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CONTENT

Abstract

Childhood vaccination is one of the most significant public health means and cost-effective ways to prevent disease, prolong life, and promote health. To take these advantages, each country implements certain immunization policies to at least reach herd immunity thresholds. However, due to medical, religious, or philosophical reasons, sometimes parents may refuse vaccinating their children. Therefore, especially in case of compulsory immunization, which is applied by the United States and Turkey, a conflict emerges between population-based benefits and individual liberties. In this context, this essay aimed to examine the immunization models of the United States and Turkey and evaluate their mandatory immunization policies from a liberal perspective, which values individual freedom and minimal state intervention. The United States uses school immunization requirements with medical, religious, and philosophical exemptions, while Turkey implements a guardianship model with financial incentives for parents and negative incentives for care providers. Nevertheless, many European countries' vaccination rates indicate that high coverages can also be achieved and maintained through voluntary immunization systems. Therefore, it seems that it is most likely to ethically justify the United States' soft compulsory model, rather than Turkey's guardianship-based hard compulsory policy.

Key words: Compulsory childhood vaccination, liberal perspective, United States, Turkey

Introduction

Public health aims to prevent disease, prolong life, and promote health through a comprehensive and collective effort (Winslow, 1920). Public health policies contain both medical applications, like vaccination, and non-medical implementations, such as supplying water and sewage systems (Nuffield Council on Bioethics [NCB], 2007). The nature of public health which focuses on the whole population in a geographical area sometimes requires authoritarian approaches in order to achieve its designated goals. However, the classical liberal perspective upholds individual liberty and strives to protect it from the state's interventions. Therefore, public health requirements tend to conflict with liberal values. In that respect, childhood vaccination is one of the most controversial subjects in public health ethics (Isaacs et al., 2009). Nevertheless, in the scope of their political views and de facto necessities, countries implement either voluntary or mandatory vaccination to make children immunized against certain diseases. Even though the United States' and Turkey's immunization systems are considered mandatory, the applications of the two countries are rather distinct from each other. In this sense, the essay aims to elaborate the two countries' current vaccination policies, compare them, and draw a conclusion in light of a liberal perspective.

Conceptual Framework

Vaccination is one of the most effective public health means to prevent contagious diseases, decrease mortality and morbidity, promote health, and eradicate infectious diseases, such as smallpox (Fina-Goulden, 2010; Haverkate et al., 2012). Every country strives to gain the maximum advantages of vaccines. Countries may apply distinct vaccination policies in light of their designated goals, the resistance to immunization, and political culture (Haverkate et al., 2012; Salmon et al., 2006). Even though the implementation of each immunization policy encompasses several differences in itself, the classification of vaccination models are categorized as compulsory and voluntary.

In this paper the terms vaccination and immunization are used as interchangeable. However, it is also possible to describe them as two different concepts. Vaccination refers to the administration of injecting weakened or killed viruses or bacteria to the body to artificially immunize individuals against certain viruses and bacteria-caused diseases (Diodati, 2008). Although mostly conducted against communicable diseases, childhood vaccination does not solely encompass vaccines for infectious diseases. For example, tetanus is not a contagious disease, but tetanus vaccine is in the childhood vaccination schedule (Isaacs et al., 2004). On the other hand, immunization is “the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine” (World Health Organization, n.d., pp. 1). Therefore, vaccination means the administration of vaccines, while immunization refers to getting immune as a result of the vaccination.

Similarly, routine vaccination and mass vaccination are conceptually two close terms with some dissimilarities. Routine immunization refers to the conduct of recommended vaccines by healthcare providers in a healthcare facility, such as the administration of a regularly scheduled vaccine to a child in a physician’s office by a nurse. On the other hand, mass immunization alludes to the vaccination of specified groups that is carried out by public health professionals anywhere, like vaccinating pregnant women against an epidemic in their houses. In routine immunization, the consequences of carried out vaccines can be observed by the same healthcare providers. On the contrary, the mass immunization is mostly related to disease outbreaks and conducted by appointed public health professionals.

The results of mass immunization are not supervised by health professionals who administrated the vaccine. In this sense, childhood vaccines are classified as routine immunization (Diodati, 2008).

Routine and mass immunizations address the reasons and administrations of vaccines, whereas herd immunity demonstrates the prevalence of the immunity against infectious diseases acquired by vaccinating a certain percentage of the population. Herd immunity means that "sufficient numbers of people in the population are immune from a disease to ensure that all members of that population are immune from that disease" (Holland, 2007, p. 136). Through adequate prevalence of routine and mass immunization, the vaccinated population benefits the unvaccinated population "by breaking the chain of disease transmission" (Diodati, 2008, p. 15). For instance, vaccinating approximately 95% of MMR (measles, mumps, and rubella)-susceptive population also protects the 5% of unvaccinated population from the disease in the same community or area (Gardner et al., 2010). Each communicable disease carries a different threshold to produce herd immunity, but by reaching this percentage of vaccination, unvaccinated people benefit as much as vaccinated ones, in terms of not getting the disease.

Compulsory/mandatory vaccination and voluntary vaccination point out two different ways of the implementation of immunization policies. Haverkate et al. (2012) define compulsory vaccination as "a vaccination that every child must receive by law without the possibility for the parent to choose to accept the uptake or not, independent of whether a legal or economical implication exists for the refusal" (p. 2). Therefore, compulsory vaccination obliges the target populations to consent the vaccine in order not to face particular sanctions. It is a mandate to conduct a vaccine to relevant population on the grounds of its benefits to the vaccinated person as well as to all the people in the society. Though the requirements and the consequences of the refusal of compulsory vaccination methods may differ, each compulsory system imposes a restriction on individuals' preferences. On the other hand, voluntary vaccination practices rely on people's informed consent or informed refusal. In light of their choices, judgements, and decisions, individuals accept or reject the opportunity to get the vaccine. Health authorities merely inform people regarding the advantages and disadvantages of the vaccine and leave the decision to them (Diodati, 2008).

Voluntary and Compulsory Vaccination

Vaccines contain a certain amount of some toxoids and weakened or killed bacteria and viruses to generate an artificial immunity against specific infectious diseases. By childhood vaccination, children are exposed to toxins, bacteria, and viruses which engender certain unwelcome results. Furthermore, according to Diodati (2008), vaccines cause a child's immune system to devote a huge portion of its capacity to only vaccinated diseases, and this situation might lead to vulnerabilities against other diseases, such as cancers, allergies, mental disorders, in the long run. Therefore, it can be stated that immunization includes some harmful effects. For the justification of these consequences, the short and long term benefits of vaccines should surpass their harms. In this context, the overwhelming majority of laypeople, health authorities, and medical experts, "the benefits of vaccines substantially outweigh their minimal risks" (Conis, 2015, p. 12). Additionally, in terms of benefit-risk ratio and in light of evidence-based medical facts, many bioethicists are not skeptical that the benefits of childhood vaccines far overshadow the risks. Moreover, vaccination is the most cost-effective and the most preventative medical intervention (Salmon et al., 2006; Isaacs, 2012: Moran et al., 2006; Fine-Goulden, 2010; Haverkate et al., 2012).

The primary question in childhood vaccination is chiefly about the efficacy of voluntary and compulsory vaccination methods and ethical problems they may carry. Vaccination creates striking advantages to the vaccinated person individually and all the other people in the society. From public health perspective, the state especially focuses on the benefits to the whole population. The state aims to exceed at least herd immunity thresholds for each vaccine to ensure adequate protection against contagious diseases. In this sense, the state has an absolute interest in achieving its goals regarding immunization either through imposing the vaccination policy on everyone or by encouraging people to comply with the recommended immunization schedule (Moran et al., 2006). A voluntary vaccination practice does not indicate the absence of an immunization policy. Like compulsory vaccination, voluntary vaccination encompasses a particular immunization schedule. The distinction between these two policies derives from the ways they are applied. A compulsory vaccination system dictates it immunization schedule in the scope of legal regulations, while voluntary vaccination relies on persuasions and inducements to convince

The overwhelming majority of laypeople, health authorities, and medical experts, "the benefits of vaccines substantially outweigh their minimal risks".

parents to willingly consent to vaccines for their children.

The history of compulsory immunization is as old as the history of vaccination. Once Edward Jenner's discovery of cowpox vaccine against smallpox at the beginning of the 19th century, several nations started administrating his smallpox vaccine as a compulsory intervention (Diodati, 2008). In the United States, Massachusetts was the first state brought in mandatory smallpox vaccine in 1809 (Isaacs et al., 2004). However, along with improvements in immunization, dissenting voices began rising as well. For example, the presence of anti-vaccination movements opposing mandatory immunization in the United States goes back to the end of the 19th century (Conis, 2015). Similarly, the introduction of compulsory smallpox vaccine in Britain in 1853 triggered huge protest rallies (Isaacs et al., 2004). Therefore, many people have resisted vaccines due to several different reasons throughout the vaccination history.

Worries about the safety of vaccines, religious and ideological arguments, skepticisms towards the state's public health policies, and beliefs that vaccination is not a necessity anymore are major reasons behind the refusal of childhood immunization (Moran et al., 2006). Especially, the safety of vaccines-based objections, fears, and claims form the major category in vaccination resistance movements. Some parents, health professionals, and researchers have attributed the increases in cancer rates, epidemics, childhood disorders and disabilities, and similar undesired medical situations to certain vaccines (Conis, 2015). However, in the United States, the Institute of Medicine's Immunization Safety Review, which assessed the safety of national immunization programs between 2001 and 2004, did not identify a correlation between vaccines and alleged medical disorders. Furthermore, numerous scientific studies prove and the majority of experts believe that there is no evidence childhood vaccines directly cause any serious malady. It is also overwhelmingly accepted that the advantages of vaccines to vaccinated persons as well as to the society far outweigh the minimal disadvantages of vaccines (Conis 2015; Isaacs et al., 2004; Back and Martakis, 2015).

Amid continuing discussions regarding safety and objections of childhood immunization, different countries carry out distinct policies to maximize the vaccination rates. The United States, Turkey, Belgium and Poland are some countries applying compulsory vaccination policies, whereas the

United Kingdom, Canada, and Sweden are among the countries conducting voluntary vaccination policies. Nevertheless, this general classification does not mean that the countries in the same category have the exact immunization policies. For instance, in Belgium, parents who reject having their children vaccinated against polio are sentenced to jail or a fine, while in Poland, the refusal of childhood vaccination requires a fine, but it is not applied in practice as long as immunization rates are over herd immunity thresholds. As practicing voluntary systems, the United Kingdom provides healthcare providers financial incentives to achieve certain immunization percentages, whereas Sweden implements completely voluntary vaccination programs (NCB, 2007).

In the case of voluntary vaccination incentives for parents and/or healthcare providers is a common method used by some countries. Austria is one of the countries provides financial incentives to parents to vaccinate their children, while Ireland offers financial incentives to healthcare providers (general practitioners) to increase or maintain immunization rates. Financial or non-financial incentives or nudges for parents generate some ethical concerns. Incentives-driven vaccination systems are called voluntary which does not intent to force people to act in a certain way, though they desire to reach high immunization percentages. However, in the event of incentives, there is always a risk for non-wealthy families to make a decision under the pressure of monetary factors rather than act autonomously. On the other hand, incentives for healthcare providers may engender another ethical problem. Healthcare providers are supposed to inform parents adequately and appropriate about all the potential benefits and harms of vaccines to allow them make a free decision. Nevertheless, incentives might cause mistrust between parents and providers concerning the providers' motivation. The parents might be suspicious of the providers whether the providers pay attention to the child's best interest or their incentive based-interest (Moran et al., 2006).

However, in the event of incentives, there is always a risk for non-wealthy families to make a decision under the pressure of monetary factors rather than act autonomously.

On the other hand, compulsory immunization policies directly compel parents to vaccinate their children and inflict particular penalties on them if parents do not consent to vaccines. Imprisoning, fines, school enrollment-related requirements are some punishments applied in compulsory vaccination (NCB, 2007). Like incentives in voluntary vaccination, fines and school enrollment-related requirements lead to a disproportionate

disadvantage against indigent families. Facing a fine may not impact an affluent family at all, but most likely worsen a poor family's financial situation. Additionally, demanding vaccination as a prerequisite for school entry chiefly precludes the possibility of non-wealthy family's children to receive any type of education. Nevertheless, an affluent family financially has chance to create additional opportunities, such as home school, for their children to get education (Back and Martakis, 2009). For this reason, the certain components or tools of some vaccination policies have potential to produce ethical concerns in themselves.

Liberal Perspective

Healthcare ethics values individual rights and preferences in the scope of individual autonomy, whereas public health occasionally implements particular mandatory interventions against individual freedom to prevent and promote the wellness of the whole population. This situation frequently creates ethical conflicts between individual autonomy and public health requirements. In many cases, the issue of whether the compulsory interventions are ethically justifiable largely depends on which moral theory or political approach is considered. In this context, liberalism is one of the political philosophies mostly taken into consideration in the assessment of conflicts between the state's interferences and individual liberties (Holland, 2007).

As a political and social philosophy, there are several types of liberalism with distinct political, social, and economic aspects (Bell, 2014). At that point, the first question is which liberalism: classical liberalism, social liberalism, modern liberalism, or neoliberalism. The answer to this question may substantially change a perspective on certain issues. For instance, the position on the character of liberty whether it requires positive rights as well, or it only comprises of negative rights shapes the role of the state in the social, political, and economic life (Butler, 2015). In this context, the negative approach defines freedom in the scope of being free from external restricts and coercion, whereas the conception of positive freedom necessitates possessing certain abilities/opportunities as well to be able to do something, which may be summarized as freedom to do (Holland, 2007).

The liberal perspective is evaluated in light of the arguments and principles of classical liberalism throughout this paper. John Locke, Adam Smith, Thomas Jefferson, John Stuart Mill, Friedrich A. Hayek, and Isaiah Berlin are some prominent representatives of classical liberalism (Butler, 2015). It is important to note that it does not mean that the mentioned philosophers and other classical liberals agree on all issues. It is possible to encounter different ideas on certain matters among them. However, from a broad perspective, there are particular subjects, such as freedom, individuality, property, civil society, and the role of law and government on which all classical and neo-classical liberals agree. Each of the philosophers may express distinct points on these issues, but a general consen-

sus exists among them on the main principles (Butler, 2015).

Liberalism can briefly be defined as a theory that defends individual liberty. For a broader description, it may be stated that liberalism is a social, political, and economic doctrine which ensures individuals' natural rights to life, liberty, and property as well as defends the spontaneous order and the state's minimal interventions in social, political and economic life (Aktan, 1995). Eamonn Butler (2015) classifies the principles of (classical) liberalism into ten categories. However, instead of dividing primary liberal values into too many principles, the central points of liberalism might also be grouped as follows: individuality, liberty, spontaneous order, market economy, and minimal state. Nonetheless, in terms of the relationship with public health interventions, liberty, individuality, and the role of state are the most relevant principles.

Liberty is the first and foremost principle of liberalism. Liberty refers to the right to freedom from coercions and oppressions. In this view, liberty is a natural and negative right which means that every individual is born with this right. John Locke's social contract theory has an important impact on the development of this view (Butler, 2015). John Locke says that in the state of nature, people were living freely (the state of liberty) through the law of nature. According to the natural law, all men were equal and independent and harming others' life, liberty, and property were prohibited. However, some people did not comply with the provisions of the natural law, and breaching the law generated the state of war which was "a state of enmity and destruction" (Locke, 1948, p. 1-5, 10). In the state of nature, people had the power of protecting themselves and others as well as the power of punishing ones violating the natural law. Nevertheless, for moving on to the civil society, people partly gave up the former and completely gave up the latter to the government to protect their life, liberty, and property from aggressors (Locke, 1948). The social contract theory does not grant the government to infringe or overlook individuals' freedom and other rights. On the contrary, in light of the purpose behind transforming the state of nature into the state of civil society, the government's function is to maximize individual liberties and minimize restrictions on freedom (Butler, 2015).

Individuality is another indispensable principle of liberalism. Individuality denotes the importance of the individual towards collective entities. Ac-

cording to Yayla (2003), the viewpoint of liberalism on individuality is both ontological and methodological. Ontological individuality demonstrates that the basic entity is individual. This approach is consistent with the theory of natural rights and social contract. Individual had existed prior to the presence of collective systems, such as society and state. The main goal of passing on to the state of civil society is to prevent essential individual rights. On the other hand, methodological individuality is a consequence of ontological individuality and indicates that it is individual deserving to be studied rather than collective bodies. An individual person is a tangible entity with his/her assets, whereas a collective being is abstract by itself, and it cannot represent individuals correctly. The interest of society or common good is intangible, while individual interest or individual good is tangible. For this reason, individual interests and goods cannot be sacrificed for the interests or goods of public.

The importance of liberty and individuality also determine liberal position on the role of the state. Liberalism believes that individuals should be "allowed to use their own means and their own knowledge for their own purposes" (Hayek, 1984, p. 370). Furthermore, according to social contract theory, the aim of the existence of the government is to protect and promote individuals' natural rights. However, it is the government bringing about the highest risk of violating these rights because it has the highest power. If this power is not restricted by law, under the circumstances of corrupt practices, individual basic rights would be in danger. Therefore, liberals recommend a "limited and representative government" (Butler, 2015, p. xviii-7). Classical liberals are always suspicious of the government to unduly engage in social and economic life, especially in terms of creating public interest or common good.

Harm Principle

Liberalism is the theory of freedom and individuality, but individual liberty is not unlimited. Liberalism recognizes the state as only authority to provide and enforce security and justice. Locke states that in the state of nature, man who is "absolute lord of his own person and possessions" has two powers: "[t]he first is to do whatsoever he thinks fit for the preservation of himself and others" and "[t]he other power a man has in the state of nature is the power to punish the crimes committed against that law" (Locke, 1948, p. 62-64). But also the state of nature "is very unsafe, very unsecure" because of the lack of an authority to protect individuals' lives, liberties, and properties (Locke, 1948, p. 62). Therefore, man hands over some of his power to an authority to preserve his rights. In this sense, the state would have the legitimacy of limiting people if they harm or pose a serious threat to some others' life, liberty, or property. However, Hayek (1984) says that the state must not tell men what to do, it must tell men what not to do. Hayek commonly considers the state's authority in the scope of the perspective of negative actions. Nevertheless, Hayek (1984) also accepts that under specific circumstances "like actions to save or protect life, prevent catastrophes" require taking positive actions (p. 370).

Butler (2015) states that "justice requires force; but force requires justification" and underline the importance of the balance between force and harm by circumscribing justifiable force to "real harm" or "the threat of real harm" (p. 39). In this context, the most common approach used by many social science disciplines is John Stuart Mill's harm principle. Mill who is a leading classical liberal and utilitarian philosopher, elucidates his views on individual liberty and the limits of the authority in On Liberty. Mill (2002) says:

[T]he only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or mental, is not sufficient warrant. He cannot rightfully be compelled to do or forbear because it will be better for him to do so, because it will make him happier, because, in the opinions of others, to do would be wise, or even right (p. 8).

In light of Mill's above statements, it could be underlined that Mill mostly evaluates individual liberty in the scope of negative freedom. Mill believes that as long as not harming others, a person can act in the way he wishes.

However, according to Mill (2002), not merely a person's actions, but also his inactions may harm others, and in the case of any harm which results from a person's inactions, the person would be accountable for the harm. This point is crucial in terms of non-vaccination. Refusing immunization does not contain a positive action as doing something, but includes an omission. From this perspective, it is possible to draw a conclusion that either as a result of an active action or through an omission, when a person does or causes any harm to others, the person would be charged with his action or omission.

Nevertheless, at that point the question is whether the intention behind an action or omission affects this conclusion. For example, suppose a family chooses non-vaccination for their children due to medical reasons, such as being on a medication that interacts with vaccines. On the other hand, there is another family that does not have their children vaccinated without providing any specific reason. In both cases, non-vaccination may lead to harm to others in the society. However, one of them has a particular excuse, whereas the other just ignores the situation. In On Liberty, Mill does not explicitly classify actions and omissions as intentional or unintentional. Nonetheless, it is important to note that the purpose of Mill's in On Liberty is not to legitimize any intervention against individual freedom; he strives to clearly formulate the boundaries of the limitations of individual freedom in order to protect individual liberty from unwarranted assaults (Tamburrini, 2011). For this reason, Mill's principle which requires not harming others should be taken into account with the intentions and causes of each specific case.

Immunization Programs in the United States and Turkey

The average health expenditure of the Organization for Economic Co-operation and Development (OECD) countries was 8.9% of GDP in 2013, and among the OECD countries, the United States spent the most with 16.4% of GDP, whereas Turkey spent the least with 5.1% of GDP (OECD, 2015). However, in spite of these striking gap in health spending, in terms of life expectancy, there is not a significant difference between them; both countries perform rather poor. The United States has 26th highest life expectancy at birth for men and 29th for women, while Turkey has 29th highest life expectancy at birth for men and 32nd for women, among 34 OECD countries (OECD, 2015). On the other hand, in regard to childhood vaccination, even though both countries implement compulsory vaccination programs, they remarkably differ in the tools they use to increase or maintain their childhood vaccination rates.

Vaccination in the United States

The concept of police power has a prominent role in the United States' vaccination policy. Carrington (2015) defines police power "as the power to regulate for the public good, particularly concerning subjects such as the public health, safety, peace, and morals" (p. 21). As a reflection of this approach, the United States Supreme Court upheld mandatory vaccination in two different cases: in Jacobson v. Massachusetts case, in 1905, regarding the state of Massachusetts' compulsory vaccination program and in Zucht v. King case, in 1922, concerning school vaccination requirements upheld mandatory vaccination (Malone and Hinman, 2003). However, until 1960s, childhood vaccination depended upon parents and local governments rather than the federal government in the United States. President Eisenhower signed the Polio Vaccine Assistance Act in 1955 to help the states to be able to buy poliomyelitis vaccine and carry out the vaccine programs. It was the federal government's first engagement in vaccination. Thus, this financial support and the states' effort on polio produced its fruits by sharply decreasing polio cases; from 60,000 in 1952 to 3,000 in 1960 (Conis, 2015).

The Vaccination Assistance Act of 1962, which was signed by President Kennedy, was a step further effort than Eisenhower's Polio Vaccine Assistance Act of 1955 to fund, guide, and support the states for the protection from certain diseases including polio, diphtheria, pertussis, and tetanus. The Act was covering the vaccines' and personnel's costs of the immunization campaigns and highlighting the importance of vaccinating all the preschool children. Nevertheless, it was not obliging people who refused the vaccines to vaccinate their children. Moreover, it was funding the states' immunization programs only for a few years. Even though the scope and conduct of program was administrated by the states, through increasing the role of the Centers for Disease Control and Prevention (CDC) in educational and promotional activities in 1963 and 1964, the federal government's function in immunization was expanded (Conis, 2015).

The validity period of the Vaccination Assistance Act of 1962 was extended and its coverage was expanded by the Congress in 1965. Children-based immunization turned into community-based and the measles vaccine was added to the vaccine list. In 1977, President Carter's Childhood Immunization Initiative, which was aiming to raise the vaccination rates among all

children to 90%, revised the list as containing vaccines against seven contagious diseases: polio, diphtheria, pertussis, tetanus, measles, mumps, and rubella. The targeted immunization percentage among school entering children surpassed the goal and reached to 96% in 1980. President Clinton intended to launch a new comprehensive program to reorganize immunization system in 1993. Controlling vaccine prices, spreading vaccination, and nationally tracking immunization activities were some primary goals of the initiative. Nevertheless, eventually a more humble and modest act was enacted. President Obama's Affordable Care Act has been the last federal regulation impacting the prevalence and financial aspects of immunization and purposing to provide vaccines to all children (Conis, 2015).

In the United States, as of 2012, the number of recommended childhood vaccines, before the age of six, was 32, against13 diseases (Conis, 2015). The administration of immunization programs are carried out by the states through state vaccination laws. All states and the District of Columbia have mandatory school vaccination requirements with some exemptions. The vaccination law requirements do not merely cover public schools, but also request private schools (except Indiana, Michigan, and Ohio) as well as child day care institutions to demand immunization documents showing that the child was vaccinated against certain vaccines for school attendance. However, many states also recognize medical, religious, and philosophical exemptions: 30 states' laws accept only medical and religious exemptions, 5 states (Delaware, Iowa, New Jersey, North Carolina, and West Virginia) which allow religious exemptions explicitly exclude philosophical beliefs-based exemptions. Furthermore, 27 states require the exclusion of exempted students from school during outbreaks, and 11 states including Alabama, Georgia, and Massachusetts give permission for not recognizing the exemptions during epidemics, outbreaks, or emergencies (CDC, n.d.).

The statistics indicate that the vaccination ratio of many childhood vaccines in the United States has exceeded 90% (Table 1). It means that the immunization rates have chiefly surpassed the herd immunity thresholds (Table 4). However, the high vaccination coverages do not indicate that every American give consent to have their children vaccinated. Research studies show that some parents are not convinced about the safety and utility

of vaccines (Kennedy et al., 2005). For example, the study conducted by Smith and his colleagues (2011), 25.8% of American parents with children aged 24–35 months only delayed, 8.2% of the parents only refused, and 5.8% of them both delayed and refused vaccines in 2009. Furthermore, the study emphasizes that the majority of parents delaying or opposing vaccination were questionable about the benefits of vaccines. Additionally, according to Smith, Chu, and Barker (2004), in the United States, the most of parents who refuse childhood vaccines are middle-class, well-educated, white people. Therefore, vaccination refusal is not an issue may be explained by the lack of education or low income level.

In the United States, the most of parents who refuse childhood vaccines are middle-class, well-educated, white people. Therefore, vaccination refusal is not an issue may be explained by the lack of education or low income level.

Vaccination in Turkey

In Turkey, the General Health Act (1930) is one the laws still in effect. The Act is a comprehensive law drawing the general framework of healthcare and formulating the State's functions in organizing health system. Furthermore, public health related-medical as well as non-medical measures are handled in detail. According to the Act, the State is responsible for improving health conditions, preventing diseases, ensuring the well-being of the next generations, and providing medical and social services. Besides underscoring the importance of medical and non-medical measures, it requires reporting and documenting contagious diseases meticulously. Additionally, the Act authorizes the State to administrate vaccines to patients or potential patients as an infectious disease or the possibility of an infectious disease break out. However, the Act does not include any explicit provision regarding childhood immunization.

Turkey's first extensive vaccination program was the extended program on immunization introduced in 1981 which was covering vaccines against 5 diseases. As of 2005, the immunization programs covered vaccines against 7 diseases including pertussis, diphtheria, tetanus, measles, tuberculosis, poliomyelitis, and hepatitis B. However, by 2013, the number of vaccines before the age of six rose to 18 vaccines against13 diseases (Ozcirpici et al., 2014; Torunoglu, 2013). Furthermore, even though the main goal of the immunization programs was to reach 95% coverage for each vaccinated disease, it was not achieved until 2007. For example, in 2003, the coverage of the MMR, hepatitis B, and tuberculosis vaccines were 75%, 68%, and 76%, respectively. However, by 2007, vaccination rates soared to more than 95% for each antigen. As of 2010, the coverage of the measles, mumps, and rubella (MMR) vaccine increased to 97%, the hepatitis B vaccine reached to 96%, and the tuberculosis vaccine rose to 97% (The Ministry of Health of Turkey [MHT], 2015).

Despite implementing mandatory immunization programs, Turkey does not have a specific vaccination law to indicate the details of the application of the programs as well as the legal consequences of vaccination refusal. However, in practice, the State utilizes the provisions of the Juvenile Protection Law (2005) and regards unvaccinated children as juveniles in need of protection. According to current system, when health professionals encounter parents who refuse having their child vaccinated due to any

reason, they have to report this situation to the Directorate of Family and Social Policies. After being informed, the relevant directorate has to seek a court decision from the juvenile judge to take protective and supportive measures regarding the child. In this context, the scope of the protection is determined by the judge in light of the child's best interest. The law gives priority to ensuring the protection of child's rights within his/her own family environment. However, the judge may only give the permission to the health authorities to vaccinate the child or decide to take the child completely under protection. The regulations applied to non-vaccination (vaccination refusal) are the same law provisions implemented to all kinds of violations against children including child abuse.

Furthermore, Turkey launched a pilot program of family medicine in 2005 and universalized to the whole Turkey in 2010 (Ocek et al., 2014). The family medicine model has two major goals. The first one is to improve preventative care, and the second is to ensure documenting personal health records. In light of these purposes, every resident needs to enroll in a family physician for primary care services. The family physician is supposed to take care of all enrollees' preventative health services including immunization. Family physicians' and family health professionals' payment system also encompasses performance-based calculations. The Family Medicine Act (2004) and Family Medicine Payment and Contract Regulations (2010) requires more than 98% monthly coverage for childhood immunization as well as follow-up care for pregnant women, infants and young children. In case of 98% and less coverage, the family physician and family health professional would encounter cuts from 2% to 10% of the monthly salary given by the government in accordance with the monthly performance. Therefore, along with compulsory measures, Turkey also applies negative financial incentives for healthcare providers.

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Additionally, Turkey has implemented financial incentives for parents since 2004 (Esenyel, 2010). The Conditional Cash Transfer Program incentivizes low-income mothers through monthly payment for each 0-6 year-old child to guarantee children's regular family physician visits. The program demands monthly medical examination for 0-6 month infants, bimonthly for 7-17 month toddlers, and once in six months for 18-72 month young children. When a beneficiary mother misses her child's scheduled visits two times running, the payment would be suspended (Esenyel, 2010).

Although the program does not obviously point out vaccines, de facto practices demonstrate that immunization is perceived and applied as a component of the mentioned physician visits.

Comparing the Two Countries' Immunization Programs

In the United States, the CDC (2016) recommends vaccination against 14 diseases for all children under the age of 7. Nevertheless, each state specifies its own immunization requirements by its school immunization law. Therefore, a state's school immunization requirements may slightly be different from the recommendations of the CDC. On the other hand, in Turkey, the Ministry of Health is the sole authority determining the immunization schedule through the extended immunization programs. For this reason, the schedule decided by the MHT is directly administrated to all children. Turkey vaccinates children under the age of 7 against 13 diseases (MHT, n.d.). A major distinction between two countries immunization schedules is that Turkey still applies one dose Bacille Calmette-Guérin (BCG) vaccine to all children against tuberculosis, whereas in the United States, the BCG is no longer a vaccine recommended to all children (CDC, 2016; MHT, n.d.). According to the CDC (2012), the BCG vaccine is not always effective to prevent tuberculosis. However, the World Health Organization (WHO) still recommends one dose of BCG vaccine for all children (Burten et al., 2009).

As table 1 demonstrates, the United States' vaccination coverages were over 90% in all indicated years, whereas Turkey started showing remarkable improvements in all vaccine coverages by 2007. Furthermore, vaccination rates in the two countries reveal that (some of Turkey's vaccination rates had been under herd immunity thresholds prior to 2007) both countries' vaccination coverages surpassed herd immunity thresholds. Even though Turkey has used compulsory vaccination model for many year, the goals of immunization programs reaching 95% coverage were achieved after 2007. Therefore, the improvements Turkey has had in the last decade do not appear to be related to applying a mandatory immunization policy. Rather than a mandatory immunization model, vaccination coverage advances in Turkey may be linked to the government's other policies, like incentives for parents, negative financial incentives for healthcare providers, and changes in healthcare system, such as introducing the family medicine model.

Almost all Turkey's vaccination coverages in all years, after 2007, are fairly higher than the United States' vaccination rates. Nevertheless, this sit-

uation does not directly reflect on the number of the incidents of vaccine-preventable diseases, except pertussis. The United States' population is approximately four times of Turkey's population (Table 2). Moreover, the number of births and children under the age of 5 in the United States is roughly three times higher than the number of births and children under the age of 5 in Turkey (Table 2). However, despite having less population of young children, the incidences of measles, mumps, and rubella in Turkey are remarkably higher than the incidences in the United States (Table 3). Pertussis is the only disease that Turkey shows notably good performance in comparison with the United States. The numbers of pertussis incidences in Turkey have been in two-digits throughout the years, while the numbers of the incidences in the United States are in five-digits (Table 3).

Another considerable difference in vaccine-preventable diseases between the United States and Turkey is that the numbers of incidences in the United States have been relatively stable. However, the numbers of incidences in Turkey have fluctuated dramatically (Table 3). For example; measles incidences sharply decreased to 34 in 2006 from 6200 in 2005; on the other hand rubella incidences increased to 1734 in 2011 from 64 in 2010.

Evaluating the two Countries' Programs through a Liberal Perspective

The distinctive feature of public health is its focus on population rather than individual (NCB, 2007). "Preventing disease, prolonging life and promoting health through organized efforts of society" is the aim of public health (NCB, 2007, p. xv). Liberalism glorifies individual freedom and purposes to maximize individual liberties (Butler, 2015). Nevertheless, individual freedom is not limitless. Any action breaching another person's liberty, causing harm to others, or leading to an immediate and serious threat to others is subject to a restriction (Mill, 2002). Therefore, it is believed that three principles: respect for autonomy, effectiveness, and proportionality should be taken into consideration to strike a balance between public health requirements and liberal values. Otherwise, even if a public health policy provides certain positive consequences, it would be difficult to justify it through liberal principles.

In a liberal democracy, public policies that infringe or restrict individual freedom should be the last resort as well as limited. In terms of public health, the approach should be to "minimise interventions that are introduced without the individual consent of those affected" and "perceived as unduly intrusive and in conflict with important personal values" (NCB, 2007, p. 26). From this perspective, though carrying some ethical concerns, the United States' school immunization requirements-based policy with the medical, religious, and philosophical exemptions is ethically more justifiable than Turkey's guardianship-based immunization model. Both countries' vaccination programs represent compulsory immunization policies which contain certain forms of coercion. Nonetheless, in the United States, medical, religious, and philosophical exemptions alleviate the degree of the coercion and violation of individual autonomy. When it comes to Turkey, it may be claimed that its compulsory vaccination model completely denotes a hard paternalism which completely disregards individual autonomy.

To some extent, it is expected to encounter a conflict between public health interventions and individual autonomy in case of any compulsory immunization policy. For this reason, the effectiveness of these interventions should also be evaluated to assess their ethical acceptability. It is a proven fact that compulsory immunization is not the sole way to achieve

high vaccination coverage. The United Kingdom, Netherland, Sweden, Denmark, and Norway are good examples demonstrating that it is possible to produce high vaccination rates without compulsory immunization policies (Salmon et al., 2006). Moran, Gainotte, and Petrini (2008) state that compulsory immunization has a positive impact on increasing vaccination coverage. However, Turkey's vaccination rates before 2007 indicate that a compulsory immunization policy does not guarantee high coverage per se. In 2002, 2003, 2004, and 2005 all vaccine coverages under 90%, even some of them in the range of 60% or 70% (MHT, 2015). The vaccination coverages began sharply rising after Turkey started implementing incentives for parents through the conditional cash transfer programs, applying negative financial incentives for healthcare providers, and prioritizing primary care through the family medicine system. The comparison of vaccination coverages in the United States and Turkey shows that the United States' soft mandatory system had created far better vaccination rates than Turkey's guardianship-based hard mandatory model until 2007. However, after introducing additional measures, Turkey started obtaining higher vaccination coverages. According to the OECD data (2015), as of 2013, Turkey was one of the countries having the highest vaccination rates.

Proportionality is another crucial issue in the justification of public health interventions. Isaacs, Kilham, and Marshall (2004) suggest some alternative strategies to mandatory immunization including education, incentives, and school exclusion during outbreaks. Without trying such non-compulsory measures, implementing any mandatory immunization tool may be regarded as disproportionate. Additionally, a voluntary system concentrating on raising public awareness and encouraging people through ethically acceptable incentives might rebuild public trust and bring about much promising results (Fine-Goulden, 2010). In this context, the United States' school enrollment requirements may be considered unjustifiable due to the potential risks to children's education. Nevertheless, to some extent, the existence of medical, religious, and philosophical exemptions as well as the flexibility and convenience in their applications would mitigate the ethical concerns.

On the other hand, in regard to proportionality, it might be difficult to ethically legitimize Turkey's guardianship model in routine childhood vaccination, which deems vaccination refusal equal to the state of child abuse

and other physical, mental, moral, social or emotional dangers a child could face, in the scope of the provisions of the Juvenile Protection Law. It is doubtless that a country may consider a compulsory immunization policy necessary to reach herd immunity thresholds or increase vaccination rates in order to protect its people from contagious diseases. However, in such cases, punitive measures should be appropriate to individual rights and human dignity. From this perspective, it is believed that Turkey's current childhood immunization model does not satisfy these values.

A voluntary system concentrating on raising public awareness and encouraging people through ethically acceptable incentives might rebuild public trust and bring about much promising results.

Conclusion

Immunization is the most effective medical public health intervention. For protecting children from vaccine-preventable diseases and promoting their health, different countries conduct distinct childhood immunization policies. From a liberal perspective, the justification of these policies depends on the balance between interventions and individual liberty in light three criteria: respect for autonomy, effectiveness, and proportionality. In terms of compulsory immunization policies, the United States uses school immunization requirements with medical, religious, and philosophical exemptions, whereas Turkey applies a guardianship model to achieve high vaccination coverage. Many industrialized countries' vaccination rates obtained through voluntary immunization systems are higher than the United States' vaccination coverages. Therefore, though the existence of certain exemptions is favorable, without experiencing the effects of voluntary immunization, applying any mandatory measure may be ethically unjustifiable. On the other hand, the appropriateness of Turkey's existing compulsory immunization policy with ethical principles and liberal values is questionable. Vaccinating a child by a jurisdictional decision without her/his parents' consent or taking a child under supervision or protection on the grounds of non-vaccination is not consistent with respect for autonomy and proportionality. It is believed that rather than carrying out any mandatory immunization intervention, raising public awareness about the importance of childhood vaccination through educational means, encouraging parents to vaccine their children by using ethically justifiable incentives, and rebuilding public trust through implementing voluntary programs would produce more autonomy-friendly, effective, and proportionate results.

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Tables

Table 1: The United States' and Turkey's vaccination coverages from 2003 to 2013.*

		2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
DTP1	USA	98	_	_	98	_	_	99	_	_	99	99
	Turkey	97	97	98	98	97	97	98	92	92	86	76
DPT3	USA	94	96	95	95	95	96	95	96	96	96	96
	Turkey	98	97	97	97	96	96	96	90	90	85	68
HepB3	USA	90	91	92	91	92	94	_	93	93	92	92
	Turkey	97	97	96	96	94	92	96	82	85	77	68
Hib3	USA	93	94	90	88	84	91	93	93	94	94	94
	Turkey	98	97	97	97	96	96	91	_	_	_	_
MCV1	USA	91	92	92	90	90	92	92	92	92	93	93
	Turkey	98	96	98	97	97	97	96	98	91	81	75
PCV3	USA	92	94	93	92	93	93	_	87	83	_	_
	Turkey	97	97	96	93	97	_	_	_	_	_	_
Pol3	USA	93	94	93	94	93	94	93	93	92	92	91
	Turkey	98	97	97	97	96	96	96	90	90	85	69

DTP1 - First dose of diphtheria toxoid, tetanus toxoid and pertussis vaccine

DPT3 - Third dose of diphtheria toxoid, tetanus toxoid and pertussis vaccine

HepB3 - Third dose of hepatitis B vaccine

Hib3 - Third dose of haemophilus influenzae type B vaccine

MCV1 - Measles-containing vaccine

PCV3 – Third dose of pneumococcal conjugate

Pol3 - Third dose of polio vaccine

Table 2: The United States' and Turkey's vaccination related basic demographic data*

		2013	2012	2011	2010	2000
Total population	USA	320'051	317'505	314'912	312'247	284'594
	Turkey	74'933	73'997	73'059	72'138	63'174
Births	USA	4'230	4'226	4'229	4'236	4'046
	Turkey	1'261	1'268	1'275	1'282	1'356
Surviving infants	USA	4'204	4'199	4'202	4'209	4'017
	Turkey	1'246	1'253	1'259	1'264	1'315
Pop. less than 5 years	USA	20'785	20'623	20'512	20'441	19'460
	Turkey	6'355	6'362	6'363	6'359	6'571

Population data in thousands

Table 3: The United States' and Turkey's incidences of some vaccine-preventable diseases from 2003 to 2013.*

		2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Diphtheria	USA	0	1	0	0	0	0	0	0	0	0	1
	Turkey	0	0	1	0	0	0	0	0	0	0	1
Measles	USA	187	55	222	63	71	140	43	55	66	37	56
	Turkey	7'405	349	111	7	4	0	3	34	6'200	8'927	5'844
Mumps	USA	584	229	404	2'611	1'991	451	800	6'339	_	258	197
	Turkey	597	834	1'609	1'525	2'180	9'514	16'524	19'726	19'754	_	_
Pertussis	USA	28'532	47'693	18'610	27'410	0	13'213	10'454	15'632	25'616	25'827	11'647
	Turkey	33	18	242	48	11	17	63	57	272	389	255
Polio	USA	0	0	0	0	0	0	0	0	0	0	0
	Turkey	0	_	0	0	0	0	0	0	0	0	0
Rubella	USA	9	9	4	5	3	16	12	11	11	10	7
	Turkey	81	43	1'734	64	97	139	644	1'058	2'245	_	_

* The data is retrieved from the World Health Organization's (WHO) 2015 global summary monitoring system (http://apps.who.int/immunizationmonitoring/globalsummary/countries? countrycriteria%5Bcountry%5D%5B%5D=USA&commit=OK.).

Table 4- Herd immunity thresholds**

Diphtheria	80% - 85%
Measles	88% - 95%
Mumps	84% - 86%
Pertussis	92% - 95%
Polio	80% - 85%
Rubella	80% - 85%

** The data is retrieved from Diodati, C. J. M. (2008). Immunization History, Ethics, Law and Health, third edition. Windsor: Integrated Aspects Incorporated, p. 16.

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