How Did a Change in Regulatory Guidance regarding the AstraZeneca Vaccine impact Vaccine Hesitancy? A Repeated Cross-Section Event Study from the UK

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Short Report

Keywords: Vaccine hesitancy, risk perception, belief updating, naturalistic, event study

DOI: https://doi.org/10.21203/rs.3.rs-428444/v1

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Abstract

On April 7th 2021 the UK regulator recommended against delivering the Oxford AstraZeneca vaccine (AZ vaccine) to those under-30 if an alternative vaccine could be offered instead. The news followed deaths arising from blood clots and a suspension of use of the AZ vaccine by various other countries. The story became headline news and online search querying vaccine safety increased. What happened to Covid-19 vaccine intentions and attitudes? I collected relevant data the day after the story hit the front page. I asked UK adults if they intended to get the vaccine and measured their attitudes towards it (after revision period: n = 502). I compare these data against two previous waves that used precisely the same methods of data collection (see Comerford et al., 2021). The first was taken before stories linking the AZ vaccine to blood clots had been reported (baseline period: March 12th -15th ; n = 241). The second was taken after the AZ bloodclot story led EU countries to suspend use of the vaccine but before UK regulator changed guidance (before revision period: March 17th ; n = 305). The data show no change in intentions or attitudes in the sample as a whole, nor in the subgroups who we would expect to be most affected by the UK regulators’ guidance (under-30s and those aged 30–40).

Background

On April 7th the UK’s medical regulator issued guidance that the AZ vaccine not be given to those aged under 30 if some alternative vaccine were available (NHS, 2021). The following day this change in guidance from the regulator became front-page news (Fig. 1).

A measure of the public concern around the safety of the vaccine is presented in Fig. 2. It depicts Google Trends data for the month March 12th to April 11th within the UK for searches that include the terms “vaccine” and “safe”. There is a clear uptick in search activity on April 7th, coincident with the change in regulatory advice. The other notable increase in search activity occurred in mid-March, when various European nations were suspending use of the AZ vaccine (for further details on this, see Comerford et al., 2021). These data demonstrate that the AZ blood clot story entered the public consciousness and caused sufficient concern to prompt the UK public to seek information online.

The question that this research seeks to answer is whether the public concern manifest in Fig. 2 translated into vaccine hesitancy.
Table 1  
Timeline of Events

| Day   | Event                                                                 | UK Media coverage               | Data collection activity |
|-------|-----------------------------------------------------------------------|---------------------------------|--------------------------|
| April 7 | UK regulator advises under-30s should receive an alternative to the AZ vaccine. |                                |                          |
| April 8 | UK regulator’s advice is front page news                                |                                |                          |
| April 9 |                                                         |                                | Data collection          |

Results

My analyses compare three waves of data collection.

The *baseline* data was collected on March 12th – 15th, before the bloodclot story became prominent.

The *before revision* data was collected on March 17th, immediately after the bloodclot story was headline news in the UK but before the UK regulator had changed guidance. Both the baseline data and the before revision data are taken from Comerford (2021).

The novelty in this paper is the *after revision* data, collected on April 9th, two days after the UK regulator changed guidance and 1 day after that change in guidance was front-page news across the spectrum of UK media. The *after revision* data wave were collected from UK-based respondents aged 18 and over on Prolific.co, just as was the *baseline* and *before revision data*. Figure 3 presents the results on intentions from these samples.

Table 2 describes the characteristics of these samples and reassures that our recruitment procedure delivered samples that were very similar at each timepoint. Further details on methods are presented below.
### Table 2
Summary of Sample Data at each Timepoint

| Variable | Baseline March 12th -15th | Before advice Mar17th | p-value vs. baseline | After advice April 9th | p-value vs. baseline |
|----------|--------------------------|-----------------------|---------------------|------------------------|---------------------|
| Not been vaccinated | 198/241 | 235/305 | .143 | 328/502 | > .001 |
| Attitudes | 4.06 | 4.12 | .440 | 4.12 | .398 |

The following data restrict the sample to those who reported they have not been vaccinated and so answered the intentions question ($n = 761$)

| Variable | Baseline March 12th -15th | Before advice Mar17th | p-value vs. baseline | After advice April 9th | p-value vs. baseline |
|----------|--------------------------|-----------------------|---------------------|------------------------|---------------------|
| Female | 61.7 | 66.8 | .848 | 64.6 | .476 |
| Age | 30.8 | 30.7 | .911 | 31.1 | .700 |
| Scotland | 10.6 | 10.2 | .894 | 8.2 | .362 |
| England | 82.8 | 83.8 | .780 | 86.3 | .285 |
| Wales | 3.2 | 3.5 | .826 | 3.6 | .700 |
| Northern Ireland | 3.5 | 1.7 | .232 | 1.2 | .082 |
| Unemployed | 12.1 | 14.5 | .475 | 83.5 | .176 |
| Had Covid-19 | 9.6 | 6.8 | .291 | 5.2 | .056 |
| Did not have Covid-19 | 90.4 | 93.2 | .291 | 94.8 | .056 |

**Outcome Variables**

| Outcome Variables | Baseline March 12th -15th | Before advice Mar17th | p-value vs. baseline | After advice April 9th | p-value vs. baseline |
|-------------------|--------------------------|-----------------------|---------------------|------------------------|---------------------|
| Intend to take | 83.3 | 86.1 | .311 | 85.7 | .471 |
| Intend to refuse | 11.6 | 9.3 | .283 | 11.0 | .822 |
| Attitudes | 3.99 | 4.02 | .676 | 4.03 | .669 |

There are no reliable changes in intentions to vaccinate from wave to the next. 83 percent of the unvaccinated sample report that they intend to take the vaccine in the baseline period (March 12th – 15th ) and 87 percent report intending to take it in the before revision period on March 17th and 86% report intending to take it in the after revision period on April 9th.

Table 2 additionally reports the average attitude levels reported at each timepoint. It demonstrates that these attitudes were unchanged from one wave of data collection to the next. This is true both for the sample as a whole and for that subsample of respondents who have not yet taken the vaccine.

**Subgroup Analyses**
Table 3 reports intentions and attitudes for the two subgroups who might be most expected to exhibit response to the regulators’ guidance. The under-30s were directly impacted by the guidance. Those aged 30–40 might feel uneasy that they were not also afforded this precautionary treatment.

Table 3
Results on intentions and attitudes for those aged < 30 and 30–40

| Age     | Day     | N   | % intend (95% CI) | % refuse (95% CI) | N   | Mean attitude (95% CI) |
|---------|---------|-----|-------------------|-------------------|-----|------------------------|
| 18–29   | Baseline| 102 | 79.9 (71.4–87.4)  | 14.5 (8.5–22.9)   | 109 | 3.92 (3.75–4.10)       |
| 18–29   | Before  | 124 | 87.9 (82.1–93.7)  | 12.5 (2.6–11.9)   | 140 | 3.82 (4.01–4.30)       |
| 18–29   | After   | 164 | 88.4 (83.5–93.1)  | 7.4 (4.2–12.9)    | 202 | 4.17 (4.02–4.28)       |
| 30–39   | Baseline| 68  | 85.3 (76.7–93.9)  | 10.3 (2.9–17.7)   | 84  | 4.03 (3.81–4.24)       |
| 30–39   | Before  | 71  | 87.3 (79.4–95.3)  | 9.9 (2.8–17.0)    | 91  | 3.94 (3.75–4.14)       |
| 30–39   | After   | 102 | 85.3 (78.3–92.3)  | 9.8 (3.9–15.7)    | 149 | 4.14 (4.01–4.27)       |

Methods
Participants

Our data were collected using the Prolific.co web recruitment platform (Palan and Schitter, 2018). In order to be eligible to view our recruitment materials, respondents had to be over 18 and have IP addresses based within the UK (Scotland, England, Northern Ireland and Wales). The study was advertised as academic research on attitudes, expectations and perceptions with regard to the Covid pandemic and included a warning that the survey would cover topics of illness and death. This is precisely the same wording as was used when recruiting for the baseline and the before data. Potential respondents could view further details on the survey front page, which elicited their informed consent. Data collection started at 12.12am on April 9th and ended at 11.04pm on that same day, April 9th. 506 respondents clicked into the survey and 502 went on to complete it. Descriptive statistics of respondent characteristics are presented in Table 2.

Procedures

The survey instrument is precisely the same as that used in Comerford et al. (2021). Attitudes were measured using the following three questions:

I believe the Covid-19 vaccine's benefits outweigh any risks
I feel uncertain about the benefits of being vaccinated against Covid-19

and

“The Covid-19 vaccine is beneficial”.
These items were answered on a five-point, *disagree strongly* to *agree strongly* scale.

**Analyses**

We conducted all analyses using STATA 15.1.

**Ethics**

The study was approved by the General University Ethics Panel at the University of Stirling under ethics application “Impact of COVID Fear 0485” on Thursday March 11th. All research was performed in accordance with the relevant regulations and informed consent was obtained from all participants.

**Declarations**

**Conflict of interest**

David Comerford has no conflicts of interest to report

**References**

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**Figures**
Figure 1

Screenshot of Front Page of the Guardian (left) and the Independent (right) print editions from Thursday April 8th.

Google Trends Graph mapping searches including the words “vaccine” and “safe” originating within the UK in the period March 12th to April 11th. Note: We use this search term because it encompasses various more specific formulations e.g. “is the Covid vaccine safe?” and “is the Oxford AstraZeneca vaccine safe?”
Figure 3

Intention to Vaccinate by Wave of Data Collection

- Baseline March 12-15 (n = 158)
- MA
- Before revision March 17th (n = 25)
- After revision April 9th (n = 375)

Intention to take vaccine
Rather not say
Intend to refuse vaccine

Suspension of use of AZ vaccine in EU nations is front-page news
Recommendation that under-30s receive alternative to AZ vaccine is front-page news