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## Research Article

### Determinant of Tetanus Toxoid Immunization: Impact in Pregnancy in Palu, Indonesia

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#### Abstract:

Tetanus toxoid (TT) injections are given during pregnancy to prevent tetanus neonatorum, which is the leading cause of infant death in many developing countries. In Central Sulawesi in 2010 there were two Tetanus Neonatorum Cases. From the data obtained at Tawaeli Public Health Center, the coverage TT immunization in this area in 2015 amounted to 51,4% and in 2016 amounted to 41,96%, this is still below of the target ie 85%. The study purpose is to determine the factors associated with the completeness of TT immunization in the Tawaeli Public Health Center area. This study using *cross sectional* approach, a population is 301, and the samples obtained 76 responses by using *stratified random sampling* technique. The results showed that pregnant women who received complete TT immunization were 30 (39.5%) respondents and not completed it were 46 (60.5%) respondents. *The Chi-square test showed that the independent variables were associated with completeness TT immunization is a education (p=0,012), economic status (p=0,027), knowledge (p=0,000) and family support (p=0,000). Through multivariate analysis found the most influential independent variable is a family support (p=0,020). Pregnant women's need to be educated to perform routine checks up to the public Health center. A counseling to improve the knowledge of pregnant women about the benefits of TT immunization in during pregnancy is necessary.*

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**Keywords:** Tetanus toxoid, Immunization, Reproduction Health.

#### Introduction

One of the causes of maternal and infant mortality is tetanus infection carried by *Clostridium tetani* bacteria as a result of unsafe birth process or non-sterile wounds. *Clostridium tetani* enter through overt wounds and produces toxins that attack the central nervous systems [1].

Pregnant women are susceptible to infectious disease infections, therefore pregnant women are also an important target of immunization programs[2]. One of the infectious diseases that can be fatal and contribute to maternal and infant mortality is tetanus maternal and neonatal infection [3].

Based on the data from Ministry of Health RI (2015), in Indonesia from 5.382.779 the number of pregnant women, who get TT2+ immunize only as many as 3,509,350 pregnant women, this figure only reached 65.20% of the total pregnant women in Indonesia[4]. While in Central Sulawesi Province until October 2016 from 69,619 pregnant women, who have been TT2+ immunized only 19,997 or just 28.72% [5].

In Palu City, there are two Public Health Center which have low percentage coverage of TT2 + immunization, ie Pantoloan Public Health Center with percentage 47,1% and Tawaeli Public Health Center with percentage 29,2% [5]. Compared with other Public Health Center that have TT2 + immunization coverage already above 50% and have reached 100%.

The data obtained coverage of TT immunization in the

Tawaeli Public Health Center area amounted to 51.4% in 2015 and 41.96% in 2016, this numbers still below the nationally target ie 85%. According to the local midwife's statement most pregnant women want to do TT immunization when her pregnancy has entered 7 months and over.

Many factors related to the achievement coverage of TT immunization on pregnant women, is are education, occupation, awareness, mother's knowledge to TT immunize and experience of mother who have got it during pregnancy[6]–[8].

TT immunization can prevent the occurrences of paralysis and severe muscle spasms at risk of maternal and infant mortality[9]–[11] This study want to know the relationship between education level, economic status, mother's knowledge, family support with the completeness of TT immunization in pregnant women and its impact on women's reproductive Health.

#### Method

This study uses a mix method that combines quantitative and qualitative research. total population of 301 people, using stratified random sampling technique withdrawn 76 samples. Data collection using questionnaires and interview guides. Techniques of data analysis using qualitative descriptive Chi-Square test

#### Results and Discussion

Based on table 1 show that education levels (  $p = 0,012$ ), economics status ( $p = 0,027$ ), knowledge ( $p = 0,000$ ), family

support ( $p = 0,000$ ) have a signification relationship with completeness of TT immunization.

Variables	Completeness TT Immunization				Total		$\rho$ value
	Not Complete		Complete		N (76)	% (100)	
	n (46)	% (60,5)	n (30)	% (39,5)			
<b>Educational Levels</b>							
Low	27	77,1	8	22,9	35	100	0,012
Hight	19	46,3	22	53,7	41	100	
<b>Economic Status</b>							
Low	27	75	9	25	36	100	0,027
Hight	19	47,5	21	52,5	40	100	
<b>Knowledge</b>							
Less	27	96,4	1	3,6	28	100	0,000
Good	19	39,6	29	60,4	48	100	
<b>Family Support</b>							
Not Support	31	93,9	2	6,1	33	100	0,000
Support	15	34,9	28	65,1	43	100	

**Table 1 The Correlation of Independent and Completeness of TT Immunization In Pregnance Womans in Tawaeli Public Health Centre**

**The Correlation of Educational Levels and Completeness of TT Immunization**

According to research by Hart & Okoh (2015), the high level of awareness is determined by the higher of respondents education levels [12]. The fact that the most common source of information is obtained from Health workers, then the lessons than have been previously obtained. This may indicate the role of Health facilities and the role of schools in the dissemination of Health information.

Based on Chi Square analysis result found that there is correlation between education with completeness of TT immunization with value  $\rho = 0,012$ . It shows that education is the determining factor of TT immunization completed. There are some pregnant women who have never given birth before (Primigravida), so they do not have adequate knowledge about how to maintain their Health during pregnancy and they are still unsure what to do to support her Health condition. Another possibility is that they have not prior experience with pregnancy checkups. Pregnant women should be more routinely checked pregnancy. The results of this study are in line with the research of Prihastanti & Hastuti (2015), which obtained  $\rho = 0,000$  [13]. Education affects a person's ability to receive a health information, where in education there is a learning process that will affect a behavior in performing maintenance and improvement of Health. However, it is not in line with Pratiwi's (2013) research where obtained  $\rho = 0.284$ , it's means there is not relationship between both [14].

This finding is in line with Nwokeukwu et al (2014), the low coverage of TT immunization is due to high dropout rates [15]. This indicates that many pregnant women still do not want to be immunized and some of them also do not completed it. This condition maked their lack of effective protection. In addition, education not only can be taken from formal education but also from non-formal education such as counseling, reading Healthty brochures and various other

positive activities.

Thus a high level of education in pregnant women will push a better understanding of the importances tetanus toxoid immunization during pregnancy. This is what caused a lot of positive information gained during the education program [16]–[18]

**The Correlation of Economic Status and Completeness of TT Immunization**

Most pregnant women with high incomes will take advantage of ANC services on a regular basis, while most low-income pregnant women do not take advantage of it[19], [20]. Chi Square analysis shows that there is correlation between economic status with completeness of TT immunization with value  $\rho = 0.027$ . This shows that economic status is a factor that can affect the completeness of TT immunization. This is because most pregnant women with high economic status are busy to work, so they do not have time to check their pregnancy at “posyandu” or public health centre. In addition, sometimes pregnant women are unwilling to check pregnancy because busy taking care of their children and household [21]. Pregnant women with less economic conditions will settle Health care as a secondary needed even as well as tertiary needs[22]. Family income will affect their desire to visit health services. The low economic status of pregnant women will result in low ability to access information media [13]. This also affects the development of information gain. Lack of information their gained will lead to low knowledge of TT immunization.

Pregnant women with low incomes can carry out TT immunization completely because the mother's house is close to the health services facilities such as posyandu (Integrated Service Post). Thus pregnant women have the opportunity to discuss with Health workers and they can understand the importance of TT immunization[13]. Pregnant women with low economic status may also be disturbed to carry out

immunization because health care facilities is far from their residence that requires transportation costs to get there. The income level is related to the completeness of TT immunization because those with high incomes can afford the cost to get it. There are many obstacles that prevent the success of TT immunization including cost, logistics and one's education level. Because the availability and access to health facilities must be ensured to be accessible to the public [23]–[25].

### The Correlation of Knowledge and Completeness of TT Immunization

Anokye et al (2014) found that pregnant women did not know when to immunize and they did not see any relevant benefits after do it[26]. Chi Square analysis found there was a relationship between knowledge and completeness of TT immunization with value  $p = 0.000$ . This shows that knowledge is a factor that can affect the completeness of TT immunization. It is possible, sometimes pregnant women not really interest to come public health center to check their pregnancy despite knowing the benefits, they are also lazy to get around during pregnancy. A few pregnant women understand the benefits of TT immunization, but they do it when the age of pregnancy 7 months and over.

This finding is in line with Yowandari et al. (2015) regarding the level of knowledge of the mother about ANC with the completeness of TT immunization [27]. This study found 3 pregnant women know about ANC and 7 do not know it. Attributed to the completeness of TT immunization was obtained 3 pregnant women who have complete it and 7 not completed. This is likely because pregnant women do not know the importance of making ANC visits during pregnancy and the mother's knowledge of them is lacking. So when a mother does not make ANC visit, it can be said that mother does not complete TT immunization. Because TT immunization is one part of the ANC.

### The Correlation of Family Support and Completeness of TT Immunization

The family is an ecological component that will determine a person's behavior or response, while internal or direct influential factors such as attitudes and intentions of the individual[28]. Based on Chi Square analysis found that there is relationship between family support with completeness of TT immunization with value  $p = 0.000$ . This shows that family support is a factor that can affect the completeness of TT immunization.

Pregnant women who did not get family support were at risk of an ANC visits incomplete when compared to mothers who received family support [29]. So if the mother does not complete the ANC visits, indirectly the mother also does not completed of TT immunization. The implementation of TT immunization is not only influenced a family support, because sometimes pregnant women get full of family support but their still ignore it [30], [31].

### Women Reproduction Health and Completeness of TT Immunization

In this study found the incompleteness of TT immunization impact on women's reproductive Health of tetanus infection that causes muscle spasms in pregnant women. This condition is at risk of maternal and infant mortality. As the Respondent "NP" pointed out that during her first pregnancy she developed tetanus infection due to ignorance about the importance of TT immunization during pregnancy. But in the second pregnancy she did not have a tetanus infection since she knew from the Health worker and repeated her previous experience. Incompleteness of TT immunization in pregnant women can cause tetanus infection and their infants maybe at risk of death[32], [33]

### Conclusions

There is a significant relationship between educational level, economic status, knowledge, family support, and completeness of TT immunization. In addition, the incompleteness of TT immunization impact on female reproductive Health of tetanus infection in pregnant women and infants that result in paralysis and muscle spasms. It is at risk of death of pregnant women. It is advisable to health workers to educate further and advocate for pregnant women to get TT immunization at least 2 times during pregnancy.

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