-1.94)	<0.001

**Table 5: Title: Statistical significance of interaction between Diastolic Blood Pressure and various demographic factors in multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D >7).** Legend: DBP: Diastolic Blood Pressure

	Regression 2a- Analyzed Data without extreme values N=31972
<b>Interaction Term</b>	p-value
<b>DBP: Age Group</b>	0.23
<b>DBP: Deprivation Status</b>	0.85
<b>DBP: Sex</b>	<b>0.01 (Significant)</b>
<b>DBP: Co-morbid Condition</b>	
<b>Two</b>	0.55
<b>Three</b>	0.93

**Figure 1: Title: Relationship between Diastolic Blood Pressure (DBP) and probability of having HADS-D positive with 95% confidence intervals with sub-group analysis for males and females.**



**Total Cholesterol-Additional Analysis**

**Table 6: Title: Comparison of results of multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D>7) with and without extreme values for Total Cholesterol.**

Legend: Regression 3a shows the regression of analyzed data after excluding extreme values for Total Cholesterol (Total Cholesterol < 2 mmol/l and Total Cholesterol > 10 mmol/l). Regression 3b shows results of data including extreme values.

Variable	Regression 3a- Analyzed Data without extreme values N=31244		Regression 3b- All available data including extreme values N=31311	
	Odds Ratio with 95% Confidence Interval	p-value	Odds Ratio with 95% Confidence Interval	p-value
<b>Cholesterol</b>	0.79 (0.69-0.92)	0.008	0.88 (0.78-1.00)	0.06
<b>Cholesterol ^2</b>	1.03 (1.01-1.04)	0.002	1.019 (1.007-1.032)	0.003
<b>Age Group(65-90)</b>	0.57 (0.54-0.61)	<0.001	0.57 (0.54-0.61)	<0.001
<b>Sex (Male)</b>	0.85 (0.80-0.90)	<0.001	0.85 (0.80-0.90)	<0.001
<b>Deprivation Status (Affluent)</b>	0.50 (0.46-0.53)	<0.001	0.50 (0.46-0.53)	<0.001
<b>Co-morbid Conditions</b>				
<b>Two</b>	1.50 (1.40-1.60)	<0.001	1.50 (1.40-1.60)	<0.001
<b>Three</b>	1.74 (1.45-2.07)	<0.001	1.75 (1.46-2.09)	<0.001

**Table 7: Title: Statistical significance of interaction between Total Cholesterol and various demographic factors in multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D >7)**

Interaction Term	Regression 3a- Analyzed Data without extreme values N=31244
	p-value
<b>Cholesterol: Age Group</b>	0.22
<b>Cholesterol: Deprivation Status</b>	0.17
<b>Cholesterol: Sex</b>	0.65
<b>Cholesterol: Co-morbid Condition</b>	
<b>Two</b>	0.63
<b>Three</b>	0.95

**Body Mass Index-Additional Analysis**

**Table 8: Title: Comparison of results of multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D>7) with and without extreme values for Body Mass Index.**

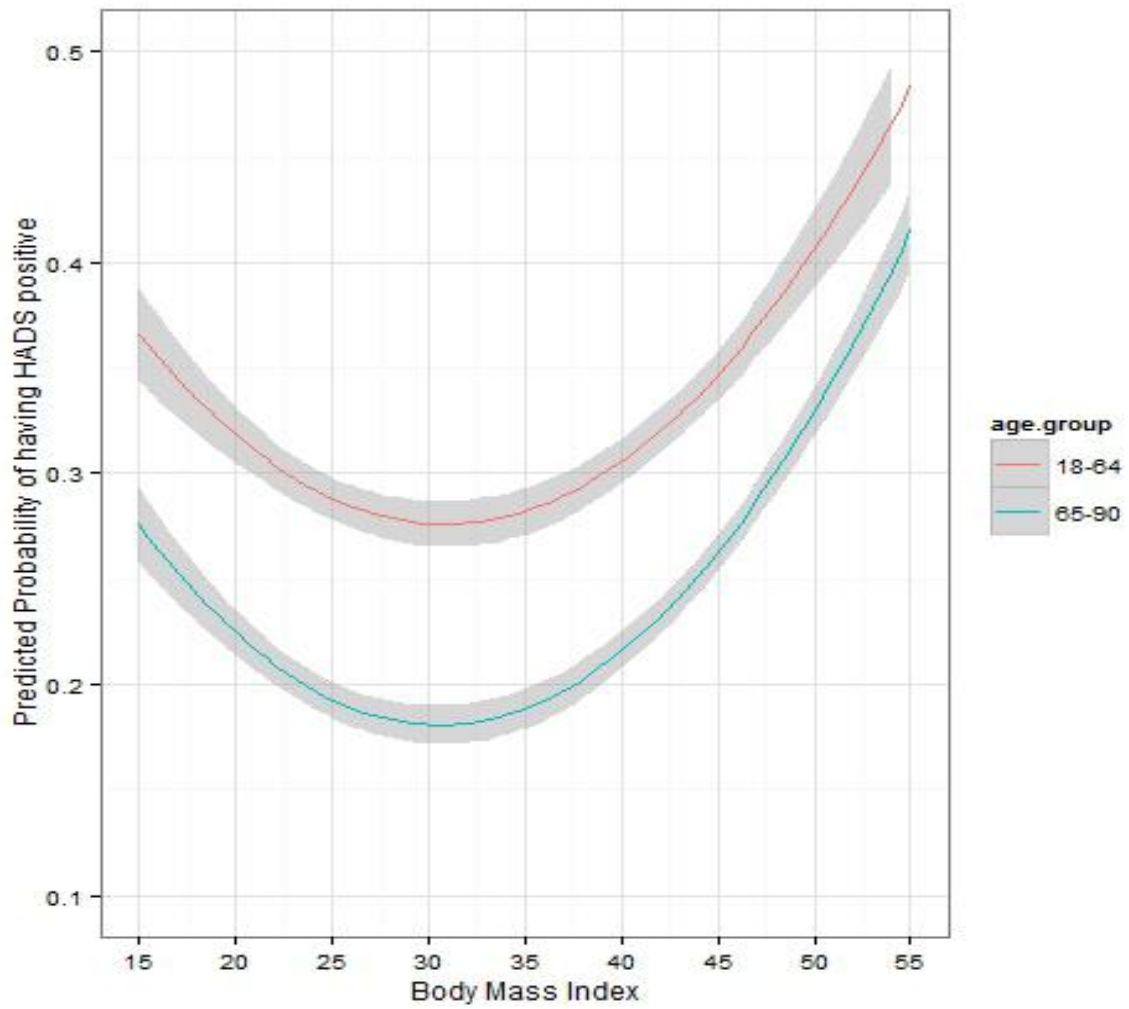
Legend: BMI: Body Mass Index. Regression 4a shows the regression of analyzed data after excluding extreme values for BMI (BMI < 15 kg/m<sup>2</sup> and BMI > 55 kg/m<sup>2</sup>). Regression 4b shows results of data including extreme values.

Variable	Regression 4a- Analyzed Data without extreme values N=30042		Regression 4b- All available data including extreme values N=30139	
	Odds Ratio with 95% Confidence Interval	p-value	Odds Ratio with 95% Confidence Interval	p-value
<b>BMI</b>	0.85 (0.82-0.88)	< 0.001	0.96 (0.94-0.98)	0.009
<b>BMI ^2</b>	1.002 (1.001-1.003)	< 0.001	1.0006 (1.00003-1.0009)	< 0.001
<b>Age Group(65-90)</b>	0.57 (0.53-0.61)	<0.001	0.56 (0.52-0.60)	<0.001
<b>Sex (Male)</b>	0.87 (0.82-0.92)	<0.001	0.85 (0.80-0.90)	<0.001
<b>Deprivation Status (Affluent)</b>	0.52 (0.48-0.55)	<0.001	0.52 (0.48-0.55)	<0.001
<b>Co-morbid Conditions</b>				
<b>Two</b>	1.50 (1.40-1.60)	<0.001	1.49 (1.39-1.60)	<0.001
<b>Three</b>	1.80 (1.51-2.13)	<0.001	1.78 (1.49-2.11)	<0.001

**Table 9: Title: Statistical significance of interaction between Body Mass Index and various demographic factors in multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D >7).** Legend: BMI: Body Mass Index

	Regression 4a- Analyzed Data without extreme values N=30042
<b>Interaction Term</b>	p-value
<b>BMI: Age Group</b>	<b>0.009 (Significant)</b>
<b>BMI: Deprivation Status</b>	0.13
<b>BMI: Sex</b>	0.07
<b>BMI: Co-morbid Condition</b>	
<b>Two</b>	0.06
<b>Three</b>	0.40

**Figure 2: Title: Relationship between Body Mass Index (BMI) and probability of having HADS-D positive with 95% confidence intervals with sub-group analysis for the two age-groups.**



**HbA1c-Additional Analysis**

**Table 10: Title: Comparison of results of multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D>7) with and without extreme values for HbA1c.** Legend: Regression 5a shows the regression of analyzed data after excluding extreme values for HbA1c (HbA1c < 3 DCCT and HbA1c>18 DCCT). Regression 5b shows results of data including extreme values.

Variable	Regression 5a- Analyzed Data without extreme values N=15676		Regression 5b- All available data including extreme values N=15678	
	Odds Ratio with 95% Confidence Interval	p-value	Odds Ratio with 95% Confidence Interval	p-value
<b>HbA1c</b>	0.82 (0.70-0.95)	0.01	0.82 (0.71-0.96)	0.01
<b>HbA1c^2</b>	1.014 (1.005-1.022)	0.001	1.014 (1.005-1.022)	0.001
<b>Age Group(65-90)</b>	0.58 (0.53-0.63)	<0.001	0.58 (0.53-0.63)	<0.001
<b>Sex (Male)</b>	0.82 (0.76-0.89)	<0.001	0.82 (0.76-0.89)	<0.001
<b>Deprivation Status (Affluent)</b>	0.52 (0.48-0.58)	<0.001	0.52 (0.48-0.58)	<0.001
<b>Co-morbid Conditions</b>				
<b>Two</b>	1.68 (1.40-1.60)	<0.001	1.68 (1.40-1.60)	<0.001
<b>Three</b>	1.99 (1.51-2.13)	<0.001	1.99 (1.51-2.13)	<0.001

**Table 11: Title: Statistical significance of interaction between Body Mass Index and various demographic factors in multiple logistic regression for outcome of concurrent depressive symptoms (HADS-D >7).**

Interaction Term	Regression 5a- Analyzed Data without extreme values N=15676
	p-value
<b>HbA1c: Age Group</b>	0.28
<b>HbA1c: Deprivation Status</b>	0.22
<b>HbA1c: Sex</b>	0.08
<b>HbA1c: Co-morbid Condition</b>	
<b>Two</b>	0.45
<b>Three</b>	0.92