Overcoming Obstacles to Vaccination: Key Insights from EU-Wide Surveys

Introduction:

Vaccination is one of the most effective tools in public health, yet disparities in vaccine uptake persist across the EU. These disparities are often driven by a complex interplay of behavioural, social, and systemic factors. Under Task 2 "Assessment of obstacles to vaccination" two large-scale surveys were conducted across all 27 EU Member States: one targeting the general population and another focused on healthcare professionals. These surveys aimed to capture both individual-level and system-level determinants of vaccine uptake.

Together, these surveys provide a rich evidence base for understanding the multifaceted nature of vaccine uptake in the EU. Key findings, and policy implications derived from the data, offer a roadmap for improving vaccination coverage and equity across Member States.

Methodology

General Population Survey

The general population survey collected responses from **25,889 individuals aged 16 and above**. Sampling was stratified by gender, age, and region to ensure national representativeness. The survey was conducted online to reduce social desirability bias, especially for questions related to attitudes and personal vaccination status.

The questionnaire was structured around the World Health Organization's **Behavioural and Social Drivers (BeSD)** framework, which identifies four domains influencing vaccine uptake:

- ◆ **Thinking and Feeling**: Cognitive and emotional responses to vaccines and vaccine-preventable diseases.
- ◆ **Social Processes**: Influence of social norms and recommendations from trusted sources.
- ◆ **Motivation**: Willingness, intention, and hesitancy to get vaccinated.
- ◆ **Practical barriers**: Barriers encountered when accessing vaccination services, such as cost, location, and scheduling.

Healthcare Professionals Survey

The healthcare professionals survey gathered **2,510 responses** from general practitioners, paediatricians, midwives, nurses, and pharmacists via Kantar's Healthcare Panel. Sample targets were set per country to reflect the diversity of vaccinators and institutional structures. While regional-level data was not captured, the survey ensured broad national coverage.

The questionnaire was developed with medical experts and covered eight thematic areas:

- ◆ Practice characteristics
- ◆ Patient attitudes and behaviours
- ◆ Professional views on vaccination
- ◆ Information systems and monitoring
- ◆ Training and competence
- ◆ Communication and recommendation practices

◆ Vaccine supply and logistics
◆ Perceived systemic barriers

Statistical Modelling

To analyse the survey data, a multilevel logistic regression approach was used, incorporating both individual-level and country-level variables. The modelling process included:

- **Bayesian Additive Regression Trees (BART)** to identify the most predictive country-level variables from over 150 indicators.

- **Post-stratification and reweighting** to align survey responses with population-level distributions.

- **Scenario modelling** to estimate potential improvements in vaccine coverage if specific barriers were addressed.

Country-level data was enriched with indicators from the World Bank, Eurostat, Transparency International, and national experts. These included metrics on governance, healthcare infrastructure, internet access, outreach methods, and vaccination financing models.

Key Findings

The analysis of the two EU-wide surveys, one targeting the general population and the other healthcare professionals, revealed a complex landscape of behavioural, systemic, and logistical factors influencing vaccine uptake. These findings are structured around individual-level determinants, healthcare system characteristics, and the impact of policy interventions.

1. Individual-Level Determinants

The general population survey identified within the four key domains of the BeSD framework, several factors and determinants shaping vaccination decisions:

- **Thinking and Feeling**: Confidence in vaccine safety, trust in healthcare professionals, and fear of side effects were major predictors of vaccine intent and uptake.

- **Social Processes**: Recommendations from healthcare providers and perceived social norms (family, peers, religious leaders) significantly influenced decisions.

- **Motivation**: Willingness to vaccinate varied between vaccine types, with higher willingness observed for seasonal influenza and COVID-19 boosters.

- **Practical Issues**: Barriers such as unclear booking procedures, limited clinic hours, and transportation costs were frequently cited.

Demographic factors such as age, education, employment status, and health literacy also played a role, with younger and more educated individuals generally showing higher vaccine acceptance.

2. Healthcare Professionals' Perspectives

The survey of healthcare professionals highlighted several systemic challenges:

- **Administrative Burdens**: Fragmented monitoring systems and lack of centralised registries hindered efficient vaccine delivery.

- **Training and Communication**: Many professionals reported insufficient training in vaccine communication and hesitancy management.

- **Supply and Access**: Limited availability of vaccines and vaccinators, especially in rural areas, was a recurring issue.

- **Outreach and Reminders**: Inadequate reminder systems and outreach campaigns were seen as missed opportunities to boost uptake.

3. Country-Level Insights and Modelling

Using Bayesian Additive Regression Trees (BART) and multilevel regression models, the study identified 20 significant country-level predictors of vaccine uptake. These included:

- **Governance and Trust**: Countries with higher government effectiveness and social trust showed better vaccination outcomes.

- **Digital Infrastructure**: Internet access and use of digital health platforms correlated positively with uptake.

- **Health System Preparedness**: Availability (i.e. number) of curative care beds and health awareness levels were strong predictors.

4. "What-If" Scenarios and Policy Impact

Scenario modelling demonstrated that targeted policy interventions could lead to measurable improvements in vaccine coverage. For example:

- **Financing Childhood Vaccines in Primary Care**: In countries without this support, predicted MMR coverage ranged from 85.2% to 93.7%. Introducing financing could raise coverage by 1–2 percentage points.

- **Outreach and Reminder Systems**: Countries with robust outreach measures, including reminder schemes (e.g. Denmark) showed higher uptake, especially when combining digital and paper-based outreach.

However, the overall effect of single interventions was modest, underscoring the need for multi-pronged strategies tailored to national contexts.

The findings from the EU-wide surveys and modelling exercises point to a clear conclusion: improving vaccine uptake requires targeted action to remove persistent barriers. These barriers, specifically administrative, practical, financial, systemic, and informational—are not isolated issues but interlinked challenges that demand coordinated responses.