Factors Affecting Birth Space Interval of Women Who Are Attending Primary Health Care Centers

Suhair M. Hassoon, B. M. Tech.*

الخلاصة:

الهدف: تهدف الدراسة إلى تحديدمدّة المباعدة بين حمل والذي يليه فضلاً عن إيجاد العوامل المؤثرة به لعيّنة من النساء.

المنهجية: دراسة مقطعية شملت مجموعة من النساء المراجعات لمراكز الرعاية الصحية الأولية في التحدي والشيخ عمر في محافظة بغداد. جمعت المعلومات والبيانات باستعمال المقابلة والأسئلة المباشرة المُعَدّة لهذة الدراسة والتي شملت (٤١٥) إمراة في سن الإنجاب (٢٠-٤٠) سنة ممنتمّ اختيارهن عشوائياً .

النتائج: أظهرت النتائج أنّ معظم النساء (٣١.٨%) كانت مُدّة المباعدة بين حملٍ وآخر (٨-١٢) شهر، تليها (٢٦.٧"%)كانت مُدّة المباعدة بين حملٍ وآخر (١٩-٢٤) شهر، (٢٠.٢%) كانت مُدّة المباعدة بين حملٍ وآخر (٢٤>) شهر و(١٦.١%)كانت مُدّة المباعدة بين حملٍ وآخر (١٣-١٨) شهر .بينما (٥.١%) من النساء كانت مُدّة المباعدة هي (٧) أشهر إنّ مُدّة المباعدة كانت الأكثر في الفئة العمرية (٢٠) سنة ولوحظ أنّ هذه المُدّة تزداد مع استعمال وسائل منع الحمل أو إرضاع الطفل من الثدي وكذلك لدى الأمهات ذوات المستوى التعليمي العالي.
أظهرت النتائج أيضاً أنّ (العمر، المستوى التعليمي، المهنة، استعمال موانع الحمل، عدد الولادات وعدد مرات الإجهاض) لها علاقة معنويّة متعلقة بمُدّة المباعدة وذلك باستعمال أقل قيمة التي تقبل بها الفرضية البديلة (p- value).

التوصيات: توصي الدراسة بضرورة توعية الأمهات حول مضار الولادات المتعاقبة بأقل من سنتين على صحة الأم والطفل وأن يكون هذا البرنامج من ضمن منهاج التثقيف الصحي في الرعاية الصحية الأولية فضلاً عن مراكز تنظيم الأسرة والتشجيع على الرضاعة الطبيعية كونها من وسائل منع الحمل المهمة والسهلة.

Abstract

Objective: The aim of this study is to determine the factors affecting birth space interval in a sample of women.

Methodology: A cross-sectional study conducted in primary health centers in Al-Tahade and Al- Shak Omar in Baghdad city. Data were collected by direct interview using questionnaire especially prepared for the study. Sample size was (415) women in age group (20-40) years who were chosen randomly**.**

Results: Analysis of data shows highest rate of women (31.8%) had a birth space interval of (8-12) months followed by (26.7%) had a birth space interval of (19-24) months, (20.2%) had a birth space interval of (>24) months and (16.1%) had a birth space interval of (13-18) months respectively, while lower rate of women (5.1%) had birth space interval of (7) months. The birth space interval was higher in age group (20) years. Also, this interval was prolonged by the use of contraceptives, breast feeding and women who had a high level of education.
Analysis of data shows that (age group, level of education, occupation, use of contraceptives, parity and number of abortion) were significant factors associated with birth space interval by using P-value of less than 0.01 was considered significant to test the result.

Recommendations: Concentrated effort should be made to emphasize the risk of close birth spacing for both of the mother and infant, in all our primary health centers as well as the family planning centers should be included in these efforts explaining the importance of breast feeding for adequate birth spacing.

Keywords: Birth Space Interval; Contraceptives; Abortion; Parity

Introduction:

Birth Spacing refers to the time interval from one child's birth date until the next child's birth date [(1)]. There are many factors to be considered in determining what an optimal time interval between pregnancies is. However, researchers agree that 2 ½ years to 3 years between births is usually the best for the well-being of the mother and her children [(2)].

The Optimal Birth Spacing Initiative (OBSI) was created under the auspices of USAID* to place optimal birth spacing on the global leadership priority agenda. The goal of (OBSI) is to institute an optimal birth spacing recommendation of ***Three to Five Years*** at the policy, programmatic and behavioral levels [(3)].

Worldwide, many women have birth intervals shorter than 3 years. Data based on

*** Board of Technical Education, College of Health and Medical Technologies**

population reports from 55 countries showed that 26% of women gave birth < 2 years after a previous birth and 31% of the birth intervals were 2–3 years [(2)].

Previous research from Matlab, Bangladesh had suggested that there is a little empirical evidence for an association between birth interval length and the risk of maternal death. However, a more recent analysis of data from Matlab, Bangladesh indicates that women with short or very long inter-pregnancy intervals are at a significantly higher risk of maternal complications [(4)].

Short-birth intervals (<2 years) may lead to maternal depletion syndrome, milk diminution and competition between siblings close in age for food and other resources [(5)]. It is believed that birth intervals are shorter in these countries (Bangladesh and India) because many women prefer to have births in close succession and then use contraceptives for limiting rather than spacing births [(6)].

Program models add to this information and framework by looking at ways in which services can influence some behaviors and outcomes. The challenge for the (OBSI) initiative will be to link social, cultural and behavioral determinants with programs and services to achieve best health impacts [(7)].

* USAID United States Agency for International Development

The study aims to determine rate of birth space interval among sample of women at bearing age and to identify factors associated with the birth space interval (age, parity, job, type of lobar and education).

A cross-sectional study was conducted Al-Tahadaa and Al-Shakh Omar primary health centers. The sample was selected randomly which included (415) women at childbearing age. The study has started from June 1st to September 30th, 2009. The data were collected by direct interview using special questionnaire. Information included socio-demographic data (age, education, occupation) and reproductive data (contraceptives use, parity, and number of abortion).

Frequencies and tabulations were obtained and proportion was calculated by using computer package SPSS and the P-value of less than 0.01 was considered significant to test the result.

Results

Table 1. Relationship between birth interval (months) and age groups (years)

BSI* (months)	Age (years)					Total	P- value
	20	21-25	26-30	31-35	36-40		
7-	4 10.5%	5 4.2%	10 5.2%	1 2.2%	1 5.3%	21 5.1%	P<0.01
8-12	23 60.5%	44 36.7%	55 28.6%	5 10.9%	5 26.3%	132 31.8%	
13-18	7 18.4%	16 13.3%	36 18.8%	6 13.0%	2 10.5%	67 16.1%	
19-24	2 5.3%	33 27.5%	49 25.5%	22 47.8%	5 26.3%	111 26.7%	
>24	2 5.3%	22 18.3%	42 21.9%	12 26.1%	6 31.6%	84 20.2%	
Total	38 100 %	120 100%	192 100%	46 100%	19 100%	415 100%	
χ^2= 33.896[a]		df= 12	P=.001		Sig.=HS		

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; P= Probability Level; Sig.= Significance**

Table (1) shows that highest percentage of women (31.8%) had a birth interval of (8-12) months and (26.7%) of them had a birth interval of (19-24) months. While, lower percentage of women (5.1%) had birth intervals of (7) months. (60.5%) of women is of (20) years old age followed by (47.8%) of women is of (31-35) years old age. There is a difference between both birth interval of (8-12) months and (19-24) months. This result is statistically highly significant (P-value 0.01).

Table 2. Relationship between birth interval (months) and type of feeding

BSI* (months)	Type of feeding			Total	P- value
	Breast	Bottle	Mixed		
7-	7 4.4%	11 9.6%	3 2.1%	21 5.1%	p<0.01
8-12	44 27.7%	45 39.1%	43 30.5%	132 31.8%	
13-18	8 5.0%	33 28.7%	26 18.4%	67 16.1%	
19-24	46 28.9%	22 19.1%	43 30.5%	111 26.7%	
>24	54 34%	4 3.5%	26 18.4%	84 20.2%	
Total	159 100%	115 100%	141 100%	415 100%	
χ^2= 68.357[a]	df=8	P=.000		Sig.=HS	

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (2) shows that (34%) of woman who breast fed their babies had longest birth interval (>24) months, while (39.1%) of mothers who bottle fed their infants had low birth interval (8-12) months. This result is statistically highly significant (P-value 0.01).

Table 3. Relationship between birth interval (months) and type of education

BSI* (months)	Type of education				Total	P- value
	Illiterate	Primary	Secondary	College		
7-	7 7.1%	8 5.7%	5 4.0%	1 2.0%	21 5.1%	P<0.01
8-12	38 38.4%	59 41.8%	32 25.4%	3 6.1%	132 31.8%	
13-18	13 13.1%	15 10.6%	27 21.4%	12 24.5%	67 16.1%	
19-24	20 20.2%	38 27.0%	39 31.0%	14 28.6%	111 26.7%	
>24	21 21.2%	21 14.9%	23 18.3%	19 38.8%	84 20.2%	
Total	99 100%	141 100%	126 100%	49 100%	415 100%	
χ^2= 40.257[a]	df=12	P=.000		Sig.= HS		

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (3) shows that the highest percentage of women had a primary education (41.8%) with birth interval (8-12) months, while (38.8%) of them had college education with birth interval (>24) months. This result is highly significant (P-value 0.01).

Table 4. Relationship between birth interval (months) and occupation

BSI* (months)	Work		Total	P- value
	Working	Housewife		
7-	1 1.3%	20 5.9%	21 5.1%	P<0.01
8 - 12	14 17.9%	118 35%	132 31.8%	
13 - 18	20 25.6%	47 13.9%	67 16.1%	
19 - 24	14 17.9%	97 28.8%	111 26.7%	
>24	29 37.2%	55 16.3%	84 20.2%	
Total	78 100%	337 100%	415 100%	
χ^2= 30.29[a]	df= 4	P=.000	Sig.= HS	

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (4) shows that (35%) of woman was housewife with low birth interval, while the working women are (37.2%). This result is highly significant (P<0.01).

Table 5. Relationship between birth interval (months) and parity

BSI* (months)	Live baby			Total	P- value
	1-2	3-4	5-6		
7-	8 5.4%	12 5.3%	1 2.3%	21 5.1%	P>0.01
8-12	54 36.7%	57 25.3%	21 48.8%	132 31.8%	
13-18	24 16.3%	35 15.6%	8 18.6%	67 16.1%	
19 24	31 21.1%	72 32.0%	8 18.6%	111 26.7%	
>24	30 20.4%	49 21.8%	5 11.6%	84 20.2%	
Total	147 100%	225 100%	43 100%	415 100%	
χ^2= 15.919[a]	df= 8	P=.044		Sig.= NS	

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (5) shows that the highest percentages of women has (5-6 live babies) in (48.8%) birth interval (8-12) months in comparison with (5-6 live babies) in (2.3%) birth interval (7) months. This results is not significant (p>0.01).

Table 6. Relationship between birth interval (months) and contraceptive use

BSI* (months)	Contraceptive use		Total	P- value
	Yes	No		
7-	9 5.3%	12 4.9%	21 5.1%	P<0.01
8-12	27 15.9%	105 42.9%	132 31.8%	
13-18	17 10.0%	50 20.4%	67 16.1%	
19-24	51 30.0%	60 24.5%	111 26.7%	
>24	66 38.8%	18 7.3%	84 20.2%	
Total	170 100%	245 100%	415 100%	
χ^2=79.990a	df= 4	P=.000	Sig.= HS	

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (6) shows that the highest percentage of women (42.9%) who not using contraceptive had low birth interval (8-12) months, compared with (38.8%) who using contraceptive had high birth interval (>24) months. This result is statistically high significant as (p<0.01).

Table 7. Relationship between birth interval (months) and number of abortion

BSI* (months)	Number of abortions			Total	P- value
	No abortion	1 abortion	2 abortions		
7-	16 4.6%	4 7.3%	1 9.1%	21 5.1%	p<0.01
8-12	100 28.7%	24 43.6%	8 72.7%	132 31.8%	
13-18	53 15.2%	12 21.8%	2 18.2%	67 16.1%	
19-24	102 29.2%	9 16.4%	0 .0%	111 26.7%	
>24	78 22.3%	6 10.9%	0 0%	84 20.2%	
Total	349 100%	55 100%	11 100%	415 100%	
χ^2= 22.987[a]	df= 8	P=.003		Sig.= HS	

***BSI= Birth space Interval; χ2= Chi-square value; df= Degree of Freedom; HS=Highly Significant; P= Probability Level; Sig.= Significance**

Table (7) presented that (72.7%) of women had (2 abortions) with low birth interval (8-12) months, followed by (43.6%) of women had (1 abortion), while women who have no abortions had a highest birth interval. This result is highly significant ($p<0.01$).

Discussion

Short-birth interval was a risk factor for maternal and prenatal morbidity and mortality. This effect remains when the data are statistically controlled for socio-demographic and biological variables [8].

Study results present that the birth interval was between (8-12) months, which is an inadequate spacing for the health of both the mother and her infant. This finding agrees with other studies done in India and Latin America [9,10,11], but does not agree with birth intervals < 3 years reported from the developing countries of the Middle East region, Jordan, Yemen, and Turkmenistan in Central Asia [12]. This finding suggests that establishing family planning center have not improved this interval due either to poor utilization of these services or to poor educational programs to the mother about the dangers of closely spaced pregnancies.

Spacing was prolonged in mothers who breast fed their infants than those who used bottle feeding. This agrees with the Qur'an which clearly states that mothers should breastfeed their children for two years, during which she should not become pregnant. This is according to the following verse which reads:
"The mothers shall give such to their offspring for two whole years, if the father desires to complete the term" (Al-Baqarah/ [2] 233). There is a consensus among religious scholars that mother requires one further year to recover [13]. Hence, 36 months is advised for birth spacing. This is the same advice as is provided by the World Health Organization on this matter that after a live birth, the recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, prenatal and infant outcomes [14].

Higher education level is usually linked to better health awareness and longer birth intervals [2, 15]. In accordance to our expectations, significantly more women in this study with higher education level preferred a longer birth interval (>24 months) than those with less education. The stresses of work outside the home usually motivate employed women to postpone pregnancy and adopt a longer birth interval, a finding which was observed in this study as well as reported from other countries of the world [2].

Contraceptives use prolonged the birth space interval for women in comparison to those ones who did not use any contraceptive. The quality of family planning services is an important determinant of contraceptive use, because it is likely to affect contraceptive continuation by controlling reproduction; women will be able to reach other goals besides having children [16].

Abortion was a factor that affected birth interval as women who had no abortion had longer birth interval than those who had 1-2 abortions and this is explained by repeated efforts of women to have babies after abortion. Spacing after an abortion is based on one Latin America study that examined hospital records of 258,108 women (delivering singleton infants) whose previous pregnancy had ended in an abortion [17].

The timing of the next pregnancy, individuals and couples should consider health risks and benefits along with other circumstances such as their age, fecundity, fertility aspirations, access to health-care services, child-rearing support, social and economic circumstances, and personal preferences.

Conclusion:

1- The highest rate of women (31.8%) had a birth interval of (8-12) months, followed by (26.7%) who had a birth interval of (19-24) months, (20.2%) had a birth interval of (>24) months and (16.1%) had a birth interval of (13-18) months respectively, while lower rate of women (5.1%) who had birth interval of (7) months.
2- Birth interval was longer in mother of breast feeding and contraceptive users also in those who had no abortion before.
3- The highest rate of birth space interval was among age group (20) years.
4- Factors that might be related to birth interval were age group, education, occupation, parity and number of abortion.

Recommendations:

1. Encourage birth spacing by creating international consensus on (OBSI) recommendations.

2. Strengthening services and community programs with birth spacing messages and improved quality of service.

3. Educating individuals/communities on the benefits of birth spacing.

4. Encourage breast feeding for its beneficial effects on contraception as well as other health benefits.

References:

1. Conde-Agudelo and Jose M. Belizan: Maternal Morbidity and Mortality Associated with Inter pregnancy Interval: Cross Sectional Study." **British Medical Journal**, 2000, (18) P.P.321:1255-1259.

2. Rustestein S.: Effects of Birth Interval on Mortality and Health: Multivariate Cross Country, MACRO International, Presentation at USAID, July 2000. In: Setty-Venugopal V. up adhyay UD. Birth Spacing: Three to Five Save Lives. *Baltimore,* Johns Hopkins Bloomberg School of Public Health, Population Information Program, 2002 (Population Reports, Series, No.13): P.P.12-16.

3. Wong, Emelita. 2000.: Women's Work, Fertility Level, and Contraceptive Use: A Synthesis of Results from Bolivia, the Philippines, and Zimbabwe. Report. The Policy Project: Washington, DC.: P.P.76-88.

4. Westoff, C. and Bankole, A. Mass Media and Reproductive Behaviour in Pakistan, India and Bangladesh. Calverton, Maryland: ORC Macro Demographic and Health Surveys Analytical Report 10; 1999.

5. Choe, M. et al.: Identifying Children with High Mortality Risk. **National Family Health Survey Bulletin**, 1999, 12: P.P.1-4.

6. Greenspan, A.: Family Planning's Benefits Include Improved Child Health and Nutrition: New Data from Bangladesh Asia–Pacific, **Population and Policy**, 1993, P.P.26:1-4.

7. Townsend, J.: Evidence-Based Programming for Birth Spacing. PowerPoint Presentation Made at the Fourth Champions Meeting on Optimal Birth Spacing Organized by the CATALYST Consortium and USAID, Washington, *DC,* 2 September 2003: P.P.33-35.

8. James, N.; Nancy, M. and Elaine, P.: Reconsidering Childhood Under-nutrition: Can Birth Spacing Make a Difference? An Analysis of the 2002-2003 El Salvador National Family Health Survey, **Maternal and Child Nutrition, 2008, 5**(1): P.P.10-12.

9. Al–kafaji, N.: 1992. A comparison between High Risk Groups for Pregnancy and Its Outcome. A thesis Submitted to the Department of Community Medicine, University of Baghdad in Partial Fulfillment of the Requirement for Diploma Degree in Community Medicine.

10. Vohera Shri 1987. National Birth Interval. A Study of Rural Population. **The Journal of Family Welfare**, Vol. XXIIV No.3, P.P.28-38.

11. Conde-Agudelo, A. et al. Effect of the Inter-Pregnancy Interval on Perinatal Outcomes in Latin America. **Obstetrics and Gynecol-ogy**, 2005, 106(2):359-66.

12. Setty –Venugopal V, U padhyayVD. Actual Versus Preferred Birth Interval. Birth Spacing: Three to Five Save Lives. Baltimore, Johns Hopkins Bloomberg School of Public Health, Population Information Program, 2002, (Population, Series, no.13)55-57.

13. Islamic Relief : Islamic Relief is Dedicated to Allevitating the Poverty and Suffering of the World's Poorest People, Published by Islamic Relief Worldwide, 2009, 19 Rea Street South, Birmingham, B5 6LB, United Kingdom, ***www.irworldwide.org***.

14. Simmons R, Baqee L, Koenig MA, Phillips JF. Beyond Supply: The Importance of Female Family Planning Workers in Rural Bangladesh. **Stud Fame Plan** 1988; 19: P.P.29–38.

15. Al –Nahedh NNA. The Effect of Socio-demographic Variables on Child–Spacing in Rural Saudi –Arabia. **Eastern Mediterranean Health Journal**, 1999, 5(1): P.P.136-40.

16. F.Rakhshani and M. Mohammedi.: Contraception Continuation Rates and Reasons for Discontinuation. **Eastern Mediterranean Health Journal**, 2004, 10(3): P.P.260-267.

17. Conde-Agudelo A, Belizán, JM, Breman R, Brockman SC, Rosas-Bermudez A. Effect of the Inter Pregnancy Interval after An abortion on Maternal and Perinatal Health in Latin America, **International Journal of Gynecology and Obstetrics**, 2005, 89: S34–S40.