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Maternal nationality and developmental delays in young children: Analysis of the data from the national registry in Taiwan



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ABSTRACT

Background: With globalization, transnational marriages become more and more common around the world. Children born to immigrant mothers might be more likely to have developmental delays, but studies on this topic are limited and with inconsistent results. **Aims:** To determine whether children born to immigrant mothers are more likely to have developmental delays.

Methods and procedures: We analyzed the data from the national registry of children with developmental delays from 2009 to 2013 and compared the incidence of developmental delays between children born to immigrant mothers and native mothers. We also performed stratified analyses by age, sex, and geographic area.

Outcomes and results: From 2009 to 2013, 78,946 new cases of developmental delays under 6 years of age were registered, including 5619 (7.1%) born to immigrant mothers. The incidence was higher in children born to native mothers in every year with rate ratios ranging from 1.32 to 1.48, and the differences reached statistical significance even after stratification by age, sex, and geographic area.

Conclusions and implications: Children born to immigrant mothers had lower incidence of developmental delays in Taiwan. The result may help reduce the discrimination of foreign spouses and their children.

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What this paper adds?

With globalization, transnational marriages become more and more common around the world, but some people believe that children born to immigrant mothers are more likely to have developmental delays. However, data on this issue are

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limited. This paper shows that the incidence of developmental delays was higher in children born to native mothers than in children born to immigrant mothers, with rate ratios ranging from 1.32 to 1.48 (all with $p < 0.05$). The differences reached statistical significance even after stratification by age, sex, and geographic area. In other words, children born to immigrant mothers in Taiwan had lower incidence of developmental delays.

1. Introduction

Transnational marriages are common around the world as a result of globalization. In Taiwan, for example, transnational marriages increased rapidly in the past two decades and reached the peak when they accounted for 31.86% of marriages in 2003 (Ministry of the Interior, 2015). Although the proportion decreased afterwards, it was still as high as 13.20% in 2014, and mothers of foreign nationalities (immigrant mothers) gave birth to 7% of the newborns (Ministry of the Interior, 2014). Marriages between native men and foreign women account for the majority of transnational marriages in Taiwan, and most immigrant mothers come from China and Southeast Asia (Ministry of the Interior, 2014, 2015). In general, transnational families had relatively low socioeconomic status, and immigrant mothers, who usually have lower education levels, face difficulties in adapting to environment and language (Ministry of the Interior, 2004; Chiang & Wu, 2011). Therefore, many Taiwanese believe that children born to immigrant mothers are more susceptible to developmental delays than those born to native mothers (Bureau of Health Promotion, 2009; Lin, 2004).

Developmental delays are not uncommon in children (Lai, Tseng, & Guo, 2011). The Children Welfare Law (1993) mandates the government establish a reporting system for children with developmental delays, and accordingly the city and county governments started to establish local Early Intervention Reporting and Referral Center (EIRRC) for the registration and providing services to children with developmental delays. Moreover, The Children and Youth Welfare Law (2003) mandates the welfare, education, and medical institutions report all children suspected to have developmental delays to the EIRRC. On the basis of the EIRRCs, the central government has constructed a national registry of children with developmental delays and requested EIRRCs to provide special services to cases born to immigrant mothers, who are believed to be particularly vulnerable (Bureau of Health Promotion, 2009; Lin, 2004; To et al., 2004). In addition, a nationwide survey in China found that the incidence rates of childhood disabilities were higher in rural areas than those in urban areas (Zhang et al., 2006), indicating urbanization might also be a factor contributing to developmental delays.

While the general public believe that children born to immigrant mothers are more susceptible to developmental delays, empirical studies on this topic are very limited, and the results were inconsistent. In addition, a stratified random sampling survey of 340 preschool children (170 of immigrant mothers and 170 of native mothers) in Taichung City found that children born to immigrant mothers had lower scores in social behavior development (Chiang & Lin, 2009). A study included 61 children born to immigrant mothers found the children had lower cognitive and language scores but higher motor and social development scores in comparison with native norms (Chen, Hsu, Chu, Han, & Chien, 2012). In contrast to those two small studies localized in specific geographic areas, the Taiwan Birth Cohort Study, which included 17,555 children born to native mothers and 2590 to immigrant mothers, found no differences in developmental status reported by the parents at the ages of 6 and 18 months between the two groups, and accordingly the government issued a press release to suppress the prejudice (Chiang & Wu, 2011; Bureau of Health Promotion, 2009). In fact, the Ministry of the Interior conducted a survey on health conditions of children born to immigrant mothers in 2003 and found the reported prevalence of developmental delays was as low as 0.1% (Ministry of the Interior, 2004), much lower than the 1.9% prevalence estimated by the national registry in the whole country in 2003 (Lai et al., 2011). In addition, some reports showed that children born to immigrant mothers were healthier than those born to native mothers in terms of low birth weight and pre-mature birth (Shiao & Chiang, 2012; See, Shen, & Lo, 2007).

Studies in other countries also found inconsistent results. The National Longitudinal Survey of Children and Youth in Canada, which included 4987 children aged 1 to 5 years, found that children born to immigrant mothers had an increased risk of poor developmental attainment, with an odds ratio (OR) of 1.93 (95% confidence interval [CI], 1.38–2.71) (To et al., 2004). A study on 13182 preschool children in Bavaria, Germany found children of foreign nationalities had a higher risk of developmental problems (Stich, Baune, Caniato, Mikolajczyk, & Kramer, 2012). However, in the 2007 National Survey of Children's Health in U.S.A. with 91642 children under 18 years of age, the prevalence of developmental delays in children of immigrant households was about one third of that in children of nonimmigrant households (Lin, Yu, & Harwood, 2012). In addition, according to the 2008–2010 American Community Survey ($N = 2079,138$) in children under 18 years of age in U.S.A., the prevalence of childhood disability was lower in immigrant children in comparison with native-born children under 18 years of age, with an OR of 0.66 (95%CI, 0.63–0.69) (Singh & Lin, 2013).

As the results of previous studies were inconsistent and there are limited data on the comparison of the incidence of developmental delays, we conducted a study to assess the difference in the incidence of developmental delays between children born to immigrant mothers and native mothers.

2. Material and methods

2.1. Case definition

According to The Bye-laws of Children and Youth Welfare Law (2004), a child with developmental delays is defined as one who is “allegedly or expected abnormal development in respect of cognitive development, physiological development,

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