

Supplementary Table 1. Bivariate Analysis of the Association between Pain in Upper Body Regions and Independent Variables in Severely Obese Individuals (N = 150)

Independent variable	Neck		Shoulder		Elbow		Wrist/hands		Upper back	
	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value
Sex		0.767		0.255		-		0.102		0.085
M	1		1		-		1		1	
F	1.32 (0.43-4.03)		1.89 (0.63-5.65)		-		3.09 (0.80-11.99)		2.23 (0.89-5.57)	
Age (yr)		0.128		0.113		0.336		0.390		0.829
≤ 39	1		1		1		1		1	
≥ 40	1.74 (0.85-3.53)		1.59 (0.90-2.83)		1.91 (0.56-6.52)		1.27 (0.73-2.21)		0.95 (0.62-1.45)	
Skin color		0.398		0.2151		0.496		0.5814		0.151
White	1.41 (0.69-2.88)		1.44 (0.81-2.56)		1.51 (0.44-5.11)		1.18 (0.66-2.09)		1.36 (0.89-2.06)	
Brown and black	1		1		1		1		1	
Living with partner		0.499		0.392		0.747		0.459		0.596
No	1		1		1		1		1	
Yes	1.30 (0.60-2.80)		1.32 (0.70-2.47)		1.35 (0.36-5.03)		1.25 (0.69-2.28)		1.13 (0.72-1.76)	
Years of schooling		0.668		> 0.99		0.745		0.265		0.183
≤ 10	1.17 (0.58-2.36)		1 (0.56- 1.77)		0.67 (0.20-2.28)		1.37 (0.78- 2.41)		1.33 (0.87-2.04)	
≥ 11	1		1		1		1		1	
Economic class		0.585		0.091		-		0.263		0.127
A-B	1		1		-		1		1	
C	1.11 (0.43-2.82)		2.13 (0.79-5.72)		-		1.85 (0.77-4.45)		1.66 (0.86-3.22)	
D-E	1.70 (0.58-4.95)		3.19 (1.11-9.19)		-		2.27 (0.84-6.11)		2.12 (1.03-4.40)	
Occupation		0.897		0.836		0.512		0.717		0.924
Formal worker	1.17 (0.49-2.80)		1.23 (0.61-2.49)		1.73 (0.44-6.91)		0.88 (0.43-1.78)		0.99 (0.59-1.65)	
Informal worker/ freelance	1		1		1		1		1	
Retired/domestic worker and others ^a	1.22 (0.51-2.91)		1.18 (0.57-2.43)		0.72 (0.12-4.16)		1.17 (0.61- 2.23)		1.08 (0.66-1.79)	
Smoking status		0.488		0.759		0.296		0.523		0.323
No	1		1		1		1		1	
Yes, former or current smoker	1.29 (0.63-2.63)		0.91 (0.48-1.69)		2.06 (0.62-6.81)		1.20 (0.68-2.12)		1.24 (0.81-1.88)	
Binge drinking		0.261		0.893		0.473		0.964		0.460
No	1		1		1		1		1	
Yes	0.59 (0.24-1.47)		0.96 (0.50-1.81)		1.66 (0.49-5.61)		1.01 (0.55-1.86)		1.18 (0.76-1.82)	
Sedentary time (min/day)		0.004*		0.029*		0.745		0.072		0.429
Lower	3.94 (1.56-9.96)		1.97 (0.43-5.04)		1.48 (0.42-5.24)		1.69 (0.95-2.99)		1.18 (0.78-1.79)	
Higher	1		1		1		1		1	
Daily fruits intake		0.081		0.797		0.727		0.955		0.285
No	2.79 (0.88-8.81)		1.09 (0.56-2.12)		1.18 (0.23-3.14)		1.02 (0.54-1.90)		1.33 (0.79-2.26)	
Yes	1		1		1		1		1	
Daily vegetables intake		0.664		0.168		0.728		0.871		0.908
No	0.85 (0.40-1.80)		0.67 (0.37-1.187)		1.50 (0.33-6.83)		1.05 (0.56-1.97)		1.03 (0.64-1.65)	
Yes	1		1		1		1		1	
Family history of hypertension		> 0.99		0.074		> 0.99		0.563		0.129
No	1		1		1		1		1	
Yes	0.98 (0.33-2.93)		4.47 (0.65-30.79)		1.15 (0.15-8.59)		1.49 (0.51-4.34)		2.26 (0.79-6.46)	
Family history of diabetes		0.566		0.177		0.457		0.786		0.167
No	1		1		1		1		1	
Yes	0.80 (0.36-1.74)		1.82 (0.76-4.32)		2.64 (0.34- 20.23)		1.10 (0.56-2.17)		1.53 (0.84-2.80)	
Family history of depression		0.584		0.227		0.743		0.911		0.960
No	1		1		1		1		1	
Yes	1.22 (0.60-2.45)		1.41 (0.80-2.51)		1.41 (0.43-4.71)		1.03 (0.59-1.80)		0.99 (0.65-1.51)	
Fall in the last 12 mo		0.798		0.835		0.703		0.664		0.079
No	1		1		1		1		1	
Yes	1.11 (0.50-2.46)		0.93 (0.48-1.79)		1.35 (0.35-5.13)		0.87 (0.45-1.66)		1.45 (0.96-2.26)	
Fracture		0.673		> 0.99		0.715		0.854		0.163
No	1		1		1		1		1	
Yes	0.83 (0.36-1.94)		1 (0.53-1.88)		1.25 (0.32-4.77)		1.06 (0.58-1.92)		1.36 (0.88-2.11)	
Difficulty of sleeping or insomnia		0.675		0.927		0.179		0.144		0.634
No	1		1		1		1		1	
Yes	0.86 (0.41-1.77)		1.03 (0.58-1.81)		2.57 (0.66-9.89)		1.51 (0.87-2.63)		1.11 (0.73-1.68)	
Depression		0.058		0.024*		0.747		0.032*		0.129
No	1		1		1		1		1	
Yes	2.43 (0.97-6.10)		2.40 (1.1-5.12)		1.35 (0.36-5.03)		2.17 (1.07-4.41)		1.45 (0.89-2.33)	
Anxiety		0.072		0.058		0.287		0.019*		0.398
No	1		1		1		1		1	
Yes	2.88 (0.91-9.13)		2.33 (0.97-5.60)		3.39 (0.44-26.07)		3.20 (1.21-8.48)		1.24 (0.75-2.07)	

Supplementary Table 1. Continued

Independent variable	Neck		Shoulder		Elbow		Wrist/hands		Upper back	
	PR (95% CI)	<i>P</i> value	PR (95% CI)	<i>P</i> value	PR (95% CI)	<i>P</i> value	PR (95% CI)	<i>P</i> value	PR (95% CI)	<i>P</i> value
Arthritis/arthrosis		0.065		0.037*		0.037*		0.019*		0.659
No	1		1		1		1		1	
Yes	1.95 (0.96-3.97)		1.84 (1.04-3.27)		3.69 (1.13-12.00)		1.92 (1.11-3.31)		1.11 (0.68-1.81)	
Type 2 diabetes		0.117		0.815		> 0.99		0.068		0.836
No	1		1		1		1		1	
Yes	1.75 (0.87-3.53)		1.07 (0.60-1.91)		1 (0.29-3.41)		1.67 (0.96-2.88)		1.05 (0.68-1.59)	
Edema in lower limbs		0.116		0.225		-		0.005*		0.020*
No	1		1		-		1		1	
Yes	2.51 (0.79-7.91)		1.64 (0.74-3.63)		-		3.82 (1.24-11.74)		2.29 (1.14-4.62)	
Use of analgesics		0.499		0.656		0.750		0.109		0.254
No	1		1		1		1		1	
Yes	1.27 (0.63-2.56)		1.14 (0.64-2.02)		1.27 (0.38-4.23)		1.57 (0.90-2.74)		1.27 (0.84-1.93)	
Use of NSAIDs		0.632		0.785		0.243		0.334		0.707
No	1		1		1		1		1	
Yes	1.21 (0.55-2.65)		1.10 (0.57-2.11)		2.19 (0.65-7.35)		1.34 (0.74-2.42)		1.10 (0.68-1.76)	
Use of statin		0.072		0.704		-		> 0.99		> 0.99
No	1		1		-		1		1	
Yes	2.55 (0.88-7.39)		1.27 (0.47-3.45)		-		0.78 (0.22-2.78)		1.08 (0.49-2.38)	
Use of muscle relaxants		0.444		0.379		0.113		0.4066		0.585
No	1		1		1		1		1	
Yes	1.33 (0.64-2.74)		1.30 (0.72-2.35)		3.32 (0.72-15.18)		1.27 (0.72-2.24)		0.89 (0.59-1.34)	
Uric acid (mg/dL)		> 0.99		0.566		-		0.782		0.963
Adequate	1.11 (0.37-3.36)		1.60 (0.54-4.71)		-		1.23 (0.49-3.09)		1.02 (0.54-1.91)	
Inadequate	1		1		-		1		1	
Vitamin D		0.655		0.546		0.751		0.4618		0.816
Adequate	1		1		1		1		1	
Inadequate	0.84 (0.38-1.82)		0.82 (0.42-1.58)		0.76 (0.22-2.70)		1.27 (0.67-2.40)		1.06 (0.63-1.80)	
C-reactive protein (mg/dL)		0.894		0.651		0.284		0.151		0.333
Non-reagent	1.06 (0.48-2.33)		1.17 (0.59-2.27)		3.50 (0.45-26.97)		1.72 (0.82-3.61)		1.29 (0.77-2.14)	
Reagent	1		1		1		1		1	
Hemoglobin (g/dL)		> 0.99		0.119		> 0.99		> 0.99		0.836
Adequate	1.34 (0.35-5.15)		3.92 (0.57-26.76)		1.01 (0.13-7.46)		0.95 (0.39-2.32)		0.93 (0.48-1.80)	
Inadequate	1		1		1		1		1	
Total cholesterol (mg/dL)		0.692		0.732		0.184		0.731		0.763
Adequate	2.17 (0.32-14.77)		1.48 (0.40-5.44)		0.35 (0.08-1.46)		1.57 (0.43-5.74)		0.89 (0.44-1.80)	
Inadequate	1		1		1		1		1	
HDL (mg/dL)		> 0.99		0.356		> 0.99		> 0.99		0.131
Adequate	0.75 (0.19-2.88)		1.45 (0.66-3.17)		1 (0.13-7.41)		1.06 (0.43-2.58)		1.5 (0.88-2.54)	
Inadequate	1		1		1		1		1	
LDL (mg/dL)		> 0.99		> 0.99		-		-		0.728
Adequate	1.57 (0.24-10.36)		1.08 (0.30-3.80)		-		-		0.83 (0.39-1.79)	
Inadequate	1		1		-		-		1	
Body mass index (kg/m ²)		0.836		0.258		> 0.99		0.560		0.438
35.0-39.9	1		1		1		1		1	
40.0-49.9	0.89 (0.36-2.22)		0.63 (0.32-1.21)		1.78 (0.22-14.24)		1.19 (0.55-2.59)		1.49 (0.75-2.94)	
> 50	0.73 (0.25-2.16)		0.54 (0.24-1.22)		1.83 (0.20-16.76)		0.81 (0.32-2.08)		1.22 (0.57-2.61)	
Total fat %		0.798		0.616		0.460		0.983		0.013*
1 tercile	0.95 (0.37-2.44)		1.18 (0.52-2.67)		0.95 (0.14-6.44)		1.04 (0.50-2.16)		1.03 (0.52-2.05)	
2 tercile	1		1		1		1		1	
3 tercile	1.25 (0.519-3.01)		1.46 (0.67-3.16)		2.43 (0.50-11.83)		1.07 (0.52-2.21)		1.94 (1.11-3.41)	

Wald's test for all *P* values, except when frequencies were smaller than five in each case, Fisher's exact test was used. Economic class "Gross average family income in the month in R \$ per class": A-B = > 3,118, C = 896 to 3,117, D-E = ≤ 895.

PR: prevalence ratio, CI: confidence interval, NSAIDs: non-steroidal anti-inflammatory drugs, HDL: high-density lipoprotein, LDL: low-density lipoprotein.

*Others include: student, rural worker, unemployed, leaning, pensioner, beneficiary of illness aid.

*Significant association (*P* < 0.05).

Supplementary Table 2. Bivariate Analysis of the Association between Pain in Lower Body Regions and Independent Variables in Severely Obese Individuals (N = 150)

Independent variable	Lower back		Hip		Knee		Ankle/feet	
	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value
Sex		0.334		0.161		0.147		0.1442
M	1		1		1		1	
F	1.30 (0.76-2.21)		2.18 (0.73-6.46)		1.69 (0.83-3.44)		1.43 (0.89-2.30)	
Age (yr)		0.774		0.031*		0.642		0.294
≤ 39	1		1		1		1	
≥ 40	0.95 (0.70-1.31)		1.80 (1.05- 3.06)		1.09 (0.75-1.57)		1.14 (0.89-1.47)	
Skin color		0.373		0.167		0.4528		0.860
White	0.85 (0.58-1.22)		1.45 (0.86- 2.44)		1.16 (0.79-1.69)		1.02 (0.78-1.34)	
Brown and black	1		1		1		1	
Living with partner		0.937		0.453		0.455		0.972
No	1		1		1		1	
Yes	1.01 (0.73- 1.40)		0.82 (0.48-1.38)		0.87 (0.60-1.26)		1.00 (0.77-1.30)	
Years of schooling		0.871		0.206		0.869		0.615
≤ 10	1.02 (0.75-1.40)		1.41 (0.83-2.41)		1.03 (0.71-1.49)		1.07 (0.83-1.37)	
≥ 11	1		1		1		1	
Economic class		0.272		0.008*		0.034*		0.190
A-B	1		1		1		1	
C	1.27 (0.81-1.98)		1.77 (0.73-4.29)		1.48 (0.83-2.62)		1.17 (0.82-1.67)	
D-E	1.52 (0.91-2.52)		3.4 (1.37- 8.41)		2.13 (1.16-3.90)		1.42 (0.96-2.10)	
Occupation		0.495		0.404		0.029*		0.744
Formal worker	1.21 (0.83-1.75)		1.32 (0.66-2.64)		1.10 (0.65-1.84)		1.11 (0.81-1.52)	
Informal worker/freelance	1		1		1		1	
Retired/domestic worker and others ^a	1.00 (0.66-1.50)		1.58 (0.81-3.06)		1.69 (1.08-2.63)		1.12 (0.82-1.53)	
Smoking status		0.309		0.812		0.787		0.333
No	1		1		1		1	
Yes, former or current smoker	1.18 (0.86-1.62)		1.07 (0.62-1.85)		1.05 (0.72-1.55)		1.13 (0.88- 1.41)	
Binge drinking		0.477		0.356		0.893		0.551
No	1		1		1		1	
Yes	1.13 (0.81-1.57)		1.29 (0.75-2.22)		1.03 (0.69-1.54)		0.91 (0.68-1.23)	
Sedentary time (min/day)		0.279		0.035*		0.667		0.778
Lower	1.19 (0.87-1.62)		1.83 (1.04-3.21)		1.08 (0.75-1.57)		0.96 (0.75-1.24)	
Higher	1		1		1		1	
Daily fruits intake		0.372		0.978		0.403		0.939
No	1.19 (0.81-1.75)		0.99 (0.55-1.79)		1.21 (0.77-1.90)		0.99 (0.75-1.31)	
Yes	1		1		1		1	
Daily vegetables intake		0.260		0.242		0.779		0.060
No	0.83 (0.60-1.15)		0.73 (0.42-1.24)		1.06 (0.61-1.85)		0.79 (0.62-1.01)	
Yes	1		1		1		1	
Family history of hypertension		0.417		0.781		0.506		0.129
No	1		1		1		1	
Yes	1.28 (0.71-2.31)		0.92 (0.42-2.03)		1.26 (0.64-2.46)		1.57 (0.88-2.82)	
Family history of diabetes		0.584		0.756		0.777		0.2567
No	1		1		1		1	
Yes	1.12 (0.75-1.66)		0.91 (0.49-1.66)		1.07 (0.68-1.68)		1.22 (0.86-1.72)	
Family history of depression		0.162		0.445		0.474		0.377
No	1		1		1		1	
Yes	1.24 (0.92-1.69)		1.23 (0.73-2.07)		1.14 (0.79-1.65)		1.12 (0.87-1.44)	
Fall in the last 12 mo		0.407		0.380		0.216		0.076
No	1		1		1		1	
Yes	1.15 (0.82-1.62)		1.29 (0.73-2.29)		1.28 (0.86-1.89)		1.25 (0.97-1.61)	
Fracture		0.229		0.291		0.397		0.252
No	1		1		1		1	
Yes	1.22 (0.88-1.69)		1.35 (0.77-2.38)		1.19 (0.79-1.77)		1.16 (0.89-1.51)	
Difficulty of sleeping or insomnia		0.163		0.011*		0.003*		0.232
No	1		1		1		1	
Yes	1.25 (0.91-1.71)		2.05 (1.18-3.56)		1.80 (1.22-2.65)		1.17 (0.90-1.51)	
Depression		0.289		0.070		0.061		0.049*
No	1		1		1		1	
Yes	1.20 (0.85-1.69)		1.79 (0.95-3.38)		1.51 (0.98-2.33)		1.34 (1.00-1.80)	
Anxiety		0.290		0.024*		0.104		0.129
No	1		1		1		1	
Yes	1.23 (0.84-1.82)		2.71 (1.14-6.44)		1.50 (0.92-2.46)		1.29 (0.93-1.79)	

Supplementary Table 2. Continued

Independent variable	Lower back		Hip		Knee		Ankle/feet	
	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value	PR (95% CI)	P value
Arthritis/arthrosis		0.517		0.003*		0.006*		0.154
No	1		1		1		1	
Yes	1.12 (0.79-1.61)		2.13 (1.29-3.52)		1.64 (1.15-2.34)		1.21 (0.93-1.58)	
Type 2 diabetes		0.554		0.331		0.324		0.184
No	1		1		1		1	
Yes	0.91 (0.65-1.25)		1.29 (0.77-2.18)		0.82 (0.56-1.21)		1.18 (0.92-1.51)	
Edema in lower limbs		0.023*		0.106		0.020*		0.003*
No	1		1		1		1	
Yes	1.77 (1.08-2.90)		1.91 (0.87-4.19)		2.04 (1.12-3.71)		2.02 (1.28-3.18)	
Use of analgesics		0.773		0.277		0.145		0.294
No	1		1		1		1	
Yes	0.95 (0.69-1.31)		1.34 (0.79-2.25)		1.31 (0.91-1.89)		1.14 (0.89-1.47)	
Use of NSAIDs		0.415		0.281		0.249		0.056
No	1		1		1		1	
Yes	1.15 (0.81-1.62)		1.36 (0.78-2.38)		1.26 (0.85-1.86)		1.28 (0.99-1.64)	
Use of statin		0.329		> 0.99		0.747		0.319
No	1		1		1		1	
Yes	1.40 (0.90-2.17)		1.11 (0.41-2.97)		1.17 (0.61-2.24)		1.32 (0.94-1.85)	
Use of muscle relaxant		0.347		0.376		0.860		0.091
No	1		1		1		1	
Yes	1.17 (0.85-1.61)		0.79 (0.47-1.33)		0.97 (0.67-1.39)		1.26 (0.96-1.63)	
Uric acid (mg/dL)		0.428		0.650		0.909		0.707
Adequate	1.25 (0.72-2.17)		0.85 (0.41-1.74)		1.03 (0.59-1.82)		1.08 (0.72-1.62)	
Inadequate	1		1		1		1	
Vitamin D		0.658		0.786		0.934		0.901
Adequate	1		1		1		1	
Inadequate	0.90 (0.58-1.42)		1.09 (0.59-2.01)		0.98 (0.60-1.59)		1.03 (0.68-1.54)	
C-reactive protein (mg/dL)		0.125		0.846		0.501		0.703
Non-reagent	1.37 (0.91-2.06)		1.06 (0.58-1.92)		0.88 (0.59-1.29)		1.06 (0.79-1.41)	
Reagent	1		1		1		1	
Hemoglobin (g/dL)		0.696		> 0.99		0.798		0.280
Adequate	1.12 (0.64-1.97)		1.04 (0.43-2.51)		0.93 (0.52-1.65)		1.36 (0.78-2.37)	
Inadequate	1		1		1		1	
Total cholesterol (mg/dL)		0.025*		0.513		0.502		0.537
Adequate	0.66 (0.45-0.95)		1.69 (0.46-6.20)		1.33 (0.58-3.02)		0.81 (0.57-1.16)	
Inadequate	1		1		1		1	
HDL (mg/dL)		0.868		> 0.99		0.374		0.679
Adequate	1.04 (0.63-1.72)		0.97 (0.40-2.36)		1.26 (0.75-2.11)		1.02 (0.74-1.59)	
Inadequate	1		1		1		1	
LDL (mg/dL)		0.168		0.445		0.732		0.537
Adequate	0.64 (0.43-0.95)		2.61 (0.40-16.97)		1.35 (0.52-3.47)		0.92 (0.57-1.50)	
Inadequate	1		1		1		1	
Body mass index (kg/m ²)		0.048*		0.639		0.873		0.038*
35.0-39.9	1		1		1		1	
40.0-49.9	1.69 (0.97-2.93)		0.89 (0.46-1.74)		1.07 (0.62-1.84)		1.62 (1.02-2.58)	
> 50	1.15 (0.61-2.18)		0.68 (0.30-1.55)		1.16 (0.65-2.08)		1.22 (0.72-2.07)	
Total fat %		0.143		0.195		0.459		0.093
1 tercile	1.24 (0.78-1.98)		1.18 (0.52-2.67)		1.02 (0.57-1.79)		1.14 (0.78-1.66)	
2 tercile	1		1		1		1	
3 tercile	1.52 (0.99-2.34)		1.82 (0.88-3.78)		1.32 (0.79-2.22)		1.41 (1.00-1.98)	

Wald's test for all P values, except when frequencies were smaller than five in each case, Fisher's exact test was used. Economic class "Gross average family income in the month in R \$ per class": A-B = > 3,118, C = 896 to 3,117, D-E = ≤ 895.

PR: prevalence ratio, CI: confidence interval, NSAIDs: non-steroidal anti-inflammatory drugs, HDL: high-density lipoprotein, LDL: low-density lipoprotein.

^aOthers include: student, rural worker, unemployed, learning, pensioner, beneficiary of illness aid.

*Significant association ($P < 0.05$).