Hesitancy Issues for Influenza Vaccination: a Literature Review

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Strategic objective

Individuals and communities value of vaccines and demand both their right and response.


Models of Hesitancy

MACRO-LEVEL

- Convenience
- 4 C model

MESO-LEVEL

- Complacency
- SAGE model
- Contextual influences
- Individual/social influences
- Vaccine specific issues

MICRO-LEVEL

- Psychological determinants
- Physical determinants
- Theories of health decision making & behaviour
- Socio-demographic factors

Calculation


Goals of the Research Project

- to extract individual barriers to seasonal and pandemic influenza vaccination for risk groups and the general public;
- to map knowledge gaps in understanding influenza vaccine hesitancy and to derive directions for further research and interventions in this area.
Records identified through database searching (n = 29630) (2005-2016)

Records after duplicates removed (n = 13575)

Records screened by title/abstract (n = 13575)

Records excluded (n = 12481)

Full-text articles assessed for eligibility (n = 1093)

Full-text articles excluded, with reasons (n = 623):
- no multivariate analysis of determinants (n = 275)
- determinants not linked to behavioral outcome (n = 100)
- no peer-reviewed journal articles (n = 81)
- not published in English or German language (n = 55)
- intervention studies (n = 35)
- publication not available (n = 33)
- no influenza vaccine specific results (n = 13)
- further duplicates (n = 12)
- publications with no primary data (n = 9)
- modelling studies (n = 6)
- not addressing human influenza vaccines (n = 1)

Studies included for systematic review (n = 470)
Coding and Operationalization of Vaccine Hesitancy

- year of publication, WHO region, risk group, influenza type, outcome variable and type of analysis

All significant predictors of influenza vaccine uptake or intention were extracted.

Therefore, each predictor is coded as a barrier, i.e. as a determinant that decreases uptake or intentions.
Results: Descriptive Analyses

Overview:
- Most studies from: Western countries (375)
- Most studied population: general public (191), most studied risk group: HCW (117)
- Underrepresented population: children between 6 and 59 months (18), elderly (62), chronically ill (45), pregnant women (35)
- Research focused on seasonal influenza (331)
- Behaviour was the major outcome variable (337)
- 259 independent barriers to influenza vaccination were identified.
Results: Micro-level

- **Modifying Factors**
  - Physical Determinants: e.g. drug consumption, BMI, physical activity
  - Context Determinants: e.g. access to vaccines, cues to action
  - Sociodemographic Determinants: e.g. gender, age, living arrangements

- **TPB Extensions**
  - Psychological Determinants
    - Utility
    - Risk Perceptions
    - Social Benefit
  - Past Behavior
  - Experience
  - Knowledge

- **TPB Constructs**
  - Attitude
  - Subjective Norm
  - Perceived Behavioral Control

- **Likelihood of Action**
  - Intention to Vaccinate / Vaccination Behavior
Utility: Risk Perception & Social Benefit

- Decreased Perceived Risk of Disease
- Decreased Perceived Severity of Disease
- Decreased Perceived Likelihood of Getting the Disease
- Decreased Perceived Susceptibility of Getting the Disease
- Decreased Anticipated Regret if not Vaccinating
- Decreased Worry about the Disease
- Increased Perceived Risk of Side Effects of the Vaccine
- Increased Worry of Safety of the Vaccine
- Decreased Belief: Benefit of Vaccines outweigh Risks
- Decreased Perceived Own Benefit of Vaccine

When HCP lacked the belief that getting vaccinated protects patients or relatives, vaccine uptake was lower (same for pregnant women regarding their unborn child).

Pregnant women in a US sample who worried about influenza were approximately 3 times more likely to get the flu vaccine even when adjusting for cognitive risk parameters like probability and susceptibility of the disease (Tucker et al., 2011)
## Results: TPB Constructs & Extensions

<table>
<thead>
<tr>
<th>Decreased Perceived Subjective Norm in Favor of Vaccines</th>
<th>Barrier</th>
<th>Promotor</th>
<th>Inconclusive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Having a Professional or Ethical Obligation to get Vaccinated</td>
<td>27</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Decreased Self-Efficacy</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Perceived Behavioral Control</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Not Believing in the Importance of the Issue (Flu)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Trust in Authorities</td>
<td>26</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Decreased Positive Attitude Towards Vaccine(s)</td>
<td>24</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Perceived Vaccine Effectiveness</td>
<td>57</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Not Having Received Pneumococcal Vaccine</td>
<td>61</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Number of Previous Influenza Vaccines</td>
<td>143</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Decreased Years of Service/Professional Experience</td>
<td>61</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Not Having Suffered from the Disease (Self)</td>
<td>61</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Influenza or Vaccine Specific Education</td>
<td>61</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Decreased Knowledge about the Disease or Vaccine</td>
<td>35</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Increased Belief in Myth/Misconception about Vaccine</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

For HCP, vaccine uptake was lower when they lacked the belief that the vaccine was an ethical or professional obligation.
Results: Physical Determinants

“may be explained by confounding factors, such as health status, attitudes regarding immunization and physician’s perspective of smokers’ health, so this association should be interpreted with care”
### Results: Context Determinants

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Promotor</th>
<th>Inconclusive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Perceived Inconvenience getting the Vaccine</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Increased Financial Costs of Vaccine</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>Not Having Received Reminder from Physician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Having Received Recommendation from Medical Personal</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Not Having Received Recommendation from Relatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased Awareness of Recommendations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Having a Regular Source of Care (e.g. PCP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased Frequency of Interaction with Health Service</td>
<td>59</td>
<td>1</td>
</tr>
<tr>
<td>Increased Deprivation of Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased Size/Volume of Care Facility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**None reported a general lack of access.**

“Subjects described these barriers/inconveniences as means of transportation to a clinic, physical disability, and the expense of vaccination per se”
Results: Sociodemographic Determinants

“people who live alone with limited assistance may have less access, irregular preventive health visits, and less support from family members”
Conclusion – Goal 1: Individual Barriers

**Barrier**
- No Previous influenza vaccinations
- Low perceived utility of vaccination
- A negative attitude towards influenza vaccines

**Promotor**
- Cues to action
- Previous influenza vaccinations
- High perceived utility of vaccination
- A positive attitude towards influenza vaccines
Conclusion – Goal 2: Knowledge Gaps

RESEARCH needs to be conducted:

1) In all WHO regions.
   (Lack of research in African Region; South East Asia; Eastern Mediterranean)

2) For all risk groups of influenza
   (Lack of research for elderly, children, chronically ill, pregnant women)
Conclusion – Goal 2: Knowledge Gaps

many studies measure sociodemographic variables

they are carrier variables rather than explanatory

we need psychological insights

amount of psychological variables not an indicator for their quality

more theory-based measures are needed

E.g.: Ethnicity
Actual difference Discrimination Education Access ...

E.g.: Knowledge
Do you know a lot about influenza? vs. Knowledge score.

Thank you for your attention!
Systematic Review – PRISMA Approach

PRISMA 2009 Checklist

<table>
<thead>
<tr>
<th>Section/topic</th>
<th># Checklist Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE</td>
<td>1 Identify the report as a systematic review, meta-analysis, or both.</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>2 Provide a structured summary including, as applicable: background; objectives; participants, and interventions; study appraisal and synthesis methods; results, including implications of key findings; systematic review registration number.</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>3 Describe the rationale for the review in the context of what is already known about the topic.</td>
</tr>
<tr>
<td></td>
<td>4 Provide an explicit statement of questions being addressed with reference to outcomes, and study design (PICO(S)).</td>
</tr>
<tr>
<td>METHODS</td>
<td>5 Indicate if a review protocol exists, if and where it can be accessed (e.g., in registration information including registration number).</td>
</tr>
<tr>
<td></td>
<td>6 Specify study characteristics (e.g., PICOS, length of follow-up) and report results by study/pooled results.</td>
</tr>
<tr>
<td></td>
<td>7 Describe all information sources (e.g., databases with dates of coverage, and additional studies) in the search and date last searched.</td>
</tr>
<tr>
<td></td>
<td>8 Search for at least one database, including repeated.</td>
</tr>
<tr>
<td></td>
<td>9 State the process for selecting studies (i.e., screening, eligibility, included in the meta-analysis).</td>
</tr>
<tr>
<td></td>
<td>10 Describe method of data extraction from reports (e.g., piloted forms) if data will be obtained from investigators.</td>
</tr>
</tbody>
</table>

PRISMA 2009 Flow Diagram

Method

Table 2: Exclusion criteria used in selection process for literature review on influenza vaccine hesitancy.

- not addressing human influenza vaccine
- content not related to determinants of influenza vaccine hesitancy
- determinants not linked to a behavioral outcome
- not a peer-reviewed journal article
- not reporting primary data (including other reviews and meta-analysis)
- modelling study
- intervention study
- not published in English or German language
- not published between 2005 and 2016
- not reporting multivariate analysis of determinants

<table>
<thead>
<tr>
<th>departure</th>
<th>decision</th>
<th>concern*</th>
<th>mandatory</th>
<th>anti-vaccin*</th>
<th>better*</th>
<th>emotion*</th>
<th>rear -</th>
<th>perception*</th>
</tr>
</thead>
<tbody>
<tr>
<td>dropout</td>
<td>govern</td>
<td>making</td>
<td>campaign*</td>
<td>recommend*</td>
<td>polic*</td>
<td>intent*</td>
<td>compulsory</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion – Goal 1: Individual Barriers

- all theoretical reasons could be identified.
- especially confidence as well as complacency are major reasons for influenza vaccine hesitancy.

1. Cues to action
2. High perceived utility of vaccination
3. A positive attitude towards influenza vaccines
4. Previous influenza vaccinations