The effect of high fertility and short-birth spacing on maternal and neonatal health status in Southwest Ethiopia: A multilevel analysis of prospective follow up study

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Background: High fertility and short inter-birth interval are assumed to have a negative effect on maternal and neonatal health care and have adverse consequences on neonatal survival. However, some controversies have been documented in prior studies concerning this fact. Ethiopia is among low-income Sub-Saharan African countries with high fertility and low coverage of family planning for birth spacing and child limiting. However, the effect of this high fertility and short birth spacing on maternal and neonatal health care haven't been well investigated. Therefore, this prospective follow up study aimed to investigate whether high fertility and short inter-birth interval have a significant effect on maternal and neonatal health care and neonatal survival.

Methods: A community-based prospective follow up study was conducted among 3612 mothers in Southwest Ethiopia from Sep 2012 to Dec 2013. Data on fertility, inter-birth interval, maternal health care during pregnancy and delivery, neonatal care practices and neonatal mortality were collected by interviewer-administered structured questionnaire. Mixed-effects multilevel analyses were done to look at the effects of fertility and inter-birth interval on maternal health care, neonatal health care and neonatal mortality.

Results: Number of pregnancies ever had, ranged from 1 to 9 among the respondents with a mean of 3.3±1.9. About a quarter, 25.7% ever had four or more pregnancies (high fertility). Inter-birth interval ranged from 1 to 8 years, with 79.1% appropriately spaced, 2-4 years. The status of skilled care use was 17.5% (95% CI: 16.2%, 18.8%). The coverage of neonatal care practice was 59.5% (95%CI: 57.6%, 61.3%) and the status of neonatal mortality rate was 35.5 (95%CI: 28.3, 42.6) per 1000 live births.

High fertility and short inter-birth interval had a negative effect on skilled care use during delivery. Mothers who ever had more than 4 pregnancies were about 55% less likely to use skilled care at birth as compared to mothers having 4 or less pregnancies (OR=0.45; 95%CI:

0.26, 0.76). Mothers who had preceding birth-interval of < 2 years were also 54% less likely to use skilled care at birth as compared to birth interval of 2 years or above (OR=0.46; 95%CI: 0.28, 0.77).

Similarly, high fertility and short preceding birth-interval had negative effect on neonatal care. Fifth or above birth order neonates were 43% less likely to get appropriate neonatal care as compared to birth order of 4 or less (OR=0.57; 95%CI: 0.32, 0.81). Neonates with preceding birth-interval of < 2 years were 80% less likely to get appropriate neonatal care as compared to birth-interval of 2 years or more (OR=0.20; 95%CI: 0.01, 0.39).

High fertility also had a negative effect on neonatal survival, whereas, birth-interval had non-significant effect. First birth order neonates were about 5 times more likely to die during neonatal period as compared to birth order of 2^{nd}-4^{th} (OR=5.45; 95%CI: 1.81, 16.40). Similarly, fifth or above birth order neonates were more than 2 times more likely to die during neonatal period as compared to birth order of 2^{nd} - 4^{th} (OR=2.61; 95%CI: 1.43, 4.74).

Conclusions: High fertility had a significantly negative effect on skilled care use, neonatal care practice and neonatal survival in the study area. Similarly, short inter-birth interval had a negative effect on skilled care use and neonatal care practices, which in turn have a negative effect on neonatal survival. Increasing access to family planning and its utilization for birth spacing and birth limiting are very crucial in the study area.