

# Lower fish, seafood, and omega-3 intakes in UK higher education students associated with poorer mental wellbeing

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## BACKGROUND & AIM

- Omega-3 LC PUFA are essential for brain development & function.
- Fish & seafood are the main dietary sources of omega-3 LC PUFA.
- Evidence from the growing field of nutritional psychiatry supports a therapeutic role of these fatty acids for mental health, particularly EPA for its anti-depressant effects (1, 2).
- Students are particularly vulnerable to poor mental health & wellbeing (3).
- Higher fish & seafood intake is associated with lower depression symptoms, meta-analyses indicate (4); but research into mental wellbeing specifically is limited.
- Mental wellbeing refers to positive aspects of mental health (e.g. feeling good, functioning well, life satisfaction, sense of life purpose & fulfilment) - not merely the absence of illness (5).
- This cross-sectional study aimed to discern whether student mental wellbeing is associated with intakes of fish, seafood & total omega-3.

## ABSTRACT

**BACKGROUND & AIM:** Fish and seafood are the main dietary sources of omega-3 long-chain polyunsaturated fatty acids, essential for brain development and function. Evidence from the growing field of nutritional psychiatry supports the therapeutic role of these nutrients, particularly eicosapentaenoic acid, for mental health. Students have been identified as particularly vulnerable to poor mental health and wellbeing, but whether this may relate to their intakes of fish, seafood and omega-3 remains unknown. The aim of this cross-sectional study was to address this question.

**METHODS:** UK higher education students provided self-reported quantitative data on their mental wellbeing and intake of fish and seafood, assessed using validated scales via online survey. Basic information on dietary patterns and omega-3 supplementation were also collected. Data were examined using appropriate correlational analyses, and independent-sample tests for sub-group comparisons.

**RESULTS:** Median weekly fish/seafood consumption (n=485) was 119g, with only 25.2% meeting UK recommendations for fish and seafood intake. 9.9% (n=48) reported using omega-3 supplements, but owing to the limited details of these provided, were excluded from subsequent analyses (n=437). Mental wellbeing was positively correlated with total fish/seafood intake ( $\rho=0.128$ ,  $p<0.01$ ) and with estimated total marine-source omega-3 ( $\rho=0.115$ ,  $p<0.05$ ).

**CONCLUSIONS:** Poorer mental wellbeing in UK students was associated with lower fish and seafood consumption, and with total estimated omega-3 intake from these sources. Three-quarters of this sample failed to meet UK dietary recommendations for fish and seafood intake. Omega-3 supplement use was also low, even in those consuming no fish or seafood. These findings raise public health concerns and suggest that improving awareness of the importance of omega-3 for brain health, and/or their dietary or supplemental sources, could benefit UK students' mental as well as physical wellbeing. Further research to investigate these possibilities is warranted.

## METHODS

485 Students recruited via word-of-mouth & online methods



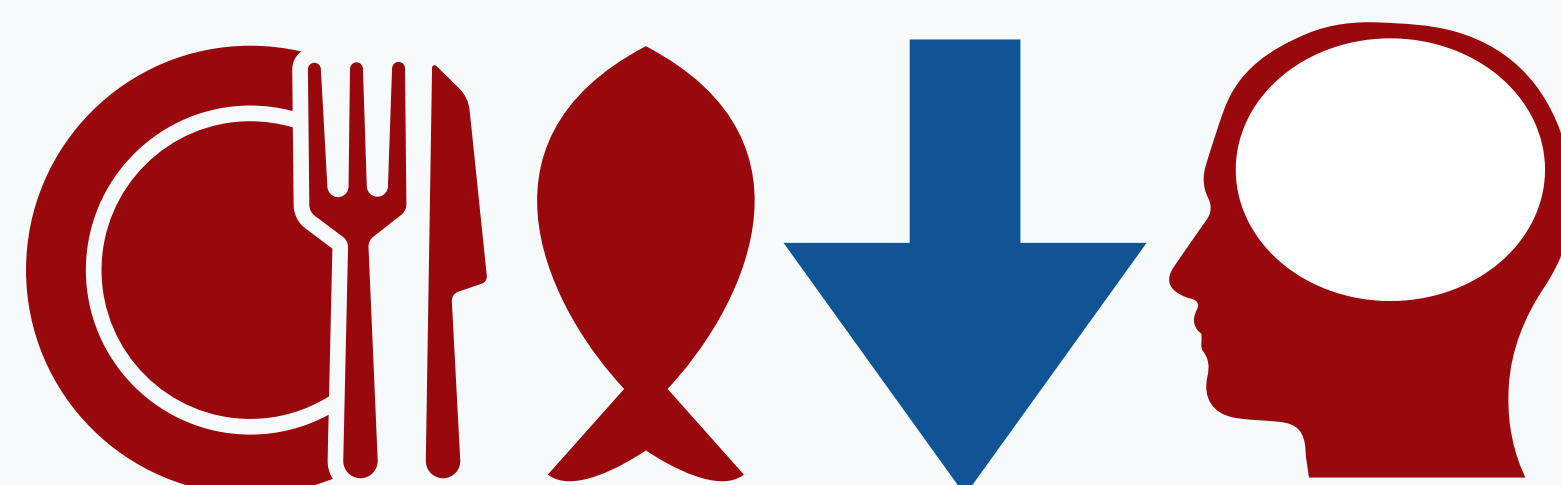
- Participants were undergraduate (67%) & postgraduate students studying at a higher education institution in the UK:
  - 64% Female
  - 72% White Ethnicity
  - Median age 22 years (86% under 30)

### Main Measures:

- Mental Wellbeing was assessed via the 7-item SWEMWS (6).
- Fish & Seafood Intake was measured with a brief FFQ previously validated against biomarkers (7, 8) & was also used to estimate total omega-3 intakes.
- Basic dietary patterns & omega-3 supplementation data also collected.
- Descriptive statistics were reported, & appropriate correlational analyses, & independent-sample tests for sub-group comparisons, were used.

## RESULTS

Poorer Mental Wellbeing linked with lower fish & seafood intakes & estimated omega-3



- **Mental wellbeing was positively correlated with total fish/seafood intake** ( $\rho=0.128$ ,  $p<0.01$ ) & with estimated total omega-3 intake ( $\rho=0.115$ ,  $p<0.05$ ).
  - This analysis excluded students supplementing fish oil or omega-3 (n=437), as insufficient formulation details were provided to account for this.
- **Mental Wellbeing scores were significantly higher for those eating 2 or more portions of fish/seafood weekly** (Md=21.54, n=158) than those that were not (Md=20.73, n=279),  $U=19288.50$ ,  $z=-2.18$ ,  $p=0.030$ , effect size  $r=0.104$ .
- **Median weekly intake was generally low:**
  - 119g fish & seafood (n=485)
  - 0.61g estimated omega-3 (n=485)
- **Average Mental Wellbeing score was lower than general population averages** (20.97 ( $\pm 3.67$ ) vs 23.5 ( $\pm 3.9$ )) (9).
- **Use of any fish oil or omega-3 supplements was low** in general (9.9%), but particularly so among vegetarians (7%) & vegans (3%).

## CONCLUSIONS

Only 1 in 4 students meeting UK fish & seafood guidelines



- **The critically low fish, seafood & omega-3 intakes raise public health concerns:**
    - these are far below the minimum EPA+DHA 500mg/day recommended for cardiovascular health (10)
    - they have serious implications for fetal neurodevelopment for mothers-to-be (11).
  - Increasing intakes could benefit UK students' mental wellbeing & brain health.
  - **Omega-3 supplement use was low, even in those consuming no food sources of EPA or DHA** (e.g. vegetarians & vegans).
- These findings show the urgent need to improve both public & professional awareness of:
- the importance of Omega-3 LC PUFA for mental health & wellbeing
  - the best dietary sources, especially those with mental health difficulties & those not eating fish & seafood.
- Omega 3 blood tests are recommended for future studies as an objective measure.

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The authors declare no conflicts of interest.

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