



Non-adherence of WHO recommended birth intervals in Rufiji, Tanzania



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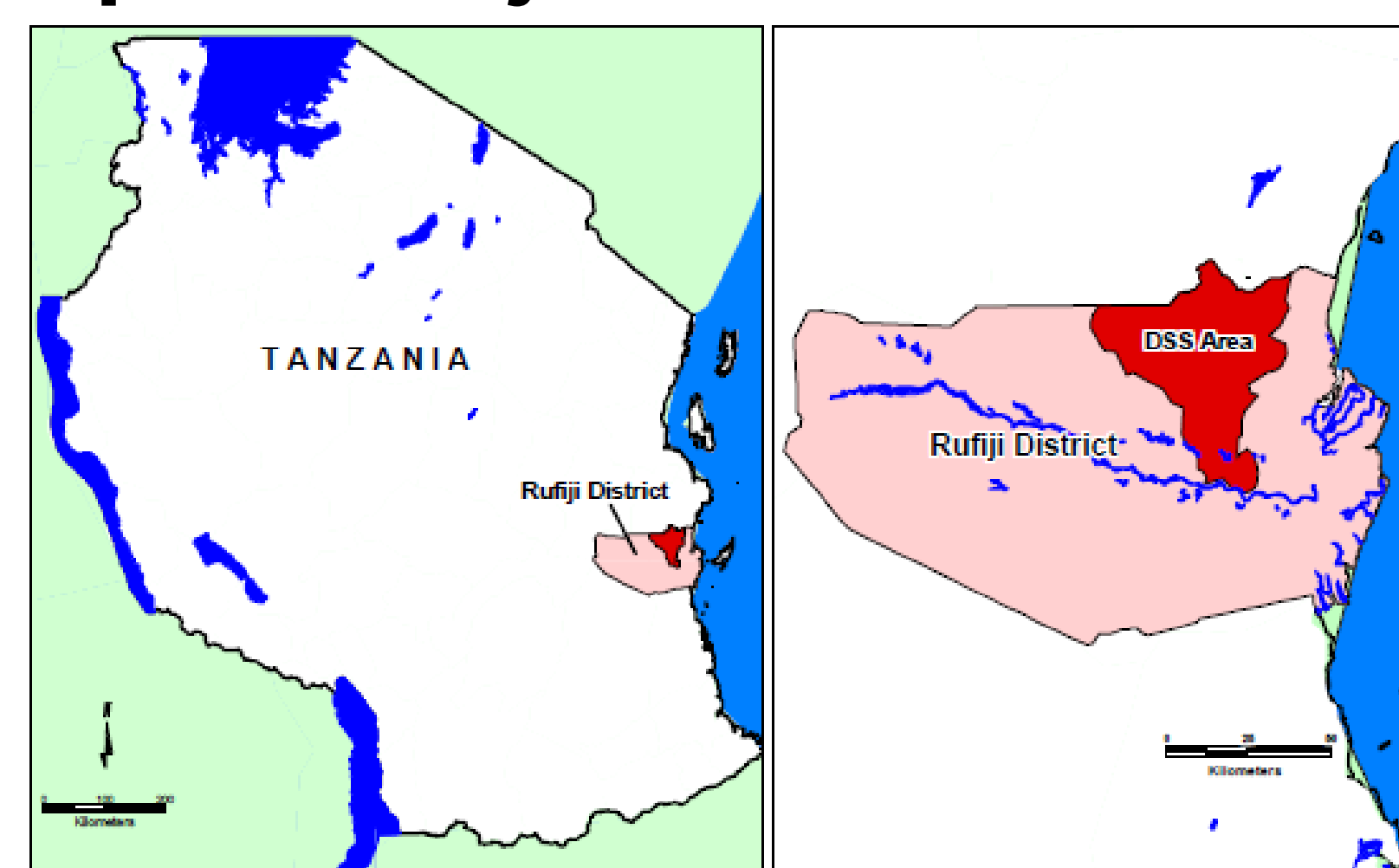
Introduction

Poorly spaced pregnancies have been documented worldwide to result into adverse maternal and child health outcomes. The World Health Organization recommends an interval length of at least two years after a live birth and before individuals attempt the next conception in order to reduce the risk of the adverse maternal, perinatal and child health outcomes.

Tanzania exhibits high rates of maternal and neonatal mortality of 454 deaths per 100,000 live births and 26 deaths per 1000 live births respectively. Several studies have reported that women with shorter birth intervals are more likely to suffer maternal complications and low birth weight of their babies than those with longer birth intervals.

In countries such as Tanzania where fertility, maternal mortality and child mortality are high, the analysis of birth intervals is of important scientific relevance. Identifying characteristics which are associated with short birth intervals will isolate avenues for public policy to lengthen birth intervals and improve maternal and child health.

Map of Rufiji HDSS



Data and methods

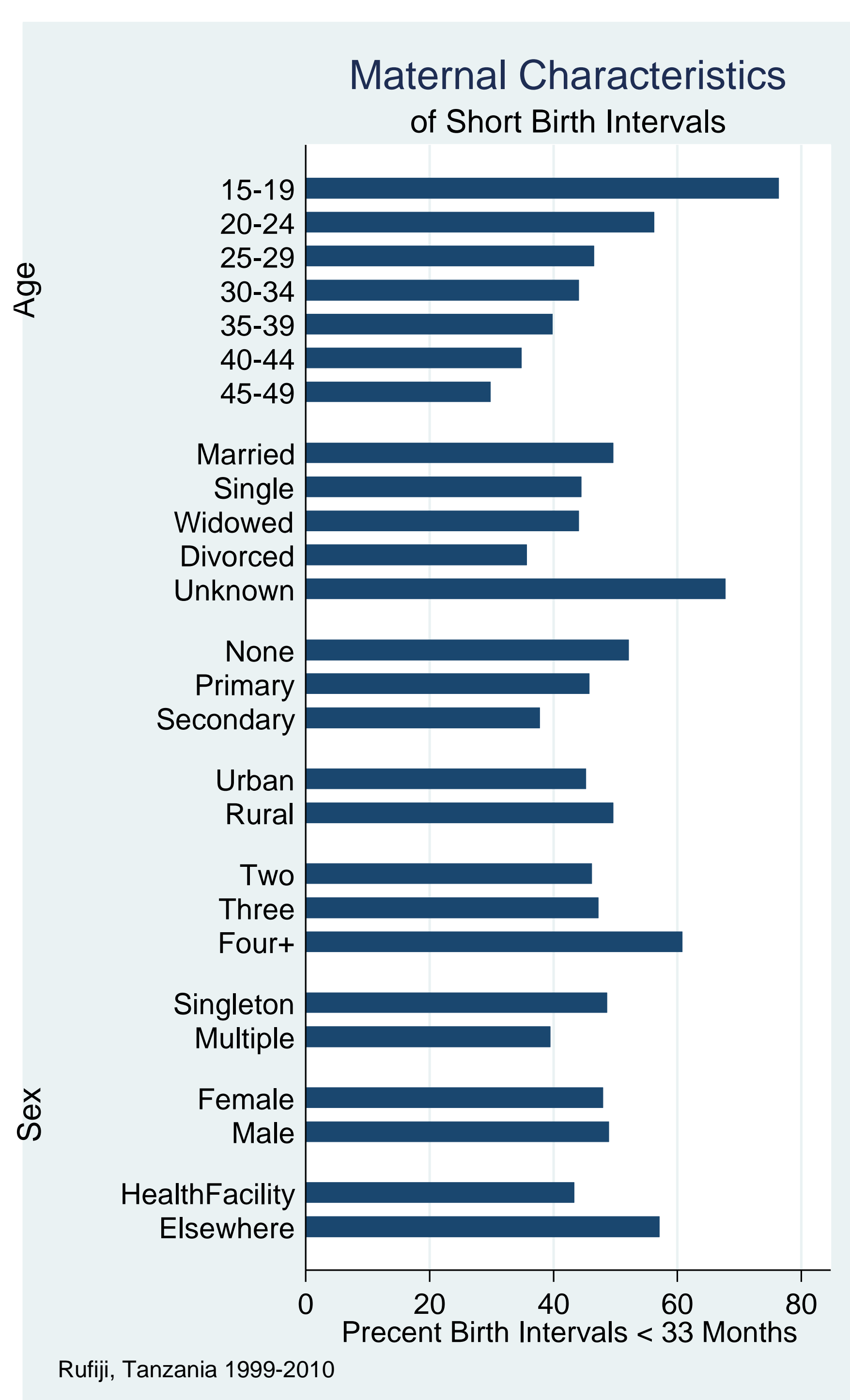
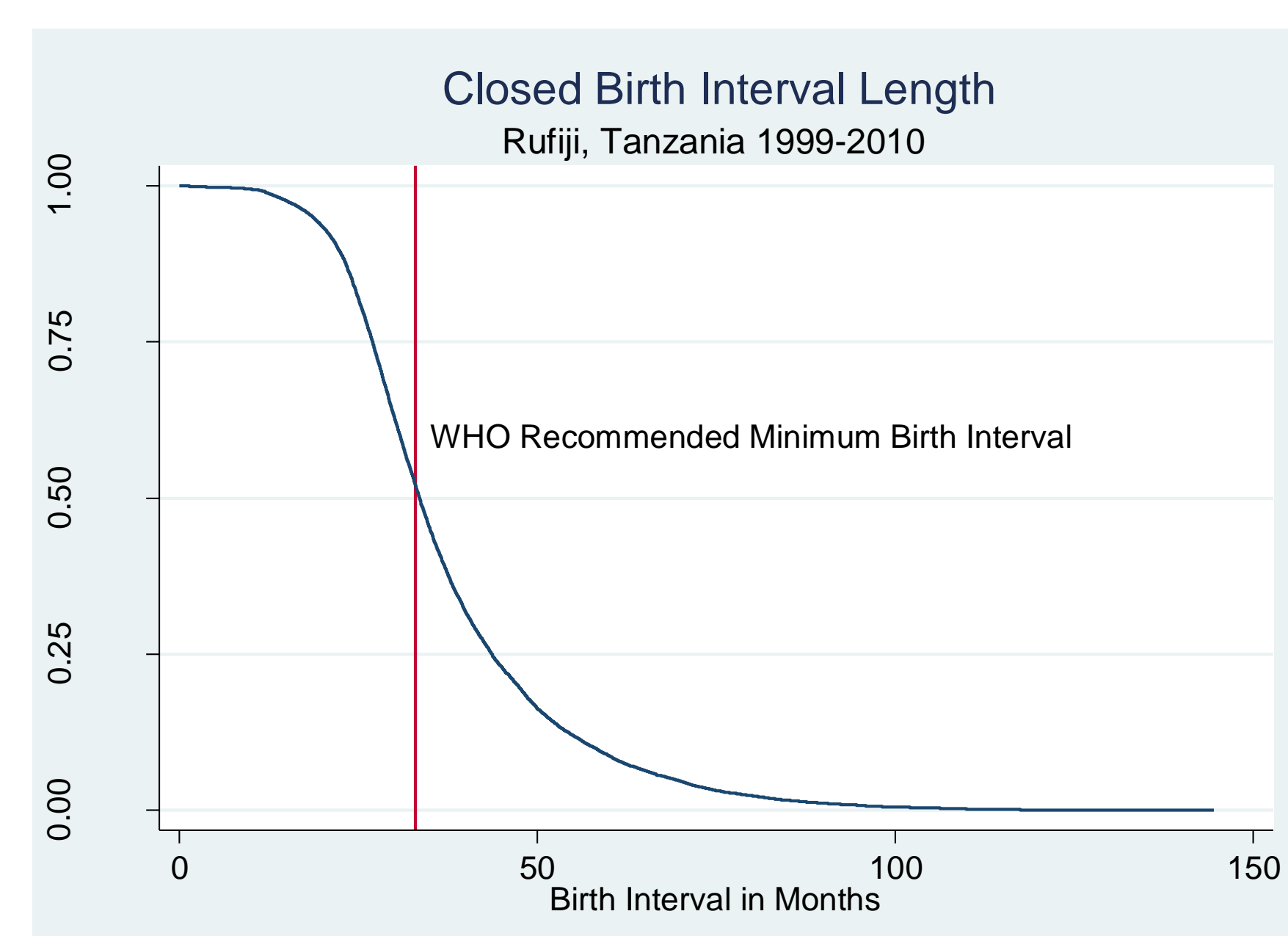
This study uses longitudinal data collected in the Rufiji HDSS in Tanzania for a period of eleven years from 1999 to 2010, resulting in a total of 15373 inter-birth intervals from 8979 women aged 15-49 years. This study examined birth-to-birth interval which were broken into two categories of <33 and ≥33 months.

The three goals of this study:

- 1.To estimate proportions of inter-birth intervals that are below and above the recommended interval length
- 2.To describe the levels of inter-birth interval lengths by background characteristics of the mother and child
- 3.To identify factors associated with non-adherence to the recommended inter-birth interval length

Summary Results

Overall, median inter-birth interval was 33.4 months long. Of the intervals, 7446 (48.4%) were below (non-adherence) the WHO's recommended interval length of 33 months between two live births for better maternal and child health outcomes.



Regression Results

Significant correlates of non-adherence were maternal age, marital status, and maternal education. Others were maternal occupation, place of residence, parity, birth type, place of delivery and HDSS entry type of the woman. These factors were further modeled in a multivariate perspective to obtain final and independent correlates of non-adherence. We tested different combinations of variables (e.g. maternal age and parity) to examine presence of any statistical interaction in the multivariate logistic regression model but we detected none.

Multivariate logistic regression model of short inter-birth intervals in Rufiji HDSS, Tanzania: 1999-2012 (n=15,338)

Characteristic	Odds Ratio	95% CI	P-Value
Age			
15-19	11.62	8.44-19.01	<0.001
20-24	3.91	2.93-5.21	<0.001
25-29	2.24	1.68-2.98	<0.001
30-34	1.97	1.48-2.62	<0.001
35-39	1.58	1.18-2.11	0.002
40-44	1.28	0.94-1.75	0.115
45-49	Ref		
Marital Status			
Married	Ref		
Single	0.59	0.51-0.69	<0.001
Widowed	1.05	0.83-1.34	0.671
Divorced	0.58	0.51-0.67	<0.001
Unknown	1.88	1.30-2.71	0.001
Education			
None	1.28	1.02-1.60	0.031
Primary	1.11	0.89-1.38	0.357
Secondary	Ref		
Occupation			
None	0.91	0.75-1.09	0.312
Self Employed	Ref		
Formal Employment	1.02	0.72-1.44	0.931
Residence			
Urban	Ref		
Rural	1.03	0.95-1.11	0.475
Parity			
Two	Ref		
Three	1.29	1.19-1.39	<0.001
Four Plus	2.63	2.37-2.93	<0.001
Birth			
Singleton	Ref		
Multiple	0.77	0.60-0.99	0.038
Place of Delivery			
Health Facility	Ref		
Elsewhere	1.82	1.69-1.95	<0.001
HDSS Entry Type			
Enumeration	Ref		
In-migration	1.32	1.21-1.43	<0.001

For further information

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Conclusions

Nearly half (48.4%) of the inter-birth intervals in the study area are poorly spaced. This is as substantial proportion and calls for interventions that can integrate the birth spacing issues into their programmes. Community and health facility-based optimum birth spacing education is urgently required for better health outcomes of our mothers and children. Focusing efforts on women most characteristically at risk, especially younger women and women of many children will improve program results. The common occurrence of below recommendation length birth intervals is a public health concern which has the potential to improve the health and well being of mothers and children in developing countries.

Limitations

No data was available regarding duration of breastfeeding, contraceptive use and religion, which if available would have been included in this analysis. Reproduction of this analysis with other data and additional variables would prove insightful.

Literature Cited

- 1 Davanzo, J et al. 2004. "The Effects of Birth Spacing on Infant and Child Mortality, Pregnancy Outcomes, and Maternal Morbidity and Mortality in Matlab, Bangladesh." *Labour and Population*.
- 2 Puffer, PR, and CY Serrano. 1975. "Birth Weight, Maternal age and birth orders: Three Important Determinants in infant mortality." *Scientific Publication No. 294*.
- 3 Zhu, B.-P. 2005. "Effect of interpregnancy interval on birth outcomes: findings from three recent US studies." *International Journal of Gynecology & Obstetrics* 89, Supplement 1(0):S25-S33.
- 4 WHO Department of Making Pregnancy Safer. n.d. "WHO Report of a technical consultation on birth spacing."
- 5 National Bureau of Statistics, ICF Macro. 2011. "Tanzania Demographic and Health Survey 2012."
- 6 Klerman, L V, S P Cliver, and R L Goldenberg. 1998. "The impact of short interpregnancy intervals on pregnancy outcomes in a low-income population." *American Journal of Public Health* 88(8):1182-1185.
- 7 Miller, Jane E. 1991. "Birth Intervals and Perinatal Health: An Investigation of Three Hypotheses." *Family Planning Perspectives* 23(2):62-70.
- 8 Miller, Jane E., James Trussell, Anne R. Pebley, and Barbara Vaughan. 1992. "Birth Spacing and Child Mortality in Bangladesh and the Philippines." *Demography* 29(2):305-318.
- 9 Rutstein, S. 2003. "Effect of Birth intervals on Mortality and Health: Multivariate Cross Country Analyses."
- 10 Rutstein, S. 2000. "Effect of birth intervals on mortality and health: Multivariate crosscountry analysis."
- 11 Rutstein, S. n.d. "Effects of Preceding Birth and Pregnancy Intervals on Child Mortality and Nutritional Status in Less Developed Countries: Evidence from the Demographic and Health Surveys."
- 12 Winikoff, B. 1983. "The effects of birth spacing on child and maternal health." *Studies in Family Planning* 14(10):231-245.

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