

Secondary School Students' Evaluation of Vaccination

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Abstract

In Austria, science teaching aims at encouraging students to develop decision-making competence and moral judgment by addressing socioscientific issues. This work considers how Austrian secondary school students evaluate ethical aspects of vaccinations. In biology lessons and a talk given by a medical scientist, students were confronted with the biological basics of vaccination, advantages for both the individual and society and the risk-benefit balance of vaccination. The students (n=17; aged 16-17) participated in semi-structured interviews, which mainly addressed their attitudes towards vaccination, responsibility to society and compulsory vaccinations. The interviews were audio taped, transcribed and qualitatively analysed. Most students showed an indifferent attitude towards vaccination. Students were mostly concerned with protecting the health of individuals and hardly with public health protection. Most students valued freedom of choice and thus rejected compulsory vaccination. They hardly addressed ethical or moral aspects of the issues discussed in the interviews. In general, students ignored recent lessons learned and argued rather intuitively and emotionally than rationally. Critically evaluating normative positions, e.g. compulsory vaccination, implies considering relevant knowledge as well as multiple points of view and balancing them. Most students seemed to experience difficulties in doing this. Perhaps they did not associate vaccinations with their personal life, socio-political responsibility or ethical considerations and/or felt that vaccination is not an issue that provokes discussion.

Keywords: moral judgment, decision-making, socioscientific issues, bioethics;

1. Introduction

Scientific findings are essential for solving societal challenges, however, they can raise bioethical questions.

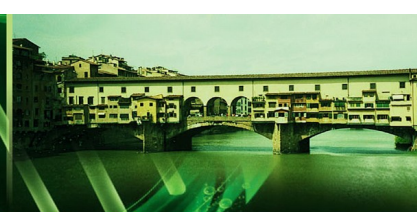
Vaccinations serve both to protect the individual and to protect the population. Vaccinations protect the individuals' health by reducing their risk of contamination enormously. This is especially true for viral diseases because there is hardly any other specific treatment. In addition, adequate vaccination coverage can provide collective protection. The so-called herd immunity arises when enough people are vaccinated. As a result, a pathogen can hardly circulate within the population. Herd immunity protects unvaccinated people, e.g. children with immune deficiency, and can prevent an epidemic spread of disease or even completely eradicate a disease. [2]

Individual vaccination behaviour may have a strong impact on the health of others. Thus vaccinations constitute a public health goal. Herd immunity is a public good as it benefits all members of society. [3] In Austria and other European countries, the vaccination coverage, especially against measles, was very high. It is currently declining and vaccination hesitancy is spreading [1].

There is no compulsory vaccination in Austria, however, the Ministry of Labour, Social Affairs, Health and Consumer Protection makes recommendations via the annual Austrian Vaccination Plan. Since 1998 there is a free child vaccination program in Austria. This includes important immunizations and booster vaccinations for children up to the age of 15 years. [2]

If we want people to analyse the issue of vaccination profoundly, to make informed decisions and to include its ethical significance in their decision-making process, they need to understand scientific basics as well as they need to practice ethical evaluation or moral judgment. These demands are included in the Austrian educational standards for secondary schools. In Austria, science education aims at encouraging students to develop decision-making skills and moral judgment by addressing socioscientific issues. Realistic, challenging and debatable socioscientific issues produce a social or moral dilemma and require scientific knowledge as well as ethical evaluation or moral judgment [4]. German science education literature [5; 6; 7] describes moral judgment via seven dimensions:

- Awareness of one's own personal attitude,
- Awareness of the moral relevance of a situation,
- Assessment,



- Reflection of consequences,
- Change of perspective,
- Argumentation,
- Ethical knowledge [7, translation by: 8, p. 179-180].

This work considers the research question: How do secondary school students age 16-17 years evaluate the bioethical issue of vaccination?

2. Research design

In spring 2018, qualitative data were collected through semi-structured interviews with students who visited a grade 10 biology class of a secondary school in Tyrol/Austria. Because the first author of this paper was their biology teacher, a special focus was put on research ethics. The students were asked for their consent and informed about in writing and verbally why and how data is collected, how anonymity and data security is ensured and that they can retract their consent any time. A pre-service biology teacher (second author) who wrote her master thesis at the University of Innsbruck interviewed the students to ensure the anonymity of the transcripts.

In the first step, students were introduced to the scientific content necessary to understand vaccination and its meaning for society. In biology lessons (four times 50 minutes), students studied the immune system, the functioning of vaccines, herd immunity and the responsibility for the individual and society. In addition, the school doctor invited a medical scientist and vaccination expert to talk to all 10th graders attending the school. In his one-hour talk, the scientist emphasised the importance of vaccinations and their ethical significance. He talked about the functioning of vaccines, advantages for the individual and society, prejudice and arguments of those opposed to vaccines, safety of vaccines, the risk-benefit balance and possible long-term consequences of a measles infection. The scientist concluded that he is not in favour of compulsory vaccination enforced by law as he believes in the emancipation of citizens through education.

In the next step, students (n=17; aged 16-17) participated in semi-structured interviews, which mainly addressed the issues responsibility to society and compulsory vaccinations. These issues were discussed in local media because neighbouring Italy introduced certain mandatory vaccinations [1]. The interviews were audio taped, transcribed and qualitatively analysed [9]. The aim was to find out how 10th graders evaluate the subject of vaccination ethically and which aspects of moral judgment according to the literature [7; 8] are reflected in their statements. Together authors read and discussed the transcripts and arranged the students' statements in order to create a system by using codes, which have been deduced from the literature [7; 8].

3. Results

Most students show an indifferent attitude towards vaccination. For these students vaccinations seem to be normal practice, about which they do not worry much. Individual students strongly commit to vaccinations. Some students expressed concerns about side effects of vaccines.

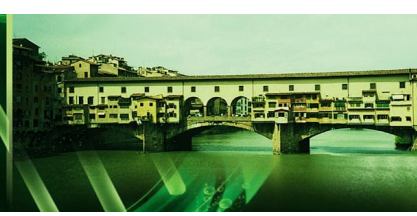
Many students seem to have an egocentric perspective during interviews. These statements are concerned with vaccinations as an important source for individual health protection rather than a source for public health protection.

In general, students ignored scientific knowledge, which they compiled in class previously and argued rather intuitively and emotionally than considerably and rationally. Thus, they hardly justify their arguments and statements.

Most students address examples used during class activities and mention for example measles and chickenpox. However, hardly any students show the ability to transfer this knowledge to any other context when discussing aspects of vaccination. For example, many students remember herd immunity only in the context of chickenpox, whereas few students explicitly address herd immunity in other contexts. Many students recognise the social relevance of vaccinations in terms of herd immunity implicitly. However, they rarely address it spontaneously.

When discussing ethical aspects of vaccinations, e.g. compulsory vaccination, most students express their opinion, however, it does not become apparent whether they reflect on their own opinion or position. For example, they do not explain how they arrived at this view. Only two students utter where their standpoint comes from.

Most students recognise the dilemma to restrict freedom of choice of individuals for public interests. Austrian society provides parents with free vaccines for their children in order to protect people who can't be vaccinated and for public health protection. However, forcing parents to intervene in the body



of their children against their will can be questioned morally. Even though most students see the advantages of vaccinations, they value freedom of choice so much that they reject compulsory vaccination. Besides, students hardly address ethical standards or moral norms. For example, they didn't question that society has a responsibility towards children of parents who are opponents of vaccinations as well.

Only few students show the ability to reflect on consequences and to change their perspective. For example, when confronted with the ethical dimensions of vaccinations, many students remember that the medical scientist told the story of a local boy, who got infected with measles in a paediatrician's waiting room as a baby, suffered from severe complications and passed away. Those students blamed the parents of the child who passed on the measles for not vaccinating their child. It appears to be difficult for the students to change their perspective and think about those parents as people, who probably want the best for their children by setting different priorities.

4. Discussion

All participating students visit either the ethics class or the catholic religion class. Presumably, students have practiced moral judgment in these classes, however, they probably don't realise to transfer skills gained in these classes and use them in a biological context. Perhaps students don't associate vaccinations with their personal life, socio-political responsibility or ethical considerations and, thus, feel that vaccination is not an issue that provokes discussion.

Critically evaluating normative positions, e.g. compulsory vaccination, implies considering relevant knowledge as well as multiple points of view and balancing them [10]. Most participating students seem to have trouble in connecting knowledge, anticipating consequences, showing empathy and changing their perspective. We argue that teachers need to react to these difficulties by helping their students to reflect on their decision-making process. In order to be able to do that, students need a profound body of knowledge. Teachers are facing the challenge of supporting their students to gain knowledge and practice evaluation and moral judgment in very little time. Besides, teachers need to reflect on how they present their own position in the classroom. A student who feels sceptical towards vaccinations might be afraid to ask controversial questions or take a standpoint against vaccinations. Indeed, some students expressed concerns about side effects of vaccines in the interviews but not in the classroom.

Teachers need to identify difficulties students face. They themselves need support in developing diagnostic as well as feedback skills.

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