

Seasonal Variations in the Normal Birth Rate and Foetal Loss In Some of Riyadh Maternity Hospitals Compared to Other Cities in Saudi Arabia.

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Abstract. The seasonal variations in the normal birth rate and foetal loss have been investigated for 4 - 5 years (1987-1991) in four maternity hospitals in Riyadh. No significant differences were observed within and between these hospitals. A slight, non-significant increase in foetal loss was observed in winter and spring (10.4 - 13.8% variations) compared to summer and fall (7.9 - 11.5%). When Riyadh area compared to other cities in Saudi Arabia a significantly higher rate of foetal loss about 28% was observed in Tabuk and less higher ones of 17% and 14% were respectively detected in Makkah and Dammam.

Introduction

The seasonal changes play a major role in the life of most plant animals and human. Such seasonal changes are sometimes accompanied by the spread of human diseases, such as the Bell's Palsy disorder (idiopathic facial paralysis) 67% of the cases occurred during October to March (cold season) in the eastern province of Saudi Arabia [1]. The respiratory diseases of newborn children in Hail area [2] which proved to be more prevalent in winter than in summer. Since most marriages in Saudi Arabia occur during summer (vacation time), an increase in pregnancy rate is expected by fall and winter. This together with the reported increase in seasonal disease in winter might lead to an increase in foetal loss or abortion. This has been investigated in the present study in Riyadh, as well as in three other locations in Saudi Arabia.

Materials and Methods

Investigations were carried out using the records of monthly new born and aborted of four hospitals in Riyadh. Yammamah Gynecology and Delivery Hospital (East of Riyadh), Prince Salmman Hospital (West of Riyadh), King Khalid Univer-

sity Hospital (KKUH) (North of Riyadh) and Otiga Delivery Clinic (South of Riyadh), together with those of Dammam Hospital (Eastern Saudi Arabia), Makkah Hospital (Western Saudi Arabia) and Tabuk Hospital (North Western Saudi Arabia). Data from Yammamah and Otiga hospitals were for four years (1988-1991) and those from Prince Salmman and KKUH, were for five years (1987-1991). The data from the hospital in other cities of Saudi Arabia were for 2 years only, 1988 and 1990 for Dammam and 1988 and 1989 for Makkah and Tabuk. The data were obtained from the Central Records kept at the Ministry of Health in Riyadh. All data were statistically analyzed using the SAS Computer program at the Statistics Department in King Saud University.

Results

The seasonal new born birth rate and abortion in Riyadh area

The data obtained from Riyadh hospitals show a higher normal birth rate during summer and fall and a higher abortion during winter and spring (Table 1). The highest birth rate and the highest abortion or foetal loss occurred at Yammamah hospital and the lowest rates were at Otiga hospital (Table 1). However, statistical analysis of the data from Riyadh hospitals showed no significant seasonal variations in abortion rates in each and between the four hospitals in Riyadh (Table 1).

The seasonal new birth rate and abortion in some cities in Saudi Arabia

A slightly higher new born birth rate during summer and fall with a slightly higher abortion rate occurred at both of Dammam and Makkah hospitals. The highest abortion or foetal loss rate during fall and summer, however, at Tabuk hospital (Table 2), statistical analysis of the data depicted highly significant abortion rates ($p < 0.005$) at Tabuk, but the variations in other hospitals were not significant (Table 2 and Fig. 1).

Discussion

The results demonstrate variations in foetal loss between hospitals that are not due to seasonal changes. These results are in agreement with those of Singh [3] that higher birth rates are accompanied by low abortion rates. The higher foetal loss in Tabuk could be due to several factors, genetical factor as Carr and Gedeon [4, pp 1-9] estimate that about half of all known spontaneous abortions occur because of chromosomal abnormalities, or exposure of the embryos to external factors such as teratogens as Ulstein *et al.* [5] found an increase in the spontaneous abortion rate in a norwegian county three years subsequent to the Chernobyl accident' or could be as a result of the cold weather diseases experienced in the Kingdom over both seasons, and Tabuk is the coldest of all areas investigated mostly with snow fall during winter.

Table 1. The seasonal variations of the mean normal birth rate and foetal loss (abortion %) on some of the Riyadh hospitals between (1987-1991)

Seasons (3 months)	Prince Salman (1978-91)	Yammamh (1988-91)	K. Khalid Univ. Hosp. (1987-91)	Otiga (1988-91)	Pooled Mean ±S.E. (per month)
Fall	Mean n. birth	1572	1060.6	1027.5	572.7±(37.2)
	Mean foetal loss	142.4	107.8	96.2	68.1±(5.0)
	Foetal loss ratio	9.0%	10.1%	9.3%	
Winter	Mean n. birth	1329.4	2961.7	962.2	522.2±(32.8)
	Mean foetal loss	150.2	398.2	108.0	70.5±(5.1)
	Foetal loss ratio	11.4%	13.4%	11.2%	
Spring	Mean n. birth	1460.2	3025.7	905.0	515.6±(32.1)
	Mean foetal loss	158.6	417.5	99.5	68.0±(4.9)
	Foetal loss ratio	10.8%	13.8%	11.0%	
Summer	Mean n. birth	1754.8	3293.5	1057.2	593.1±(36.4)
	Mean foetal loss	140.2	356.0	97.2	66.4±(5.0)
	Foetal loss ratio	7.9%	10.8%	9.2%	

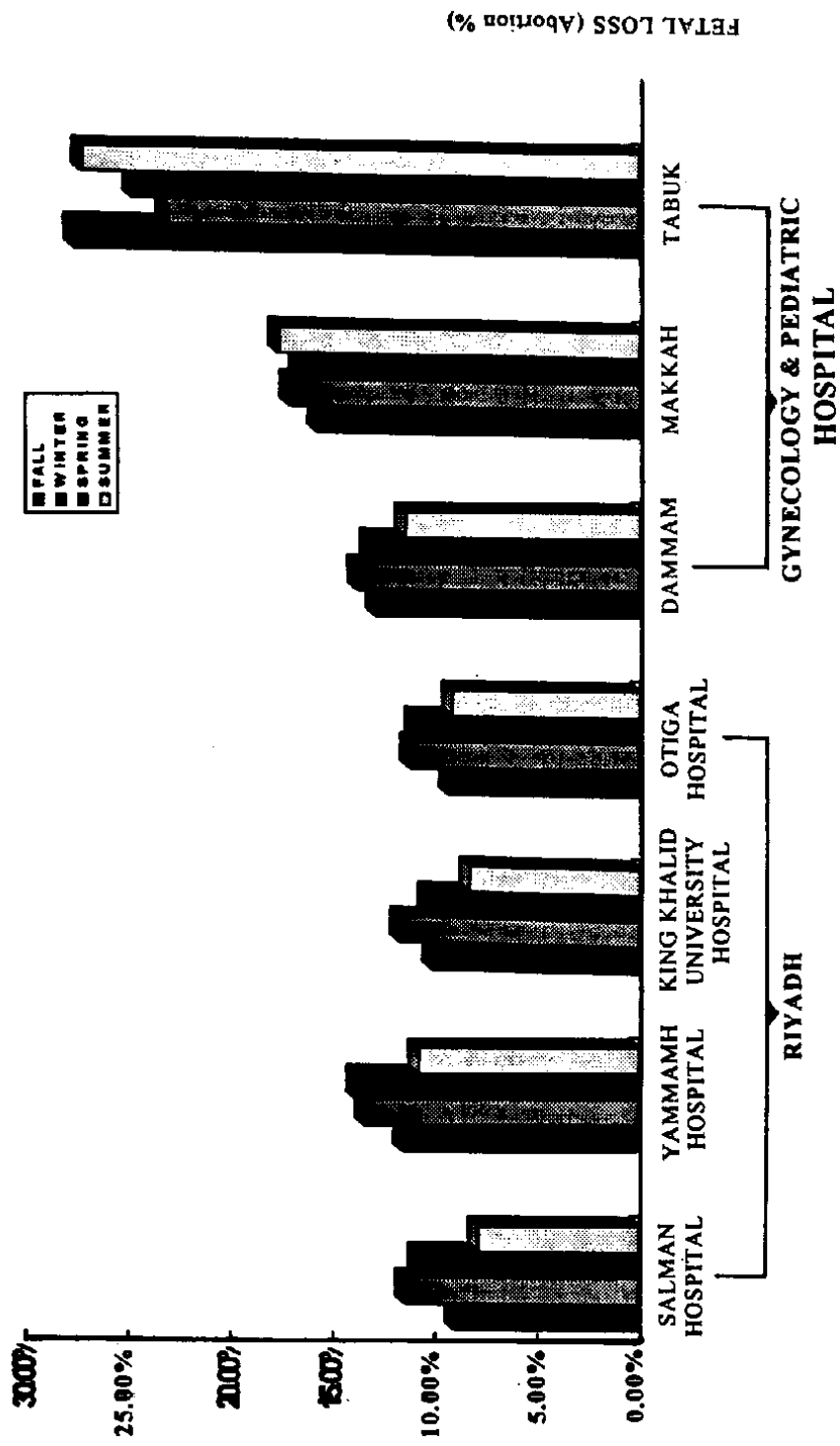


Fig. 1. The seasonal variations of the fetal loss (abortion %) in some of the hospitals of Saudi Arabia.

Table 2. Seasonal variations of the mean normal birth rate and foetal loss (abortion %) in some cities in Saudi Arabia

Seasons (3 months)		Dammam (1988-89)	Makka (1988-89)	Tabuk (1987-89)
Fall	Mean n. birth	2449.5	2397.5	712.5
	Mean foetal loss	317.0	380.0	197.5
	Foetal loss ratio	12.9%	15.8%	27.7%
Winter	mean n. birth	2341.0	2220.5	687.5
	Mean foetal loss	324.0	382.5	160.5
	Foetal loss ratio	13.8%	17.2%	23.3%
Spring	Mean n. birth	2159.5	2147.0	673.5
	mean foetal loss	286.5	362.5	167.5
	Foetal loss ratio	13.2%	16.8%	24.9%
Summer	Mean n. birth	2400.5	2266.0	661.0
	Mean foetal loss	278.5	405	181.5
	Foetal loss ratio	11.5%	17.8%	27.4%
Pooled Means $\pm$ S.E.				
(per month)				
N. birth		779.2 $\pm$ (14.8)	752.5 $\pm$ (34.3)	227.8 $\pm$ (4.4)
Foetal loss		100.5 $\pm$ (4.1)	127.5 $\pm$	58.9 $\pm$ (2.8)
Ratio		13%	17%	26%*

* Asterisk indicates significant abortion ratio at $P < 0.05$

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التغيرات الفصلية لمعدلات المواليد والإسقاط في بعض مستشفيات الرياض ومقارنتها مع بعض مدن المملكة العربية السعودية

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(سُلِّمَ في ١٦ محرم ١٤١٤هـ، وقُبِلَ للنشر في ١٦ جمادى الثانية ١٤١٤هـ)

ملخص البحث. لقد تم بحمد الله جمع البيانات للمتغيرات الفصلية لمعدلات المواليد والإسقاط في أربع من مستشفيات الولادة بالرياض لمدة ٤-٥ سنوات (١٤٠٧-١٤١١هـ). وقد لوحظ ارتفاع نسبة الإسقاط في فصلي الشتاء والربيع (بشكل غير معنوي) (١١-١٤٪) عن فصلي الصيف والخريف (٨-١١٪) بين المستشفيات، كذلك لم تلاحظ أي اختلافات معنوية لمعدلات نسبة الإسقاط الفصلية في المستشفى الواحد. ثم تمت مقارنة مستشفيات الرياض مع مستشفيات كل من الدمام ومكة وتبوك (على مدى عامين ١٤٠٨-١٤٠٩هـ أو ١٤١٠هـ) والتي أظهرت اختلافات حسب الفصول. إذ ارتفع معدل نسبة الإسقاط في مستشفى تبوك بشكل معنوي بلغ ٢٦٪ في الشهر وكذلك كان الارتفاع في فصلي الصيف والخريف بشكل معنوي (٢٨٪ في الشهر). أما مستشفيات مكة المكرمة والدمام فقد سجلت ارتفاعاً طفيفاً في معدل نسبة الإسقاط عن الرياض، حيث تراوحت في مكة من ١٧-١٨٪ لجميع فصول السنة. بينما كانت النسبة في الدمام قريبة من الرياض (١٣-١٤٪) لفصلي الشتاء والربيع وانخفضت في فصلي الصيف والخريف (١٢-١٣٪).