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(UN)INFORMEDNESS OF PARENTS ABOUT VACCINATION OF CHILDREN OF EARLY AND PRESCHOOL AGE

Abstract

Vaccination is one of the most effective ways of preventing infectious diseases and a key factor in safeguarding public health. Despite its proven benefits, parental decisions regarding childhood vaccination are increasingly influenced by unverified sources of information, particularly on social media. In Croatia, vaccination is mandatory, and unvaccinated children may be restricted in exercising their right to enrol in preschool institutions, which raises a number of ethical and legal issues. The aim of this paper was to analyse the sources of information most trusted by parents and to examine how their level of informedness influences decisions on vaccinating children of early and preschool age. The paper is based on a systematic review of scientific literature published over the past ten years, with an emphasis on comparative approaches to mandatory and voluntary vaccination within the European context. The results indicate that parents' level of informedness is a key factor in vaccination acceptance, with healthcare professionals and official health institutions playing an important role. It is concluded that education and transparent communication about the importance of immunisation are essential for increasing parental trust and maintaining high vaccination coverage rates.

Key words: vaccination, informedness, parents, preschool education, public health

1. Introduction

Vaccination is one of the most effective methods of preventing infectious diseases, as confirmed by numerous studies (WHO, 2020). Throughout history, immunisation has saved millions of lives and led to the eradication of smallpox, as well as a significant reduction in the incidence of diseases such as poliomyelitis, measles, and whooping cough (Orenstein & Ahmed, 2017). Contemporary vaccination programmes implemented by health organisations worldwide represent the foundation of public health prevention and herd immunity (ECDC, 2019). However, despite scientifically proven benefits, parental decisions regarding childhood vaccination are often influenced by various, sometimes contradictory, sources of information (Larson et al., 2018). In the era of digitalisation, social media, blogs, and online communities play an increasingly important role in shaping attitudes, frequently disseminating misinformation and unfounded theories (Jolley & Douglas, 2017). This situation has led to the phenomenon of vaccine hesitancy, which the World Health Organization identifies as one of the ten greatest threats to global health (WHO, 2019). In Croatia, where vaccination is legally mandatory, unvaccinated children face restrictions in access to preschool education (Government of the Republic of Croatia, 2021). Although such an approach is motivated by the protection of public health, it raises numerous ethical and legal dilemmas. On the one hand, there is an imperative to protect community health, and on the other, the issue of individual rights and freedom of choice (Giubilini et al., 2018). This tension is particularly evident in the context of children's right to education, where questions of proportionality and discrimination arise (UNESCO, 1960). This paper analyses current literature to identify key factors influencing parental decisions regarding vaccination of children of early and preschool age. Through a critical review of existing research, the paper seeks to provide a comprehensive analysis of this complex issue, which is of particular relevance to the Croatian context.

1.1. Historical context of vaccination

The history of vaccination dates back to the eighteenth century, when Edward Jenner developed the first vaccine against smallpox using material from cowpox lesions (Riedel, 2005). This revolutionary method, based on the observation that individuals who had contracted cowpox did not develop smallpox, laid the foundations of modern immunology. Jenner's discovery marked a turning point in the fight against infectious diseases and led to the development of the concept of preventive medicine. During the nineteenth and twentieth

centuries, further scientific breakthroughs occurred, most notably the work of Louis Pasteur, who developed vaccines against rabies and anthrax, further confirming the importance of immunisation in medicine. In the twentieth century, advances in microbiology and the pharmaceutical industry enabled mass immunisation campaigns, leading to a dramatic reduction—and in some cases complete eradication—of diseases such as smallpox, while illnesses such as poliomyelitis, diphtheria, and measles were significantly reduced (Orenstein & Ahmed, 2017). National vaccination programmes were established, ensuring wide vaccine availability and substantially reducing child mortality and morbidity worldwide.

1.2. Vaccination in contemporary society

Despite its undeniable successes, the last three decades have witnessed the rise of anti-vaccination movements. A turning point was the controversial 1998 study by Andrew Wakefield, which falsely linked the MMR vaccine to autism (DeStefano et al., 2013). Although the study was later discredited and retracted, and its author lost his medical licence, its consequences continue to influence public opinion. The contemporary era of information expansion and social media has further exacerbated this problem by enabling the rapid spread of misinformation and conspiracy theories (Kata, 2012). Paradoxically, the very success of vaccination—which led to the disappearance of many once-feared diseases—has contributed to a reduced perception of disease risk and increased scepticism regarding the necessity of vaccination (Leask et al., 2020). In this context, healthcare professionals play a crucial role as trusted sources of information (Jarrett et al., 2015).

2. Methodology

This paper is based on a systematic review of scientific literature on parental informedness and attitudes towards vaccination of children of early and preschool age. The aim of the search was to identify relevant studies addressing mandatory vaccination, parental perceptions, and public health policies within the European context.

2.1. Databases and search procedures

The literature search was conducted in the PubMed, Scopus, and Google Scholar databases in February 2025. Combinations of keywords and operators were used: ('vaccination' OR

‘immunisation’) AND (‘parents’ OR ‘parental attitudes’) AND (‘children’ OR ‘preschool’) AND (‘mandatory vaccination’ OR ‘vaccine hesitancy’ OR ‘information sources’) AND (‘Europe’ OR ‘Croatia’). The search was limited to articles published between 2013 and 2024, in English and Croatian, with full-text availability.

2.2. Inclusion and exclusion criteria

Included studies:

- address parental perceptions and the impact of informedness on vaccination decisions,
- examine mandatory vaccination or immunisation public policies,
- contain empirical data or systematic literature reviews,
- are published in peer-reviewed journals.

Excluded studies:

- focus on adult immunisation or specific medical populations,
- lack clearly described methodology,
- are not available in full text,
- represent commentaries, opinions, or non-peer-reviewed sources (e.g. newspaper articles, blogs).

2.3. Research results and study selection

In the initial search phase, 127 studies were identified. After removing duplicates (n = 18) and screening titles and abstracts, 76 studies did not meet the inclusion criteria. A detailed analysis of full texts resulted in the identification of 33 relevant studies, of which 25 were ultimately included in this systematic review.

The search process followed these steps:

1. Identification of potential studies in databases (n = 127)
2. Removal of duplicates (n = 18)
3. Title and abstract screening (excluded n = 76)
4. Full-text analysis (excluded n = 8)

5. Final number of included studies: 25

2.4. Analytical approach

The selected studies were analysed using a qualitative thematic synthesis method. Three main thematic areas were identified:

1. approaches to mandatory and voluntary vaccination,
2. parental information sources and the influence of social media,
3. ethical and legal aspects of mandatory vaccination.

Themes were compared across European countries to highlight differences in approaches, levels of parental trust, and the effectiveness of immunisation.

3. Results and discussion

3.1. Mandatory vaccination in the European Union

Within the European Union, significant differences exist in vaccination approaches, reflecting diverse cultural, historical, and health policy backgrounds of individual Member States (ECDC, 2019). While countries such as the Netherlands, the United Kingdom, and Sweden operate voluntary vaccination systems based on recommendations and education, Croatia, Slovenia, France, Italy, and nine other countries implement mandatory vaccination policies for certain diseases (ECDC, 2019). Mandatory vaccination programmes have proven effective in increasing immunisation rates. For example, in France, the introduction of mandatory vaccination against 11 diseases for children born after 2018 led to an increase in vaccination coverage from 90% to over 98% (Santé Publique France, 2020). Similarly, Croatia records high vaccination rates (over 95%) for core vaccines included in the mandatory immunisation programme (HZJZ, 2022). However, a study by Dubé et al. (2016) warns that mandatory programmes, while effective in the short term, may provoke resistance among parents who question their necessity or have concerns about vaccine safety. In Italy, for instance, the introduction of mandatory vaccination in 2017 triggered numerous protests and legal disputes (Casula & Toth, 2021). Research by Peretti-Watel et al. (2015) shows that mandatory vaccination can lead to polarisation of attitudes, increasing both strong supporters and strong opponents. An interesting case is Germany, which introduced mandatory measles vaccination in 2020 but with flexible mechanisms for resistant parents (Federal Ministry of

Health, 2020). This approach seeks to balance public health requirements with respect for parental autonomy and may serve as a model for other countries. Comparisons show that high vaccination rates can also be achieved without mandates, as seen in Sweden and Norway, where strong educational campaigns and trust in the healthcare system prevail (Larson et al., 2018). This raises the question of whether mandatory vaccination is the most effective long-term strategy, or whether greater emphasis should be placed on building trust and public education.

3.2. Comparison of vaccination systems

Comparative analysis reveals key differences in vaccination systems and their effects. In countries with voluntary vaccination, such as Sweden and Norway, immunisation coverage remains high (over 95%) due to strong educational campaigns, transparent communication about vaccines, and high levels of trust in the healthcare system (Larson et al., 2018). These countries invest substantial efforts in parental education and long-term strategic promotion of vaccination, resulting in consistently high coverage without administrative coercion (Storrø et al., 2020). In contrast, countries with mandatory vaccination, such as Croatia and France, face greater resistance from minority groups who perceive mandates as violations of personal freedom (Peretti-Watel et al., 2015). Paradoxically, while mandatory systems often achieve immediate increases in vaccination rates, they may also trigger a long-term decline in trust in vaccines and health institutions (Dubé et al., 2021). For example, in Italy, the introduction of mandatory vaccination in 2017 led to a rise in anti-vaccination movements and legal challenges, despite improved immunisation rates (Casula & Toth, 2021). These experiences suggest that long-term maintenance of high vaccination coverage depends not only on legal measures but also on continuous efforts to build trust and improve health literacy.

3.3. Information sources and parental perceptions

Research shows that parents increasingly rely on online sources and social media when making vaccination decisions, often prioritising other parents' experiences and unverified content over official health recommendations (Betsch et al., 2018). Unfortunately, misinformation and conspiracy theories spread rapidly through digital channels, undermining trust in official guidance and scientific evidence and creating unfounded fears and doubts (Jolley & Douglas, 2017). Of particular concern is the role of social media algorithms, which

often promote controversial and sensationalist content, further limiting access to balanced information (Bruns, 2019). Ensuring access to reliable sources, such as healthcare institutions and professionals, and developing strategies to improve parental health literacy are therefore essential (Nutbeam, 2008). Recent studies highlight that personalised communication, in which physicians dedicate time to addressing parental concerns, can significantly improve vaccination acceptance (Leask et al., 2020).

3.4. Legal and ethical aspects of mandatory vaccination

The legal and ethical dimensions of mandatory vaccination present a complex dilemma between protecting public health and respecting individual rights. Croatian law restricts enrolment in preschool institutions for unvaccinated children, which conflicts with the Convention against Discrimination in Education (UNESCO, 1960) and raises questions of proportionality. Some studies warn that such measures may lead to social exclusion and stigmatisation of unvaccinated children, with long-term negative psychosocial consequences (Leask et al., 2020), while others argue that they are necessary to ensure herd immunity and prevent outbreaks (Giubilini et al., 2018). Ethically, this issue requires careful balancing between parental autonomy in decisions about a child's health and societal responsibility towards the community (Dawson, 2011). In this context, some authors propose a model of "soft paternalism", combining mandatory immunisation with flexible exemption mechanisms for special cases, as a potential compromise solution (Navin, 2015). Some countries, such as Australia, have introduced vaccination incentives rather than direct sanctions (Attwell et al., 2018), which may be more effective in increasing immunisation rates without infringing individual rights.

4. Conclusion

Mandatory vaccination in Croatia generates considerable controversy, particularly regarding children's right to education and potential discrimination against unvaccinated children. The current system, which prevents enrolment of unvaccinated children in preschool institutions, challenges the balance between public health protection and respect for individual freedoms. To reduce parental resistance and improve cooperation, additional efforts are required in educational campaigns that provide transparent, scientifically grounded information, as well as communication strategies that address parental concerns rather than

ignore them. Future research should focus not only on the epidemiological effects of mandatory vaccination but also on its long-term social and psychological consequences for children and families. It is particularly important to explore alternatives to mandatory models, such as incentive-based programmes or flexible exemption mechanisms, which may achieve high vaccination coverage while respecting human rights. Finally, evaluation mechanisms should be developed to monitor the effectiveness and ethical acceptability of existing measures, ensuring that vaccination policies are not only effective but also fair. Only a comprehensive approach that balances public health priorities with ethical principles can ensure the long-term success of immunisation programmes in Croatia.

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(NE)INFORMIRANOST RODITELJA O CIJEPLJENJU DJECE RANOG I PREDŠKOLSKOG UZRASTA

Sažetak

Cijepljenje je jedan od najučinkovitijih načina sprječavanja zaraznih bolesti i ključni čimbenik u zaštiti javnog zdravlja. Unatoč dokazanim prednostima, roditeljske odluke o cijepljenju djece sve su više pod utjecajem neprovjerenih izvora informacija, posebno na društvenim mrežama. U Hrvatskoj je cijepljenje obavezno, a necijepljena djeca mogu biti ograničena u ostvarivanju prava na upis u predškolske ustanove, što pokreće niz etičkih i pravnih pitanja. Cilj ovog rada bio je analizirati izvore informacija kojima roditelji najviše vjeruju te ispitati kako njihova razina informiranosti utječe na odluke o cijepljenju djece rane i predškolske dobi. Rad se temelji na sustavnom pregledu znanstvene literature objavljene u posljednjih deset godina, s naglaskom na komparativne pristupe obveznom i dobrovoljnom cijepljenju u europskom kontekstu. Rezultati pokazuju da je razina informiranosti roditelja ključni čimbenik u prihvaćanju cijepljenja, a važnu ulogu imaju zdravstveni djelatnici i službene zdravstvene ustanove. Zaključuje se da su edukacija i transparentna komunikacija o važnosti cijepljenja ključni za povećanje roditeljskog povjerenja i održavanje visoke stope procijepljenosti.

Ključni pojmovi: cijepljenje, informiranost, roditelji, rani i predškolski odgoj i obrazovanje, javno zdravstvo