

# BMJ Open Types of anticipated affect that encourage and discourage vaccination: a scoping review protocol

Tsuyoshi Okuhara , Hiroko Okada, Eiko Goto, Aiko Tsunazumi, Yumi Kagawa, Takahiro Kiuchi

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Department of Health Communication, The University of Tokyo, Bunkyo-ku, Tokyo, Japan

## Correspondence to

Dr Tsuyoshi Okuhara;  
[okuhara-ctr@umin.ac.jp](mailto:okuhara-ctr@umin.ac.jp)

## ABSTRACT

**Introduction** Various cognitive behavioural models and theories have been used to address vaccine hesitancy. However, those models and theories have been criticised for focusing on cognitive influences on health behaviours at the expense of affective influences. Recent studies have highlighted the importance of affective elements as complementary predictors of health behaviours. Anticipated affect (ie, an expectation of one's affective response to the target behaviour) has received the most scrutiny. This scoping review will analyse studies of anticipated affect that aimed to encourage vaccination and organise implications for future research and practice in vaccine communication. Our report will focus on exploring the usefulness of affective influence in terms of a comparison with the cognitive influence on vaccination.

**Methods and analysis** We will search several databases (MEDLINE, CINAHL, PsycINFO, PsycARTICLES, Academic Search Complete, Embase, Scopus, Web of Science and Google Scholar) and identify additional literature by searching the reference lists of eligible studies. Eligible studies are those that quantitatively or qualitatively examined anticipated affect and aimed to encourage vaccination. Only papers written in English will be included. We will include all eligible publications from database inception up to the date of the final database search. Two independent reviewers will screen the titles, abstracts and full texts of all identified studies. Two independent reviewers will share responsibility for data extraction and verification. Discrepancies will be resolved through discussion to reach consensus. We will extract data such as study characteristics, type of vaccine, type of anticipated affect, participant characteristics, methodology and main results. Data will be extracted using a customised extraction template on Covidence. The findings will be synthesised in a descriptive, narrative review.

**Ethics and dissemination** This work does not warrant any ethical or safety review. This scoping review will be presented at a relevant conference and published in a peer-reviewed journal.

## INTRODUCTION

Vaccines are one of the most important achievements in public health. However, over the past few decades, there has been growing public distrust and criticism of vaccination. More and more people are questioning

## Strengths and limitations of this study

- This will be the first scoping review of studies focused on anticipated affect that aimed to encourage vaccination; evidence generated from this review will contribute to developing research and practice in the field.
- This review will offer a timely contribution to vaccination promotion during the COVID-19 pandemic.
- As this is a scoping review, formal quality assessment and risk-of-bias assessment will not be conducted.
- This review may miss important literature published in languages other than English.

vaccination, rejecting some vaccines but agreeing with others, postponing vaccines and accepting vaccines but are unsure about their decision.<sup>1 2</sup> The debate over vaccination has become increasingly complex as more vaccines and vaccine combinations have become available and as people's communication about vaccines has become fast, global and non-hierarchical.<sup>3 4</sup> Vaccine hesitancy, defined as 'delay in acceptance or refusal of vaccines despite availability of vaccination service', is a problem that is attracting growing attention and concern.<sup>5</sup> According to the WHO's Strategic Advisory Group of Experts on vaccine hesitancy, vaccine hesitancy is influenced by a number of factors including issues of confidence (ie, distrust of vaccine or provider), complacency (ie, do not see the need or value in a vaccine) and convenience (ie, access).<sup>6</sup> Determinants of vaccine hesitancy are complex varying across contextual influences (eg, historic, sociocultural, environmental, health system/institutional, economic or political factors), individual and group influences (eg, personal perception of the vaccine or the social/peer environment) and vaccine-specific issues, which are directly related to the characteristics of the vaccine.<sup>3 6</sup> Vaccine hesitancy influences the

uptake of vaccines such as those for measles, mumps, and rubella and COVID-19, and presents a global problem.<sup>7–10</sup> Studies and practices focused on vaccine communication have been conducted to counteract vaccine hesitancy and promote optimal vaccine uptake.<sup>11</sup>

Various models and theories have been used in studies focused on encouraging vaccination, such as the health belief model, protection motivation theory, theory of planned behaviour and social cognitive theory.<sup>12–14</sup>

Recent intervention studies to encourage COVID-19 vaccination examined the impact of perceived vaccine efficacy and safety, perceived susceptibility of infection and perceived seriousness of the pandemic on COVID-19 vaccine acceptance.<sup>15–17</sup> Intervention messages used in these studies provided probability numbers of vaccine efficacy and safety,<sup>15 16</sup> and explanatory notes of vaccination benefits, vaccine safety and seriousness of the pandemic.<sup>17</sup> These studies have in common that they emphasise cognitive beliefs about vaccination behaviours, such as perceived susceptibility of infection, perceived severity of infection and perceived vaccine efficacy and safety.<sup>18</sup> These studies have assumed that individuals are logical and rational in their decision-making, and that cognitive beliefs an individual has now about vaccination will predict whether they receive vaccination in the future.<sup>18</sup> However, existing cognitive behavioural models have been criticised for focusing on cognitive influences on health behaviours at the expense of affective influences.<sup>19</sup>

Recent studies have highlighted the importance of affective elements as complementary predictors of health decisions and behaviours.<sup>20 21</sup> Anticipated affect (ie, an expectation of one's affective response to the target behaviour) has received the most scrutiny. A particular focus area is anticipated negative affect, such as regret and to a lesser extent guilt<sup>22 23</sup>; for example, if an individual does not get vaccinated, they may anticipate that they will feel regret or guilt and therefore receive vaccination to avoid feeling such negative affect. Anticipated affect can be manipulated by simply asking study participants about their anticipated affect, and by interventions such as text messages.<sup>24</sup> Several studies have shown that asking participants one to three items about how much they would regret an unhealthy choice increased their engagement in a healthier behaviour alternative, such as physical activity,<sup>25</sup> cancer screening<sup>26 27</sup> and vaccination.<sup>28</sup> Furthermore, several studies showed that anticipated regret and worry more strongly predicted vaccination uptake than cognitive beliefs, such as perceived susceptibility and perceived severity.<sup>29 30</sup>

Although anticipated regret or guilt may encourage vaccination, anticipated fear and disgust can be barriers to receiving vaccination (eg, an individual may anticipate they will feel fear about adverse reactions to vaccines and after effects if they receive vaccination; therefore, they avoid vaccination to avoid feeling this negative affect).<sup>31</sup> In addition, anticipated positive affect (eg, pride or satisfaction) has received attention in previous studies<sup>32</sup>;

for example, an individual may anticipate that they will feel pride or satisfaction if they receive vaccination because it will prevent infection to others, and therefore they receive vaccination to feel this positive affect. These studies highlighted that one type of anticipated affect (eg, regret or pride) may encourage vaccination, whereas another type of anticipated affect (eg, fear) may discourage vaccination.

Previous studies have reported an individual's perceptions of factors associated with vaccine hesitancy, such as risk perceptions of the disease and perceived benefits/harms of vaccines.<sup>33 34</sup> However, because the COVID-19 vaccine is a new vaccine developed in a short period of time, specific factors may be associated with COVID-19 vaccine hesitancy.<sup>35</sup> Previous studies have identified the perceived safety and efficacy of a new vaccine (eg, anxiety about the speed at which vaccines were developed and whether or not sufficient testing had been conducted, anxiety about residual long-term side effects of newer vaccine) as a barrier to COVID-19 vaccination,<sup>36–39</sup> and belief that vaccines can stop the pandemic as a factor that facilitates COVID-19 vaccination.<sup>40</sup> Considering these, anticipated negative affect such as fear and disgust may be a stronger barrier and anticipated positive affect such as pride and satisfaction may be a stronger facilitator in COVID-19 vaccination than in other vaccinations. However, similarities and differences between the COVID-19 vaccine and other vaccines regarding vaccination anticipated affect are unknown.

A study published in 2014 reviewed the impact of anticipated regret on vaccination as one of several types of health and safety decisions.<sup>24</sup> However, that review only focused on anticipated regret among the possible types of anticipated affect and described the results of studies only in terms of whether anticipated regret predicted vaccination decisions. To our knowledge, no systematic review has been conducted of studies that focused on anticipated affect and aimed to encourage vaccination. Therefore, many questions remain unanswered, such as what kind of vaccines and anticipated affect previous studies targeted, whether the results of correlational studies were consistent with the results of intervention studies, how the strength of the correlations and intervention effects compared with cognitive beliefs.

The general aim of this review is to create an overview of studies focused on anticipated affect that aimed to encourage vaccination among adolescents and adults, critically examine the methods and results of those studies and identify gaps and implications for future studies and practices. The specific aim of this review is to explore the usefulness of affective influence in terms of a comparison with the cognitive influence on vaccination. The findings will be useful in guiding the development of research in the field, and will inform development of effective strategies for vaccine communication that address vaccine hesitancy from the perspective of the affective influence on vaccination. Research questions of this review are as follows. Our broad research objectives and questions

will be best achieved or answered through a scoping review.<sup>41 42</sup>

**RQ1:** What is the state-of-the-art of the scientific literature regarding vaccination anticipated affect targeting adolescents and adults? (eg, study characteristics, study aim, study design, type of vaccine, type of anticipated affect, participant characteristics, methodology, main results and findings).

**RQ2:** What type of anticipated affect (in comparison with what cognitive variables) has what effect on what type of vaccination?

## METHODS AND ANALYSIS

Our scoping review will use the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews tool<sup>43</sup> and the previously proposed methodological framework for scoping studies.<sup>41 42</sup> We plan to begin work on the literature search and analysis from 1 April 2022, and to complete the analysis by early 2023.

### Literature search

We will use the EBSCOhost Search Platform to search several databases: MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, PsycARTICLES and Academic Search Complete. We will also search Embase, Scopus and Web of Science. We will also search Google Scholar to triangulate the studies' selection. We will not filter our database searches by year for the extensive search. We will then search the abstracts of retrieved articles using a combination of keywords (a online supplemental file). For example, the search string for the EBSCOhost Search Platform will be: AB ((anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance)). We will include all eligible publications from database inception up to the date of the final database search. We will also search the reference lists of identified eligible studies to identify further potentially eligible literature.

### Eligibility criteria

We aim to include all studies identified in these databases that quantitatively or qualitatively examined anticipated affect and aimed to encourage vaccination to create an overview of studies focused on anticipated affect that aimed to encourage vaccination. Studies concerning any kind of vaccines and anticipated affect will be eligible. Any study design will be eligible including quantitative, qualitative and review studies. Studies that quantitatively

assessed any outcomes will be eligible, including behaviour, behavioural intention and attitude. Studies that targeted adolescents and adults who response to questions of affect themselves will be included. Eligible studies will include any gender, ethnicity and from any country. Only papers written in English will be included. We will exclude studies that were not published in full-text form. Grey literature (eg, conference proceedings, theses and dissertations) will be included if sufficient information is provided to confirm its eligibility.

### Study selection

Study selection will be conducted using Covidence. Two independent reviewers (the first author, TO and the fifth author, YK), will screen the titles and abstracts of all studies initially identified against the eligibility criteria. Disagreements will be resolved by discussion to reach consensus, with the opinion of a third reviewer (the second author, HO) sought if necessary. The full-text versions of potentially relevant studies will be retrieved and screened independently by two reviewers (TO and YK). Consensus will be reached through discussion, and a third reviewer (HO) will arbitrate if no consensus can be reached on a study. All studies that do not meet the eligibility criteria will be excluded. The results will be displayed in a PRISMA flow diagram.

### Data extraction

Data will be extracted using a customised extraction template on Covidence. A customised data extraction form will be created to extract all relevant data from each study. The data extraction form will be piloted with a sample of eligible studies to assess its reliability in extracting the targeted study data. The first author (TO) will conduct data extraction, and another author (YK) will check the extracted data against the full texts of the studies to ensure there are no omissions or errors. Consensus will be reached through discussion, and a third reviewer (HO) will arbitrate if no consensus can be reached on any study. The extracted data will include: study characteristics (author, year of publication and country), study aim, study design, type of vaccine, type of anticipated affect (eg, regret, guilt, fear, pride), type of cognitive variables (when examined), participant characteristics (number, student or non-student, gender, age and other demographic information), definitions of vaccine hesitancy and anticipated regret, methodology (eg, type of manipulation of anticipated affect and outcome), main results and findings (including comparisons with the cognitive influence when examined) and mediating and moderating factors (when examined).

### Data synthesis

Numerical summary will describe the characteristics of included studies. The findings will be summarised in a concise table and synthesised in a descriptive, narrative review. We will discuss the content and gaps of included studies, and the findings and their implications for future



research and practice as we answer each of the research questions. In discussing the findings and their implications, we will use the analytical framework to explore the usefulness of affective influence in terms of a comparison with the cognitive influence on vaccination; what type of anticipated affect (in comparison with what cognitive variables) has what effect on what type of vaccination? The implications of findings will be discussed for future research, policy and practice.

### Patient and public involvement

No patients will be involved.

### ETHICS AND DISSEMINATION

This work does not warrant any ethical or safety review. We intend to present the results of this review at a relevant conference and publish them in a peer-reviewed journal.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

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### ORCID iD

Tsuyoshi Okuhara <http://orcid.org/0000-0002-6251-3587>

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**Supplementary file****Search strategies for databases.**

EBSCOhost Search Platform (MEDLINE, CINAHL, PsycINFO, PsycARTICLES, Academic Search Complete)	AB ((anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance))
Embase	ABS ((anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance))
Scopus	ABS ((anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance))
Web of Science	ABS ((anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance))
Google Scholar	(anticipated OR anticipatory) AND (affect OR affective OR emotion OR regret OR guilt OR worry OR fear OR disgust OR embarrassment OR pride OR satisfaction) AND (vaccines OR vaccinations OR immunisations OR vaccine hesitancy OR vaccine refusal OR vaccine reluctance OR vaccine confidence OR vaccine willingness OR vaccine acceptance OR vaccination hesitancy OR vaccination refusal OR vaccination reluctance OR vaccination confidence OR vaccination willingness OR vaccination acceptance)