**Comparison of BMI and mental health symptoms across risk-status groups**

Data on the following mental health symptoms, assessed at the last assessment, were analysed:

* Clinician-rated scales including the *Quick Inventory of Depressive Symptomatology (QIDS)* (Rush et al. 2003); *Brief Psychiatric Rating Scale (BPRS)* (Overall and Gorham 1962); *Young Mania Rating Scale (YMRS)* (Young et al. 1978); and *Social and Occupational Functioning Assessment Scale (SOFAS)* (Goldman et al. 1992)
* Self-rated measures, including *Kessler Psychological Distress scale* *(K10)* (Andrews and Slade 2001); and *Overall Anxiety Severity and Impairment Scale (OASIS)* (Norman et al. 2006)

Participants were categorised based on their risk status for insulin resistance or inflammation determined by HOMA-2-IR and CRP results at their initial blood assessment, and their recent BMI and mental health symptoms were compared. Individuals classified as low-risk for HOMA2-IR or CRP exhibited significantly lower BMI compared to those with elevated risk (24.65±5.04 vs. 29.46±7.23, p<0.001 for HOMA2-IR; 25.11±5.27 vs. 29.85±6.81, p<0.001 for CRP). No significant differences were found in depressive symptoms (measured by QIDS), psychotic symptoms (by BPRS), manic symptoms (by YMRS), or anxiety (by K10 or OASIS) between the low-risk and elevated-risk groups for both HOMA2-IR and CRP (Table S1). However, individuals with low-grade inflammation in the initial blood tests exhibited marginally poorer functioning compared to those with no risk of inflammation (62.97±19.81 vs. 69.56±13.77, p=0.051). The distribution of illness subtypes did not significantly differ between the risk status groups.

**Table S1.** Comparison of BMI and mental health symptoms among risk-status groups for insulin resistance and inflammation.

|  |  |  |
| --- | --- | --- |
|  | **HOMA2-IR** | **CRP** |
|  | Low-risk (n=80) | Elevated-risk (n=30) | p-value | Low-risk (n=81) | Elevated-risk (n=30) | p-value |
| **BMI** | 24.65±5.04 | 29.46±7.23 | **F=14.99, p<0.001** | 25.11±5.27 | 29.85±6.81 | **F=14.22, p<0.001** |
| **QIDS** | 8.39±4.98 | 8.30±3.90 | F=0.008, p=0.931 | 8.35±4.75 | 8.83±5.01 | F=0.224, p=0.637 |
| **BPRS** | 32.91±6.53 | 32.73±4.79 | F=0.019, p=0.891 | 33.2±5.75 | 33.2±6.78 | F<0.001, p=0.999 |
| **YMRS** | 1.24±1.50 | 1.00±1.64 | F=0.518, p=0.473 | 1.53±2.00 | 0.90±1.35 | F=2.547, p=0.113 |
| **SOFAS** | 68.38±14.61 | 64.70±15.47 | F=1.337, p=0.250 | 69.56±13.77 | 62.97±19.81 | **F=3.903, p=0.051** |
| **K10** | 23.56±8.08 | 24.72±8.84 | F=0.411, p=0.523 | 23.12±7.85 | 25.00±9.40 | F=1.015, p=0.316 |
| **OASIS** | 5.81±4.85 | 7.55±4.93 | F=2.665, p=0.101 | 5.90±4.60 | 7.38±5.18 | F=1.912, p=0.170 |
| **Illness subtype** |  |  | χ2=1.964, p=0.455 |  |  | χ2=2.750, p=0.246 |
| Hyperarousal-anxious | 59 (74%) | 18 (60%) |  | 52 (64%) | 24 (80%) |  |
| Circadian-bipolar | 7 (9%) | 4 (13%) |  | 11 (14%) | 3 (10%) |  |
| Neurodevelopmental-psychosis | 14 (18%) | 8 (27%) |  | 18 (22%) | 3 (10%) |  |

Data presented as mean±standard deviation or n (%). BMI; body mass index, QIDS; quick inventory of depressive symptomatology, BPRS; brief psychiatric rating scale, YMRS; young mania rating scale, SOFAS; social and occupational functioning assessment scale, K10; Kessler psychological distress scale, OASIS, overall anxiety severity and impairment scale

**Comparison of BMI and mental health symptoms across illness subtypes**

The current BMI and mental health symptoms were compared between illness subtypes (Table S2). However, none of the variables showed significant differences between the subtypes. Although none of the variables showed significant differences between the subtypes, it was observed that the YMRS score is lower in the Circadian-bipolar subtype, contrary to expectations. We could speculate that people in this subtype may be in a depressed phase at the assessment.

**Table S2.** Comparison of BMI and mental health symptoms among illness subtypes for insulin resistance and inflammation.

|  |  |  |
| --- | --- | --- |
|  | **HOMA2-IR** | **CRP** |
|  | Hyperarousal-anxious (n=77) | Circadian-bipolar (n=11) | Neurodevelopmental-psychosis (n=22) | p-value | Hyperarousal-anxious (n=76) | Circadian-bipolar (n=14) | Neurodevelopmental-psychosis (n=21) | p-value |
| **BMI** | 25.78±6.14 | 28.42±6.35 | 25.42±5.73 | F=0.941, p=0.393 | 26.45±6.13 | 28.48±5.94 | 24.86±5.74 | F=1.398, p=0.252 |
| **QIDS** | 8.01±4.60 | 10.27±4.73 | 8.64±4.94 | F=1.166, p=0.315 | 8.21±4.94 | 9.36±4.65 | 8.86±4.50 | F=0.413, p=0.663 |
| **BPRS** | 32.23±5.72 | 34.27±5.14 | 34.36±7.50 | F=1.385, p=0.255 | 32.64±6.35 | 34.36±4.52 | 34.43±5.57 | F=1.021, p=0.364 |
| **YMRS** | 1.18±1.42 | 0.82±1.47 | 1.32±1.96 | F=0.388, p=0.680 | 1.33±1.64 | 0.79±1.37 | 1.86±2.71 | F=1.436, p=0.243 |
| **SOFAS** | 67.61±14.91 | 68.64±16.92 | 65.91±14.26 | F=0.154, p=0.858 | 68.41±16.39 | 67.00±15.75 | 66.00±14.16 | F=0.207, p=0.813 |
| **K10** | 23.53±8.48 | 26.90±8.02 | 23.68±7.78 | F=0.733, p=0.483 | 23.24±8.84 | 25.62±7.56 | 23.48±6.68 | F=0.450, p=0.639 |
| **OASIS** | 5.90±4.91 | 7.90±5.17 | 6.86±4.80 | F=0.910, p=0.406 | 6.00±4.76 | 6.69±5.19 | 6.90±4.70 | F=0.344, p=0.709 |
| **Risk status** |  |  |  |  |  |  |  |  |
| Elevated risk | 18 (23%) | 4 (36%) | 8 (36%) | χ2=1.96, p=0.467 | 24 (32%) | 3 (21%) | 3 (14%) | χ2=2.75, p=0.253 |

Data presented as mean±standard deviation or n (%). BMI; body mass index, QIDS; quick inventory of depressive symptomatology, BPRS; brief psychiatric rating scale, YMRS; young mania rating scale, SOFAS; social and occupational functioning assessment scale, K10; Kessler psychological distress scale, OASIS, overall anxiety severity and impairment scale

**Repeated measures correlation between HOMA2-IR and CRP**

Repeated measures correlation analyses were conducted to investigate the relationships between HOMA and CRP and their association with age over time (Figure S1). A significant positive correlation was observed between HOMA2-IR and CRP levels (r=0.27, p=0.005), indicating that higher HOMA2-IR levels were associated with higher CRP levels. Conversely, a significant negative correlation was found between age and HOMA2-IR levels (r=-0.15, p=0.026), suggesting that older age was linked to lower HOMA2-IR levels. However, no significant correlation was detected between age and CRP levels (r=0.02, p=0.73), indicating that age did not significantly influence CRP levels.



**Figure S1.** Repeated measure correlation between HOMA, CRP and the age at each assessment.

**Supplementary References**

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