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The Association
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Mental Health

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Critical appraisal workshop on

The effects of school closures on youth mental health: evidence from a cross-sectional survey

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Critical appraisal 101

"Not all evidence is created equal"
Ben Djulbegovic

Broadly, we can think of three possible explanations for the results of any research study:

1. Bias
2. Chance
3. The truth

The more we can rule out 1 and 2, the more confident we can be that we're looking at 3.

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Reality Checks

Some limitations of surveys:

- Correlation ≠ causation

- Chicken or egg?

- Chance associations

- Selection bias

- Information bias

- Averages can be misleading
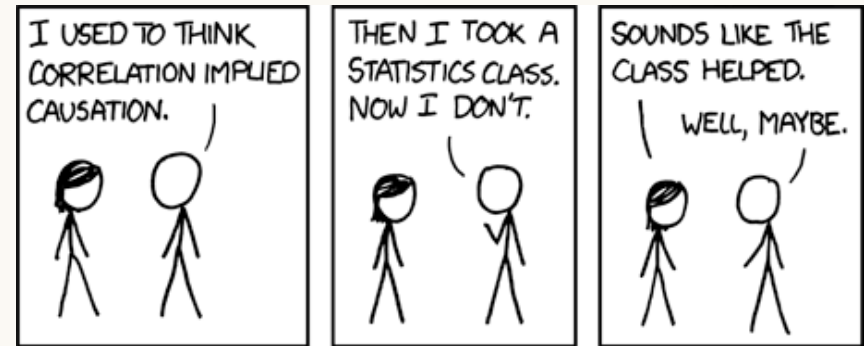
Credit: XKCD
https://xkcd.com/552/

ORIGINAL ARTICLE

COVID-19 partial school closures and mental health problems: A cross-sectional survey of 11,000 adolescents to determine those most at risk

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The research question

In young people affected by school closures,

11,765 pupils, S England, aged 12-21 (yrs 8-13)

what risk factors are associated with

Socioeconomic, individual vulnerability, situational

their experience of mental illness?

Depression and anxiety (RCADS), single-item mental wellbeing question

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Risk factors

1. Socioeconomic
   - Access to free school meals
   - Experience of food poverty
2. Increased vulnerability
   - Female gender
   - Previous accessed MH services
   - Living circumstances
3. Situational risk factors
   - Parents going out to work
   - Important examinations (years 10 and 12)

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Depression and anxiety via RCADS

1	I worry about things	Never	Sometimes	Often	Always
2	I feel sad or empty	Never	Sometimes	Often	Always
3	When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
4	I worry when I think I have done poorly at something	Never	Sometimes	Often	Always
5	I would feel afraid of being on my own at home	Never	Sometimes	Often	Always

|					
6	Nothing is much fun anymore	Never	Sometimes	Often	Always
7	I feel scared when I have to take a test	Never	Sometimes	Often	Always
8	I feel worried when I think someone is angry with me	Never	Sometimes	Often	Always
9	I worry about being away from my parent	Never	Sometimes	Often	Always
10	I am bothered by bad or silly thoughts or pictures in my mind	Never	Sometimes	Often	Always

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Critical appraisal checklist

	Yes	Not sure	No
1 Were the aims/objectives of the study clear?	X		
2 Was the study design appropriate for the stated aim(s)?	X		
3 Was the sample size justified?	X		
4 Was the sample population clearly defined?	X		
5 Was the sample taken from a representative population?	X		
6 Was the selection process likely to be representative?		X	
7 Were measures undertaken to address non-responders?	X		
8 Were the variables measured appropriate to the aims of the study?	X		
9 Were they measured using validated instruments?	X		
10 Is it clear what how statistical significance was estimated?	X		
11 Were the methods sufficiently described to enable them to be repeated?		X	

The Results
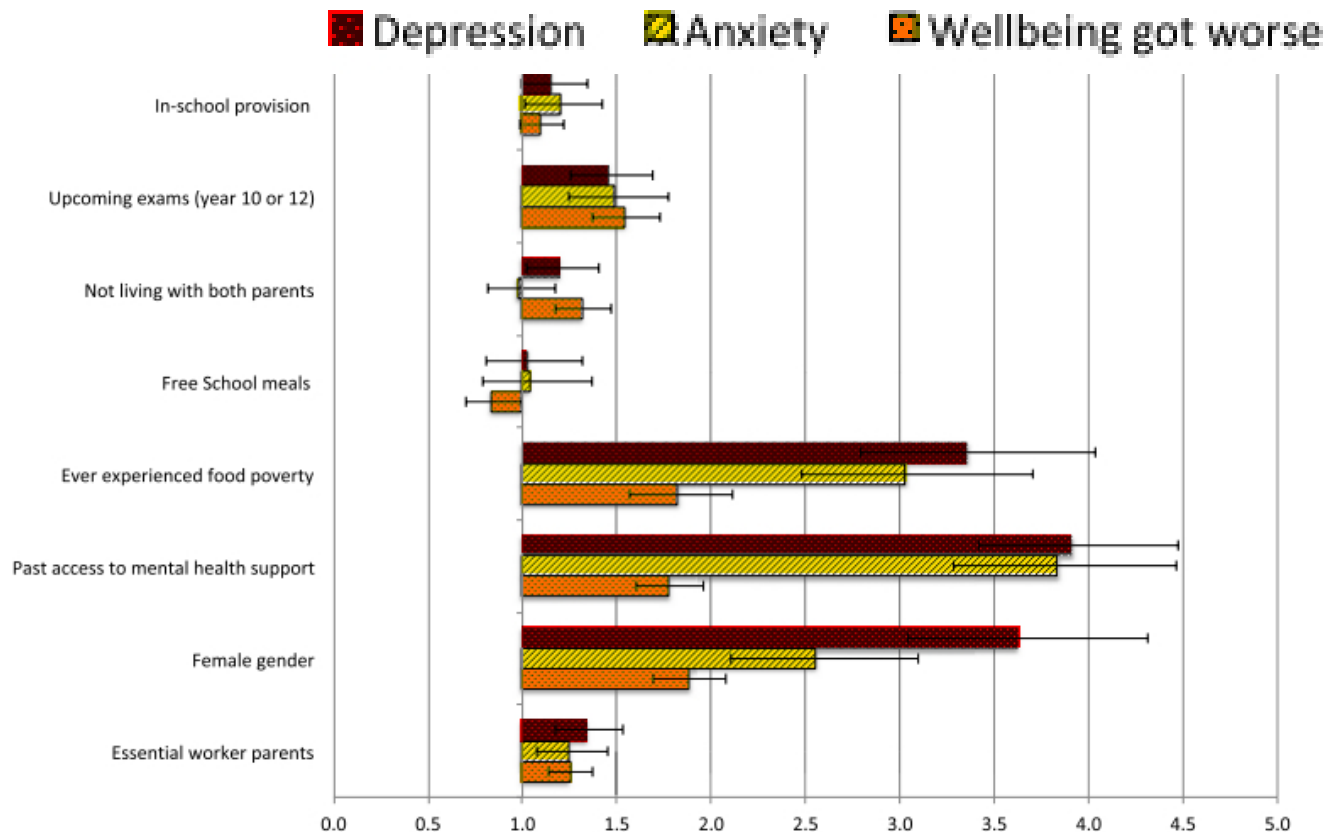
FIGURE 1 Adjusted odds ratios and 95% confidence intervals for depression, anxiety and self-reported worse wellbeing during school closures

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What are the "odds"?

Odds are a way of measuring the probability of an event

Odds are:

$$\frac{\text{The probability of an event occurring}}{\text{The probability of the event NOT occurring}}$$

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Odds of AJ winning Strictly

If we assume all three have an equal chance:

- 1 in 3 chance of winning (33%)
- 2 in 3 chances of not winning (67%)

=> **AJ's odds are 33/67 = 0.5**

Odds of 1 = equal chance of each outcome

Above 1 = more likely than not

Below 1 = less likely than not

AJ Odudu

John Whaite

Rose Ayling-Ellis

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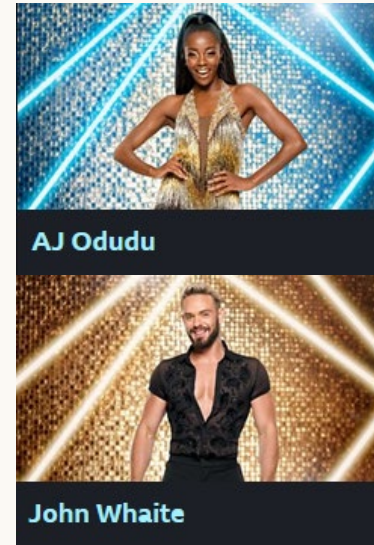Virtual journal club
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What if Rose drops out?

If we assume both have an equal chance:

- 1 in 2 chance of winning (50%)

- 1 in 2 chance of not winning (50%)

=> **AJ's odds are now 50/50 = 1**

AJ Odudu

John Whaite

We can use the **Odds Ratio** to show how much AJ's chances have improved:

= **Odds after / odds before**   **= 1/0.5 = 2**

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Odds ratios in this study

e.g. are youth who previously accessed MH services (YPAMHS) more likely than others to experience depression after school closures?
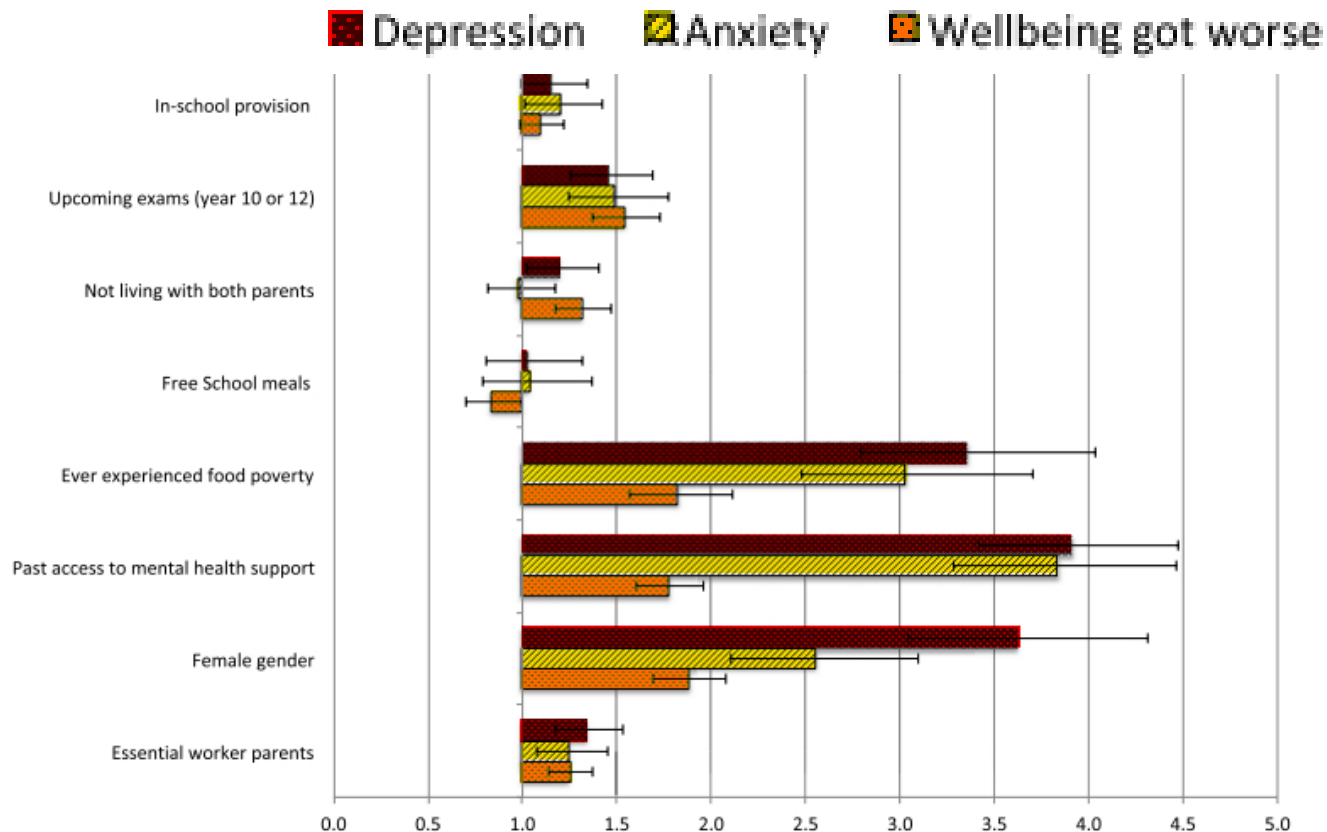
Odds ratio:

$$\frac{\text{Odds of depression in YPAMHS}}{\text{Odds of depression in others}}$$

The Results

FIGURE 1 Adjusted odds ratios and 95% confidence intervals for depression, anxiety and self-reported worse wellbeing during school closures

Conclusions

A well conducted survey with a large sample and clear protocol
- Non-responders were less engaged with remote learning
- Did not look at ethnicity, SENs or other important factors

The strongest predictive factors were:
- Previous use of mental health services
- Female gender
- Experience of food poverty

Also: having key worker parents, preparing for important exams

The adverse mental health impacts of school lockdown were felt most by those who were already at risk.

Questions for the team

- How does this compare with other surveys?
- Does the reliance on self-reports affect the results?
- Were non-responders different from responders?
- Any "threshold effects" re: depression and anxiety?
- What other risk factors or confounders are in play here?
- Can we use these findings to guide interventions?