Factors Affecting Refusal Rates of the Birth Dose of Hepatitis B Vaccine: A Single-Center Study

Doğumda Hepatit B Aşısı Red Edilmesine Yol Açan Olası Faktörler: Tek Merkezli Çalışma

Dear Editor,

I curiously read the recent article written by Vasireddy et al. (1) titled "*Factors Affecting Refusal Rates of the Birth Dose of Hepatitis B Vaccine: A Single-Center Study*" published in the *Journal of Pediatric Infection* in December 2014. They conducted a retrospective chart review of live births at The Unterberg Children's Hospital at Monmouth Medical Center. The study included a total of 259 infants for 10 months. Their study showed that English-speaking mothers and Caucasians had higher refusal rates for the birth dose of the hepatitis B vaccine for their newborns than Spanish-speaking mothers and non-Caucasians. They concluded that newborn hepatitis B vaccination coverage at their center is only 29.7%, although the statement by the Advisory Committee on Immunization Practices on hospital policies for the prevention of hepatitis B is very clear.

As shown in another research regarding a broader strategy for the prevention of infectious diseases, vaccinations continue to remain at the top of the list as a cost-effective health intervention. In terms of public health, vaccinations are referred to as a tremendous achievement. There has always been a constant strain imposed by those in the society who question this success, and at times reject it for numerous reasons such as religious, scientific, and political. Vaccine-hesitant individuals are often classified as a heterogeneous group consisting of those who completely accept and those who completely reject vaccinations. Such individuals may approve of some vaccines but reject others or postpone some vaccines, or accept some vaccines with an uncertainty in the mind (2).

The behavior of vaccine-hesitant individuals or groups is very complicated, and concrete reasons for hesitancy can fluctuate a lot. In a study conducted in Greece, socio-economic factors, such as the number of siblings in the family and the patriarch's education level, were the key factors in the understanding of both the under- and delayed childhood vaccination, and parental attitudes and beliefs about vaccinations turned out to be non-significant (3). In yet another study on MMR vaccine in the UK, it was discovered that varying factors affected decision making, with the intensity of influence also varying at each interval (4). Vasireddy et al. (1) found in their study that race and language had a statistically significant influence on newborn hepatitis B vaccine refusal rates. Brown et al. (5) conducted a systematic review of factors responsible for parental vaccination decisions; they included 31 studies in their review. They discovered that vaccine-declining parents held the belief that vaccines were unsafe and did not yield the desired results, and that the vaccinations were to prevent were rare and not severe. They had a lack of trust in their health professionals as well as in the government-endorsed and officially endorsed vaccine research, but they had trust in the media and non-official information sources and resented the observed societal pressure to risk their own child's safety for the health benefit of the greater public. While there have been some systematic reviews that have researched these factors affecting vaccine hesitancy across different groups and different vaccines, there is also a reason to believe that still not everything has been properly identified or investigated that might play a role in these parental decisions.

Chronic hepatitis B virus (HBV) infection is a worldwide health issue affecting roughly 350 million people across the globe. In 2011, in the US, the Center for Disease Control and Prevention (CDC) estimated that between 700,000 and 1.4 million people were suffering from chronic HBV infection (6). Chronic HBV infection, a leading cause of cirrhosis, chronic liver disease, and liver cancer (hepatocellular carcinoma), is known as a "silent killer" because carriers remain asymptomatic for many years. The birth dose of hepatitis B vaccine is a crucial step in preventing perinatal HBV infection. Infants and young children carry the greatest risk of chronic infection; approximately 90% of infants and 30% of children under the age of 5 who acquire HBV infection become chronic carriers, and approximately 25% of those who become chronically infected during childhood may die of liver failure secondary to chronic active hepatitis, cirrhosis, or primary hepatocellular carcinoma. The most effective initial measure to prevent HBV infection and its negative effects is the birth dose of the hepatitis B vaccine. If vaccination is started on the first day of life, then the completion of the hepatitis B vaccine series alone prevents 70%–95% of perinatal HBV infections as well as early childhood HBV infections acquired from contacting HBV-infected households (7). Zhao et al. (8) analyzed the data of 17,053 US children aged 19–35 months obtained from the 2009 National Immunization Survey to determine the frequency of children who were not administered the birth dose of hepatitis B vaccine and to identify any sociodemographic factors related to the non-receipt of the birth dose of the hepatitis B vaccine. They found the following three factors to be significantly associated with higher (and not lower) risks of missing the birth dose of the hepatitis B vaccine: one (a single) vaccination provider, a married mother, and the family of children located in urban or suburban areas.

Vasireddy et al. (1) pointed towards a very important topic to prevent chronic HBV infection via the birth dose of the hepatitis B vaccine. Although their study has some limitations, which if properly addressed, could have shed more non-conjectural light on the topic at hand and made their research more comprehensive and better suited for replication in future research, their results are important to implement quality improvement strategies at each center. Multi-level factors facilitate the birth dose of the hepatitis B vaccine in the USA and other countries, and tailored, culturally appropriate communication strategies will positively influence the immunization at birth.

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