

Delivery in the Time of War: A Study of Births at the Principal Maternity Ward in Benghazi from 2002 - 2013

Zuhir Bodalal^{1*}, Khalil Agnaeber² and Monsef Gnaiber²

¹Faculty of Medicine, Libyan International Medical University, Benghazi, Libya

²Maternity Ward, Al-Jamhouria Hospital, Benghazi, Libya

Abstract

Background: Al-Jamhouria is the principal maternity hospital in eastern Libya, serving a population approaching two million people. In 2011, armed conflict broke out in Libya which was followed by subsequent civil unrest – placing a heavy strain on the healthcare service. This study aims at performing an observational analysis on the trends of delivery for over a decade while also taking civil unrest into consideration.

Methods: Patient records were gathered retrospectively from the maternity ward for the twelve-year period between 2002 and 2013. The overall number of births and method of delivery were analyzed.

Results: Al-Jamhouria hospital delivered nearly a quarter million deliveries (n=228,598) in slightly over a decade. The majority of deliveries were unassisted vaginal (74%, n=169,199), although as a trend the rate was decreasing. Cesarean sections have more than doubled in the last twelve years with particular increases during the conflict period (in favour of other methods). Intrauterine death rates have been fairly constant in the studied period. Since the start of armed conflict, the number of deliveries at Al-Jamhouria hospital has been declining (for the first time in its recorded history).

Conclusion: Al-Jamhouria hospital has continued to provide healthcare services to pregnant women en masse in eastern Libya – in spite of a myriad of hindrances and a decreasing patient load. Cesarean sections have become more commonplace and their rate has doubled in the last twelve years. The private sector may have potentially helped to relieve the heavy burden on this sole maternity ward. Further studies are needed to determine the short term and long term impact on the health of the population.

Keywords: Maternity services; Armed conflict; Cesarean delivery; Assisted delivery; Private sector; Obstetrics; Libya

Introduction

Public hospitals have traditionally carried the brunt of the patient load in society. Populations increased in urban areas and quite often, these locations outgrew their original healthcare facilities – thereby necessitating the establishment of newer, larger hospitals. With the development of time, private hospitals emerged and helped relieve the burden. In the Libyan scenario, Al-Jamhouria hospital (a public healthcare facility) in Benghazi has served as the pivotal centre for maternity services in eastern Libya. For many decades, it has been the only major hospital with an OBGYN department and effectively the only place for women to deliver in Benghazi. In fact, it is quite common to find three generations within a Libyan family who were all born at Al-Jamhouria hospital (i.e. grandparent, parents, and children). Despite its crucial role in the healthcare system in Benghazi, not enough light has been shed on the hospital and the patient load that it carries. With the outbreak of armed conflict in 2011, the healthcare system in Libya has been put under a great strain [1-3]. There is scanty research on the effect of armed and subsequent civil unrest on maternity services. This study aims at performing an observational analysis on the trends of delivery for over a decade while also taking civil unrest into consideration.

Methodology

Study population

Libya is a North-African country categorized under the Eastern Mediterranean Regional Office in the WHO classification. According to the 2006 census, over 5.5 million people lived in Libya, with 28.5% (n=1,613,749) residing in the eastern part of the country. Benghazi is the largest city in eastern Libya with over 670,000 inhabitants.

Ethical approval

The study was approved by two Institutional Review Boards; the Biomedical Ethics Committee at the Libyan International Medical University and the Ethical Committee at Al-Jamhouria Hospital. All personal identifiers were stripped from the data and only medically significant data was analyzed.

Data collection

Data was obtained from the patient records at the Maternity ward in Al-Jamhouria hospital who were delivered from the period of January 1st, 2002 to October 31st, 2013. Al-Jamhouria hospital is a public healthcare facility that receives the vast majority of obstetric and gynecological patients in Benghazi. Moreover, complicated deliveries are referred to the hospital from the other towns in eastern Libya. The hospital itself was established over 60 years ago during the period of Italian occupation.

All patients who delivered in the hospital were given a patient file and recorded in the registry. Using this file, the total number of annual

***Corresponding author:** Zuhir Bodalal, Faculty of Medicine, Libyan International Medical University, Benghazi, Libya, Tel: 218 91 478 9141; Fax: 218 61 2233909; E-mail: zuhir.bodalal@limu.edu.ly

Received: August 13, 2014; **Accepted:** December 05, 2014; **Published:** December 08, 2014

Citation: Bodalal Z, Agnaeber K, Gnaiber M (2015) Delivery in the Time of War: A Study of Births at the Principal Maternity Ward in Benghazi from 2002 - 2013. J Preg Child Health 2: 124. doi:[10.4172/2376-127X.1000124](https://doi.org/10.4172/2376-127X.1000124)

Copyright: © 2015 Bodalal Z, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

births as well as the nature of deliveries (vaginal, assisted or cesarean) that took place in the hospital was determined.

Statistical methods

This study is an observational, retrospective, descriptive study. The collected data was computerized in a data sheet and an SPSS-based model was designed that spanned the collected data and basic statistical procedures were performed – primarily frequencies.

Results

Across twelve years, Al-Jamhouria hospital performed 228,598 deliveries. This suggests a rate of 19,050 deliveries per year or 54.5 deliveries per day – on a purely average basis. The annual breakdown of the birthsshow a consistent increase in the number of births until the conflict period is reached. The first drop in daily deliveries (since hospital records began) was seen in 2011 when the hospital delivered only 62.1 babies when compared to 63.7 deliveries the previous year. The daily delivery rate levels seen in 2013 matched those five years earlier in 2008 (i.e. ~56 deliveries per day).

These deliveries were then divided in terms of method to give three major subtypes, namely unassisted vaginal birth, assisted vaginal birth, and cesarean delivery. In this period of time, nearly three quarters of all births (74%, n=169,199) went without any assistance through the vaginal route. Overall, there was a decreasing trend for unassisted births with 82.5% (n=12712) of births in the year 2002 being fully normal vaginal births while that figure plummets in 2013 to 69.1% (n=14278). That decreasing trend for unassisted vaginal births was met with primarily a sharp increase in the number of cesarean section where the rate practically doubled between 2002 (14.5%, n=2236) and 2013 (28.1%, n=5797). Interestingly, the rate of assisted delivery (i.e. via the use of forceps or suction) was showing a steady rise in rate until suddenly the rate was cut by two thirds in 2013 (1.4%, n=291).

Focusing on the conflict period alone, it can be seen that cesarean sections rates showed a sharp increase (from 24.9% to 28.1%) with a corresponding decline in vaginal deliveries (assisted or otherwise).

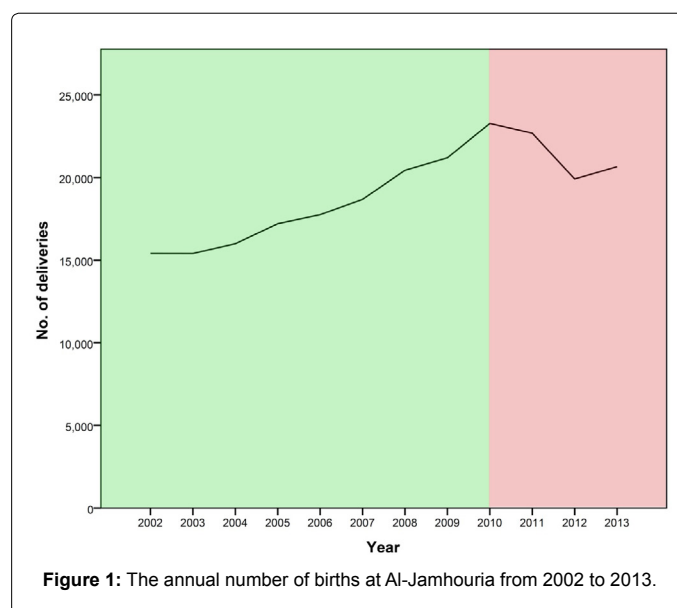
Intrauterine deaths were studied and were found to have a fairly constant level irrespective of the year or presence/absence of war (1.5%, n=3478).

Discussion

The Figure 1 presented in this study paint a portrait of a hospital that has been carrying nearly a quarter million births for over a decade. Despite limited resources, especially after the armed conflict, the hospital has managed to meet the needs of the populace. This is a remarkable achievement especially given the low rate of intrauterine deaths.

The annual number of births has been consistently increasing by virtue of population growth coupled with the fact that Al-Jamhouria is the only maternity hospital in eastern Libya. Since the conflict, the annual number of deliveries has been on the decline. Table 1 shows all the detailed figures for the individual years.

While it would be difficult to pinpoint a single reason for this decline, a number of factors may have played a role. In the beginning of the revolution, there was a significant internal displacement of the population in eastern Libya. A large number of people (Libyans and foreign nationals alike) left the country and that may have influenced the number of women delivering at Al-Jamhouria hospital in 2011.



Year	Vaginal Delivery				Cesarean Delivery		Intrauterine Death		Total Deliveries		Daily Deliveries
	Unassisted		Assisted		n	%	n	%	n	%	
	n	%	n	%							
2002	12712	82.6	204	1.3	2236	14.5	254	1.6	15406	100.0	42.2
2003	12422	80.6	290	1.9	2477	16.1	213	1.4	15402	100.0	42.2
2004	12600	78.7	494	3.1	2653	16.6	248	1.6	15995	100.0	43.8
2005	13227	76.9	458	2.7	3255	18.9	264	1.5	17204	100.0	47.1
2006	13337	75.2	452	2.5	3646	20.5	318	1.8	17753	100.0	48.6
2007	14150	75.7	439	2.4	3793	20.3	298	1.6	18680	100.0	51.1
2008	15733	77.0	738	3.6	3615	17.7	351	1.7	20437	100.0	56.0
2009	15461	72.9	761	3.6	4654	22.0	320	1.5	21196	100.0	58.0
2010	16336	70.2	785	3.4	5803	24.9	351	1.5	23275	100.0	63.7
2011	15717	69.3	690	3.0	5982	26.4	294	1.3	22683	100.0	62.1
2012	13226	66.4	909	4.6	5499	27.6	277	1.4	19911	100.0	54.5
2013	14278	69.1	291	1.4	5797	28.1	290	1.4	20656	100.0	56.6
Total	169199	74.0	6511	2.8	49410	21.7	3478	1.5	228598	100.0	48.1

Table 1: Distribution of births at Al-Jamhouria hospital from 2002 – 2013.

Additionally, in the subsequent years, private healthcare centers have established themselves as viable alternatives to the strained public health system. After the declaration of liberty in Libya, the economic situation improved and the amount of disposable income in the hands of the populace increased. Wealth was found to be the greatest associated factor with the choice of a private facility for birth [4,5]. This was followed by the perception that private facilities would provide a superior healthcare and better trained staff.

Similarly, cesarean rates have increased with time most notably in the conflict period. This can be explained by two main mechanisms. In the light of the difficult security conditions, a large number of women have chosen elective cesareans in order to speed up their deliveries and be able to return home. This decision may have also been supported by obstetricians who wished to help relieve the patient load on the maternity services (i.e. shorter patient stay, less monitoring required etc...).

Unrelated to the war any patient who had previously delivered with a cesarean would undergo another cesarean for subsequent births (for fear of uterine rupture). This sets a scenario where women who had delivered in the years before the conflict (with a c-section) would have to undergo a new cesarean for a pregnancy during the period of civil unrest. Al-Jamhouria handles all the complicated cases from the outlying areas in the eastern half of Libya.

It is to be expected that with increasing use of private facilities for birth, there will be something akin to a snowball effect wherein families that have previously given birth in private hospitals are more likely to seek services in the private sector [4]. This does not necessarily imply that public healthcare services will continue at their level. Multiple studies have shown that involvement of the private sector in healthcare will lead to improved medical services to the populace [6]. Being a purely descriptive retrospective study, certain limitations need to

mentioned, namely the quality of the patient records. In the gathering of this data, not all the parameters were available for all the patients and hence only the parameters that had been covered for the entire patient were analyzed. This limitation of parameters prevented a wide-scale analysis of births across a large time period. Further studies are required to comprehensively determine the long term and short term impact of the war on the health of the population.

Conclusion

Al-Jamhouria hospital has continued to provide healthcare services to pregnant women en masse in eastern Libya – in spite of a myriad of hindrances and a decreasing patient load. Cesarean sections have become more commonplace and their rate has doubled in the last twelve years. The private sector may have potentially helped to relieve the heavy burden on this sole maternity ward. Further studies are needed to determine the short term and long term impact on the health of the population.

References

1. Bodalal Z, Agnaeber K, Nagelkerke N, Stirling B, Temmerman M, et al. (2015) Pregnancy outcomes in Benghazi, Libya, before and during the armed conflict in 2011. *East Mediterr Health J* 20: 175-180.
2. Bodalal Z, Agnaeber K (2012) The effect of armed conflict on spontaneous abortions in Benghazi–Libya. pp. 173. Presented at COGI 2011 – Paris, France.
3. Bodalal Z, Mansor S (2013) Gunshot injuries in Benghazi-Libya in 2011: the Libyan conflict and beyond. *Surgeon* 11: 258-263.
4. Pomeroy AM, Koblinsky M, Alva S2 (2015) Who gives birth in private facilities in Asia? A look at six countries. *Health Policy Plan* 29 Suppl 1: i38-47.
5. Basu S, Andrews J, Kishore S, Panjabi R, Stuckler D (2012) Comparative performance of private and public healthcare systems in low- and middle-income countries: a systematic review. *PLoS Med* 9: e1001244.
6. Zwi AB, Brugha R, Smith E (2001) Private health care in developing countries. *BMJ* 323: 463-464.