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Factors associated with birth registrations in Indonesia

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ARTICLE INFO	ABSTRACT
	Introduction: Considering the importance of birth registration for children, the government has been put a policy in place to provide legal recognition of a child's identity. This study aims to examine the factors associated with birth registration among children aged one-four years in Indonesia. **Methods:** A cross-sectional design was applied in this study using data from the 2017 Indonesian demographic and health survey. A sample of 15,624 mothers with children aged one-four years were included in this research as the subjects. To examine the associated factors, Chi-square tests and binary logistic regression were used. **Results:** The prevalence of children's birth registrations in Indonesia was 77.9%. Multivariate analysis showed that the mother variables, such as mothers aged between 35 and 39 years (odds ratio [OR]=1.69, 95% confidence interval [CI]=1.22-2.33), their higher education levels (OR=4.63, CI=2.93-7.30), their current marital status (OR=2.0, CI=1.48-2.66), the richest quintile (OR=5.04, CI=3.91-6.50), living in the west Indonesian region (OR=2.85, CI=2.29-3.55), were significantly associated with a higher possibility of registering the child's birth. In the same vein, the variables of being born at a health facility (OR=1.23, CI=1.04-1.46), being assisted by a skilled birth attendant (OR=1.72, CI=1.39-2.15), female children (OR=1.28, CI=1.16-1.43), and children aged four years old (OR=8.07, CI=6.72-9.69), were the factors associated with birth registration in Indonesia. **Conclusion:** Our study showed that birth registrations related to the demographic, socioeconomic, and health services are given to the family, particularly mother and child. Structured policies to improve the birth registration rate for the less privileged or vulnerable groups, poor and limited access to health services should be considered in the long run. **Keywords:** birth registration, children registration, equality, Indonesia

INTRODUCTION

Birth registration is a part of children's rights, which was acknowledged by the government and the international convention [1]. As a fundamental right, birth registrations will ensure justice for children [2, 3]. Data around the world show that approximately 166 million children aged under five years old have never been officially registered with the government, with Asia recording as many as 14 million children [4]. Indonesia, which is estimated as a country on track to meet the universal birth registration in 2030, needs quicker progress on achieving this expectation [4].

Birth registration in Indonesia has been regulated by the government starting from the law, presidential decree, and ministry of home affairs decree Acceleration of increasing coverage of birth certificate ownership has been implemented by Indonesian government as an initiative to encourage all Indonesians to gain access [5]. Unfortunately, in 2018, the completeness of birth registration in Indonesia was 83.3% [6] or around 80% based on children sexes, either males or females [7]. It needs involvement not only from the government, but also from all of the stakeholders. Indonesia has set a target that by 2024 the completeness of birth registration will be 100%, as stated in the national medium-term development planning 2020-2024 [6].

Government can take benefit of accurate and universal birth registration by a functioning system of civil registration and vital statistics (CRVS) [8]. Nevertheless, in low-middle income countries, the implementation of birth certificates has still been challenging and unequal [9, 10]. Over 100 low- and middle-income countries do not have functioning civil registration systems [11]. The challenges to increasing birth registration rates and coverage, as well as achieving functional CRVS systems, can be classified as supply- (enabling environment) and demand-side. Legal barriers, system issues, poor infrastructure, limited capacity, and limited funding are all notable supply-side barriers. Cultural and behavioral

factors, costs, distance to registration office, registration process issues, education, gender, statelessness, and migrant or refugee status are all examples of demand-side barriers [9]. Inequality issues including wealth gaps and rural/urban residents who have differences in the coverage of birth certificate registration [10]. By ensuring that every child is registered at birth and receives a birth certificate, it can increase equity and access to adequate health services for every child. This is in line with one of the focuses of sustainable development goals to ensure that no one is left behind through equality and adequate access in birth registration [4].

One of the benefits of a birth certificate is that it can be used as a tool for conducting research, one of which is to assess the effect of the special supplemental nutrition program for women and infants [12]. Moreover, birth certificate data are used to define the approaches for prevention and to distribute resources for maternal and child health programs [13]. Furthermore, birth certificates are a simple source of epidemiologic population data. It is well-documented that the data on birth certificates can be highly improved by the collaboration of stakeholders [14].

Several studies related to birth registration showed that the sociodemographic has become the determining factor influencing the increase of birth registrations around the world [15, 16]. Recent study found that marriage certificate ownership by the parents, higher household socioeconomic status, and older age of the child were factors associated with a child's birth certificate ownership [17]. National study from three provinces in Indonesia, such as East Nusa Tenggara, West Nusa Tenggara, and West Java, showed a positive correlation between childbirth certificate ownership and marriage certificate ownership of the parents, and household socioeconomic status [18]. Prohibitive costs prevented citizens from obtaining their child's or children's birth certificates and inconsistent policies found across regions [17]. Although when using data from the birth certificates for the study, it is important to consider the subgroup differences in the data quality [19]. A significant association was recognized between birth registration and nutritional status, with the registered children showing a better nutritional condition than the unregistered ones [20]. Therefore, the researcher is interested in examining the factors associated with birth registration in Indonesia.

METHODS

Source of Data

This study draws from secondary data from the 2017 Indonesia demographic and health survey (IDHS). The birth registration was used as a dataset extracted from the household and children's data files. The data used in this study was women aged 15-49 who were eligible within the last five years preceding the survey in order to gain the most recent birth registration practice and to minimize recall bias in reporting the birth registration status of the children.

Sample Size and Sampling

The respondents for the 2017 IDHS were selected using a two-stage sampling technique. The first stage of sampling involved selecting a total of 1,970 clusters consisting of enumerations areas (EAs) delineated for the 2010 population census. The second stage of sampling involved the systematic selection of 49,250 households from the selected EAs. The 2017 IDHS collected data on various demographic and health indicators, including maternal and child health, fertility, and birth registration [21].

Variables

In this study, the dependent variable was birth registration status and categorized as "registered" and "unregistered". Birth registration was defined as children who registered or not with the Department of Population and Civil Registration. Children who registered, either have or does not have a birth certificate, were classified as registered, while those who did not register were classified as unregistered [22].

We considered sex of child, age of child, age of mother, mother's level of education, mother's marital status, mother's occupation, wealth quintile, place of residence, place of delivery, and assistance during delivery as independent variables to identify factors associated with birth registration. We categorized sex of child male and female, age of child as zero, one, two, three, and four years, age of mother has five categories (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49) in years, mother's level of education has four categories (no education, primary, secondary, and, higher school), mother's marital status as currently married and formerly married, mother's occupation as working and not, wealth quintile as 5 categories (poorest, poorer, middle, richer, and richest), place of residence as rural and urban, region of residence as West, Middle, and. East of Indonesia, place of delivery as health facility and non-health facility, and then assistance during delivery as skilled and non-skilled birth attendant [22]. All of the identified variables arise from literature reviews conducted by researchers.

Statistical Analysis

Descriptive statistical methods, including frequencies and cross tabulations, were applied to analyze the characteristics of the children and their mothers by birth registration status. The dependent variable was divided into two categories (registered and unregistered), then a binary logistic regression model was followed to analyze the variables associated with the birth registration status. All the analyses were made using Stata 15.1 with complex sample procedure.

RESULTS

Based on the DHS 2017 data, the overall prevalence of children with birth registrations in Indonesia was 77.9% among children under age five years old. Mothers and children were the groups of variables on the sociodemographic data. Higher education graduates with an age range of 35-39 and currently married have percentages of as much as 89.21%, 80.97%, and 78.27%, respectively, regarding their children's birth registrations. Working mothers who come from high-income family tend to have birth registrations of about 80.06% and 92.22%, respectively. Meanwhile, there was a higher percentage, approximately 83.26% and 80.89%, respectively, of subjects living in urban areas and in the west of Indonesia. Most female children had registered births of about 79.02%, with aged four being the highest rate (88.52%). The children who were delivered at a healthcare facility had their birth registered (81.10%) and were assisted by a skilled birth attendant (80.22%).

Table 1. Sociodemographic characteristics of study participants (n=15,624)

Characteristic	Unregistered		Registered (with or without certificate)		X^2
	n	%¥	n	%¥	
Sex of child					11.82**
Male	2,100	23.26	5,440	76.74	
Female	2,045	20.98	6,039	79.02	
Age of child (in years)					1,130.30***
0	1,380	44.48	1,316	55.52	
1	978	25.91	2,109	74.09	
2	743	18.99	2,546	81.01	
3	585	14.43	2,714	85.57	
4	459	11.48	2,794	88.52	
Age of mother (in years)					237.96***
15-19	216	49.51	164	50.49	
20-24	798	27.60	1,481	72.40	
25-29	1,025	21.17	2,940	78.83	
30-34	947	19.28	3,160	80.72	
35-39	730	19.03	2,458	80.97	
40-44	349	22.74	975	77.26	
45-49	80	25.93	201	74.07	
Mother's level of education					546.87***
No education	138	62.56	87	37.44	
Primary	1,439	30.99	2,533	69.01	
Secondary/SHS	2,156	20.16	6,516	79.84	
Higher	412	10.79	2,343	89.21	
Mother's marital status					38.82***
Currently married	3,964	21.73	11,215	78.27	
Formerly married	181	34.74	264	65.26	
Mother's occupation					41.45***
Not working	2,184	24.22	5,259	75.78	
Working	1,961	19.94	6,220	80.06	
Wealth quintile					1,250.75***
Poorest	2,044	42.08	2,301	57.92	
Poorer	871	25.57	2,207	74.43	
Middle	585	19.42	2,291	80.58	
Richer	410	13.97	2,311	86.03	
Richest	235	7.78	2,369	92.22	
Place of residence					236.43***
Rural	2,690	26.96	5,332	73.04	
Urban	1,455	16.74	6,147	83.26	
Region of residence					443.26***
West of Indonesia	1,813	19.11	7,366	80.89	
Middle of Indonesia	1,582	30.13	3,306	69.87	
East of Indonesia	750	53.11	807	46.89	
Place of delivery					388.53***
Non-health facility	1,490	35.56	2,291	64.44	
Health facility	2,655	18.90	9,188	81.10	
Assistance during delivery					501.02***
Skilled birth attendant	3,309	19.78	10,671	80.22	
Non-skilled birth attendant	836	46.17	808	53.83	

Note. *p-value<0.05; **p-value<0.01; & ***p-value<0.001

Chi-square test was calculated, as depicted in **Table 1**, which shows all variables that have a significant relationship. A multivariate analysis shows several factors associated with birth registrations in children aged one-four years. Based on the mother variable, it showed that mothers aged between 35 and 39 were more likely to register their children's births compared to the reference group (odds ratio [OR]=1.69, 95% confidence interval [CI]=1.22-2.33). The mothers having higher education levels were highly likely to register their children's birth compared to mothers who had no education (OR=4.63, CI=2.93-7.30). Mothers who are currently married are shown as more likely to register their child's birth compared to those who were formerly married (OR=2.0, CI=1.48-2.66). Also, mothers who belonged to the highest wealth quintile were 5.04 times more likely to register their children's births than women from the lowest wealth quintile (OR=5.04, CI=3.91-6.50). Those who lived in the west of Indonesia were associated with children's births registration (OR=2.85, CI=2.29-3.55).

Regarding the children variable, the data recorded that the children born in a health facility were 1.23 times more likely to be registered compared to those who were born in a non-health facility (OR=1.23, CI=1.04-1.46). The majority of children who were assisted by a skilled birth attendant were more likely to be registered than those who were helped by a non-skilled birth attendant (OR=1.72, CI=1.39-2.15). According to the sex of the child, female children were more likely to be registered than males (OR=1.28, CI=1.16-1.43), and children aged four years were more likely to be registered than children of other ages (OR=8.07, CI=6.72-9.69) (**Table 2**).

Table 2. Factors associated with birth registration status in Indonesia

Variables	OR	95% CI	
		Lower	Upper
Sex of child			
Male	1.00		
Female	1.28***	1.16	1.43
Age of child (in years)			
0	1.00		
1	2.30***	1.96	2.69
2	4.12***	3.53	4.81
3	5.73***	4.83	6.81
4	8.07***	6.72	9.69
Age of mother (in years)			
15-19	1.00		
20-24	1.39*	1.02	1.90
25-29	1.54**	1.13	2.10
30-34	1.61**	1.18	2.21
35-39	1.69**	1.22	2.33
40-44	1.19	0.85	1.68
45-49	1.00	0.60	1.73
Mother's level of education			
No education	1.00		
Primary	2.45***	1.61	3.74
Secondary/SHS	3.19***	2.08	4.88
Higher	4.63***	2.93	7.30
Mother's marital status			
Currently married	2.00***	1.48	2.66
Formerly married	1.0		
Mother's occupation			
Not working	1.00		
Working	1.02	0.91	1.15
Wealth quintile			
Poorest	1.00		
Poorer	1.70***	1.45	1.99
Middle	2.18***	1.81	2.63
Richer	3.05***	2.49	3.75
Richest	5.04***	3.91	6.50
Place of residence			
Rural	1.00		
Urban	0.92	0.80	1.07
Region of residence			
West of Indonesia	2.85***	2.29	3.55
Middle of Indonesia	1.89***	1.51	2.36
East of Indonesia	1.00		
Place of delivery			
Non-health facility	1.00		
Health facility	1.23**	1.04	1.46
Assistance during delivery			
Skilled birth attendant	1.72***	1.39	2.15
Non-skilled birth attendant	1.00		

Note. *p-value<0.05; **p-value<0.01; & ***p-value<0.001

DISCUSSION

The total number of birth registrations in Indonesia is relatively high at around 77.9% among children under five years old. This percentage indicates that the universal birth registration and legal identity for every Indonesian child needs to be accelerated. The data showed that the target will be 100% coverage of the completeness birth registration by 2024 [6]. A similar number occurs in several countries, namely Ghana (70.5%) [15], Lao PDR (75%) [23], Malawi (63.9%) [10], and India (69.1%) [24]. This achievement proves that the Indonesian government's efforts to achieve universal birth registrations needs to be supported by all the stakeholders.

The factor associated with birth registrations was the mother's age, with those aged 35-39 years having the highest intention to register their children's birth compared to mothers in the reference age group. These findings align with the study, which resulted in a significant association between the mother's age and the birth registrations of the children as the maturity of mothers indicate the understanding of the benefits of birth registrations [16, 25]. However, study recorded that the youngest mothers are highly likely to register the child's birth [26]. This is an interesting phenomenon, and there is a need to examine and consider various issues, such as norms, beliefs, and the culture of the community.

The mother's education had become a factor supporting the implementation of birth registration. Educated mothers who had passed their higher education had a high possibility of registering their child's birth compared to mothers with lower educational levels. This is consistent with studies that demonstrated that the higher the education of mothers, the more aware they are regarding birth registration [16]. Educated mothers will be aware of the necessity of birth registration; thus, this explains the tendency of mothers with higher education to be more likely to register their child's birth [15].

The marital status of the mothers in this study showed a significant correlation with the tendency to register the birth of children under five years old. This fact was supported by studies that declared that the current marital status is associated with birth registration [27, 28]. The main reason for this is due to required documents when applying for the birth registration, one of these is legal document of marriage [29]. Marital status remains a symbol of legal aspect of the family and children of Indonesia and which is a part of a civil registration record.

Regarding the wealth quintile, children from high-income families were the highest percentage to be registered compared to children from low social-status levels. Likewise, some studies proved that enrolling a child from a family from the highest quintile, whether from rural or urban areas, has been illustrated as a similar trend [16, 30]. With regard to this factor, the cost of processing a child's registration became an obstacle for low-income families since there was a cost involved in doing this [16]. The government must provide a subvention to encourage dwellers' access to birth registrations especially low-income families.

The findings of this study indicate that there are differences in birth certificate ownership based on the region of residence (West of Indonesia) that showed significant association with birth registration among Indonesian children. We assume that those who lived in west area of Indonesia majority located in urban area. This align with study conducted in urban area is commonly having the highest of childbirth registrations [16, 26]. Of children in the west of Indonesia, 80.89% have higher birth certificate rates than children in the middle of Indonesia (69.87%) and the east of Indonesia (46.89%). Those who reside in the eastern part of Indonesia have low prevalence to register their childbirth. This finding is in line with the findings of [31], which based on spatial and temporal data, provinces in eastern Indonesia have lagged achievement. Among the provinces with low birth certificate ownership rates in Indonesia are Papua and East Nusa Tenggara. Ownership of birth certificates differs between regions, which is also shown in studies in Ghana [15] and in Uganda [32]. This fact correlates with the ease of registering a child's birth with the local government as well as public service innovation conducted by district government.

The present study shows the determinant factors of children in relation to birth registrations, including the child's sex, the age of the child, the delivery place, and the skilled birth attendant. The first factor is the sex of the child, which is female. Female children were more likely to be registered compared to male children. The result contradicts study that recorded that male counterparts are more likely to be registered [15, 25]. This finding is in accordance with the results of an Indian study, which found that higher birth registration among female children was due to the availability of benefit payments and scholarships for women [33]. This, however, did not occur in Indonesia, the Indonesian government does not differentiate benefit distribution based on gender. The possible cause is child health, which shows that boys have higher morbidity and mortality rates than girls based on Indonesian health data [22]. Recent studies have also confirmed that boys have significantly higher mortality and morbidity rates than girls [34]. This is what may cause parents to prioritize caring for their children in order for them to recover quickly, rather than focusing too much on matters of birth registration.

In addition, four-year-old children were more likely to be registered compared to younger children. This finding is similar to the study in Ghana, which determined the range of children's ages when registering a birth, namely 48-59 months [35]. Essentially, children's age ranges, which is between four and five years, is the time when parents prepare their children for formal schooling; hence, at this age, more parents register their children to obtain a birth certificate. These findings could also be an indication of parents' lack of awareness to register their children on time, because the Indonesian government requires residents to report each birth no later than 60 days after birth, as stated in Law Number 24 of 2013. As a result, the Indonesian government should pay closer attention to this situation, particularly the validity of data on the number of births during a specific time period.

This study found that mostly children who were delivered at a health facility and who had been helped by a skilled provider were the most likely to have their birth registered compared to those who did not access a health facility and who were helped by a non-skilled medical team. In Indonesia, almost all health facilities have provided services to integrate the making of birth certificates after delivery, one example is the Services for Providing Birth Certificates through Health Facilities or called BERITA ASIK by the Department of Population and Civil Registration of Tanggamus district, one of the districts in Indonesia. This simplifies the process of registering a child's birth and obtaining a birth certificate [36]. This finding corresponds with study in Uganda, which showed exposure with the healthcare provider were significantly associated with birth registration [32]. Childbirth at home (non-health facility) by skilled birth attendants is still common in Indonesia, particularly in rural areas [37, 38].

Our findings also show that the percentage of unregistered babies is higher in non-health facilities. Thus, skilled birth attendants alone are insufficient to increase birth registration coverage. Both the health facility and skill birth attendant play an important role to educate and raise awareness of the parents regarding the importance of birth registration. This study correspond with the policy of Indonesian government to encourage all births delivered at health facility based on some considerations [39].

CONCLUSION

Children's birth registrations have been significantly associated with mother and child's factors, which are correlated to social-demographic factors. To achieve the aim of universal children's birth registrations, the significant variables in this study should be considered as fundamental to develop the policy and campaign. A policy intervention for the poor and marginal groups should be developed and tested to increase birth registrations. The barriers for registration need to be tackled using a multi-sectoral approach to increase the number of birth certificate registrations.

Practice Implications

Our findings support the suggestion that structured policies to improve birth registration rate for the less privileged or vulnerable groups, poor and limited access to health services should be considered in the long run.

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