The Influences of Demographic Factors and Women's Autonomy on the Completion of Childhood Vaccination in Rural Southwestern Ethiopia

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INTRODUCTION

Childhood vaccination can reduce child mortality significantly and is a cost effective way to improve child health. According to the World Health Organization (WHO), vaccination averts an estimated 2 to 3 million deaths every year from diphtheria, tetanus, pertussis, and measles Globally, in 2011, 22.4 million children under one year of age did not receive DTP3 vaccination. [1]. Previous studies have documented several maternal, social and health care factors that influence completion of child vaccination in low and middle income countries. However, few studies in developing countries examined associations between vaccination rates and factors such as pregnancy intention, the number of under-five children in a family and women's autonomy within the household. These demographic factors are likely to be implicated in the coverage and completion of childhood vaccination. This study examined the association between childhood vaccination and demographic factors including pregnancy intention, women's autonomy and the number of under-five children in a family in southwestern Ethiopia.

METHODS

The data used for this study were collected as part of a larger study on the effects of unintended pregnancy and social factors on maternal and child health conducted in a Demographic Surveillance Site (DSS) in southwestern Ethiopia. A sample of 1,370 women with births in the two years before the survey were interviewed, and a sub-sample of 889 children of age 12-24 months were included in the present analysis. Vaccination data were recorded from cards if the

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mother was able to present a card or reported verbally. Data on explanatory variables were collected using a structured questionnaire. Ethical approval was obtained from the College of Health Sciences, Addis Ababa University. The main outcome variable was full vaccination coverage of children, defined after the WHO definition of full vaccination status. The main explanatory variables were women's pregnancy intention for the index child, number of under-five children in the household, other demographic variables and women's participation in household decision making. Pregnancy intention and women 's participation in decision making were defined in the same way as done in larger surveys as the DHS. Data were analyzed using STATA software version 11. Multivariate logistic regression models were used to identify factors associated with complete vaccination coverage.

RESULTS

Seventy-eight percent of children age 12-24 months had ever been vaccinated. However, only 37% of children had received all basic recommended vaccinations Among the children who had ever received vaccination 70% received DPT3 and 63% received measles vaccinations respectively. Bivariate analysis showed that completion of vaccination varied by mother's education, women's participation in household decision making, number of under-five children in a family, child sex, antenatal care use, place of delivery and distance from health facility ($p < 0.05$). In the multivariate logistic regression analyses ; child sex and the number of under-five children in a family, were the demographic factors significantly associated with full vaccination status. Male children were more likely than female children to be fully vaccinated. Children are less likely to be fully vaccinated if there were three or more under-five children in the household (OR; 0.45, 95% CI, 0.21-0.96) compared with children living in households with only one under-five child. Women's participation in household decision making was also important. Children were 1.35 times more likely to be fully vaccinated if their mothers participated in all household decisions than if they did not participate in all household decisions. Moreover, mothers education, antenatal care use and Proximity to health facility were important variables that predicted completeion of childhood vaccination in rural Ethiopia.

Table 1. Odds ratio from logistic regression predicting factors associated with child vaccination in Gilgel Gibe, southwestern Ethiopia, 2012

Variables	Receiving at least one vaccination[1], OR (95% CI)	Completing all vaccinations[1] OR (95% CI)
Sex of the child		
Female	Ref	Ref
Male	1.32 (0.94-1.88)	1.35 (1.00-1.82)*
Mothers educational status		
No education	Ref	Ref
Primary	1.23 (0.86-1.69)	1.22 (0.87-1.55)
Secondary and above	2.74 (1.34-5.80)*	1.77 (1.04-3.59)*
Wealth tertile		
Poor	Ref	Ref
Middle	0.82 (0.54-1.24)	0.75 (0.51-1.11)
Rich	1.18 (0.71-1.95)	1.08 (0.72-1.63)
Pregnancy intention		
Intended	Ref	Ref
Unintended	0.81 (0.61-1.07)	0.93 (0.67-1.28)
Number of under-five children		
1	Ref	Ref
2	0.98 (0.64-1.51)	0.97 (0.68-1.39)
3+	0.70 (0.33-1.46)	0.45 (0.21-0.93)*
Participation in decisions		
Low	Ref	Ref
High	1.63 (1.15-2.31)**	1.35 (1.01-1.80)*
Distance from health facility		
≤ 60 minutes	Ref	Ref
> 60 minutes	0.55 (0.38-0.80)**	0.58 (0.41-0.81)**
Antenatal care visits		
None	Ref	Ref
1-3 visits	2.79 (1.72-4.55)**	1.50 (1.06-2.13)*
4 or more visits	5.73 (2.77-11.84)**	2.27 (1.53-3.36)**
Place of delivery		
Home	Ref	Ref
Health institution	1.37 (0.63-2.98)	1.28 (0.80-2.03)

*significant at P<0.05 ** significant at P<0.01

[1]Adjusted for mother's age, education, wealth index, father's education, place of delivery, and ANC use

DISCUSSION

Our results show that the completion of basic vaccinations in rural Ethiopia is low. Although 78% of children received at least one of the vaccinination series, only 37% completed all basic vaccinations. We found that children from families with two or more under-five children were less likely to be fully vaccinated. This may be because women with many under-five children face a higher burden of care and may not be able to take their younger child(ren) for vaccination services. Other studies from low and middle countries have also found an association between parity and vaccination status [2,3]. Pregnancy intention was not associated with vaccination status in this study. Male children were more likely to be fully vaccinated than female children, indicating the tradition of son preference in Ethiopia [4] and the current finding may thus reflect such preference in providing proper care including the decision to immunize a child. We also found that women's participation in household decision making was associated with complete vaccination. Participation in decision making on health care use may enable women to independently or jointly decide to have their child vaccinated. Thus, in addition to efforts made to improve access to maternal and child health services, promoting initiatives that encourage women's autonomy within the household and healthy timing and spacing of pregnancies help in improving completion of childhood vaccination series.

Refernces

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