

## Public Health Congress 2018 : Trend of caesarean deliveries in Egypt and its associated factors: Evidence from national surveys, 2005-2014 - Rami H Al-Rifai - United Arab Emirates University

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**Statement of the Problem:** The continued rise in Caesarean section (C-section) deliveries raises a major public health concern worldwide.

**Methodology & Theoretical Orientation:** The trend of C-section deliveries was tracked from 2005 to 2014 and the factors associated with a rise in C-section deliveries among the Egyptian mothers, from 2005 to 2014 were examined by place of delivery. Total samples of over 29,000 Egyptian mothers were surveyed in 2005, 2008 and 2014.

**Finding:** Institutional-based C-sections increased by 40.7 points from EDHS2005 to EDHS-2014 (aOR, 3.46, 95% CI: 3.15- 3.80, P-trend<0.001). Compared to mothers with low Socioeconomic Status (SES), mothers with high SES had higher odds (aOR, 1.78, 95% CI: 1.25-2.54, P=0.001) for C-section, but only in EDHS-2005. The adjusted trend of C-sections was found to be 4.19-time (95% CI: 3.73-4.70, P<0.001) higher in private sector while that in public sector it was 2.67-time (95% CI: 2.27- 3.13, P=0.001) higher, in EDHS2014 relative to EDHS-2005. This increase in the private sector is explained by significant increases among mothers who are potentially at low risk for C-sections; mothers aged 19-24 years vs. ≥35 years (aOR: 0.31; 95% CI: 0.21-0.45; in EDHS-2005 vs. 0.43, 95% CI: 0.33-0.56, in EDHS-2014, P<0.001); primigravida mothers vs. mothers with ≥4 children (aOR: 1.62; 95% CI: 1.12-2.34, in EDHS-2005 vs. 3.76, 95% CI: 2.94-4.80 in EDHS-2014) and among normal compared to high risk birth weight babies (aOR: 0.79, 95% CI: 0.62-0.99 in EDHS-2005 P<0.05 vs. 0.83; 95% CI: 0.65-1.04 in EDHS-2014, P>0.05).

**Conclusion:** The steady rise in C-sections in Egypt has reached an alarming level in recent years. This increase appears to be associated with a shift towards delivery in private health care facilities. More vigilance of C-section deliveries, particularly in the private sector, is warranted. Discussions: The study estimated trend of c-sections among Egyptian mothers sampled in 2005, 2008, and 2014. There was a substantial rise in trend of

institutional-based c-sections by more than three-fold, over the study period. The private sector appears to be the driver of the rising c-sections in Egypt, a substantial increase was also observed in use of this surgical procedure in public sector. The more than 4-folds increase in c-sections in the private sector was driven by substantial increases in c-sections among mothers who are potentially at low risk for c-section delivery. In Egypt, the nearly 60% population-based proportion of c-sections performed in 2014 greatly exceeds the threshold of 10–15% recommended by WHO. A population-based proportion of c-sections>10% did not lead to health improvements for mother or newborn. Although the observed over time increase in c-section rate in Egypt is in line with what has been noted in many national and international studies, this over time increase places Egypt as a country with the highest c-sections performed worldwide, after Brazil (45.9%). The institutional-based proportion (67.3%) of c-sections recorded in Egypt in 2014 is 2.2-time and 2.7-time higher than that recently recorded in Jordan (30.3%) and in Saudi Arabia (25%), respectively. The decline in homebased deliveries by over 60% merely reflects an improvement in provided health care services in Egypt. Over the past decade, per capita total expenditure on health increased from US\$75.8 in 2000 to US\$123.2 in 2010. However, improving administered health care services should not justify the massive increase in c-sections. This exponential rise in c-sections indicates an overuse for this surgical procedure that might be due to many c-sections may increasingly be performed without any medical indication. This rise in c-sections would pose further economic burden in a resource limited-setting such as Egypt, which is already burdened with different economic difficulties where 26.3% of Egyptians live below the poverty line. In 2008, the WHO estimated that 253,890 unnecessary c-sections had been performed with a total cost of US\$ 41,085,585 per year. Referring to the obtained results, the discernible increase in c-sections in Egypt in 2014, this study assumes that the unnecessary c-sections and its associated spending at least would double the ones

estimated in 2008. Furthermore, the increased c-sections would pose further unfavorable health outcomes as a result of adverse outcomes associated with c-sections in a country already burdened with a relatively high MMR and NMR in addition to other infectious diseases mainly hepatitis C virus that infect nearly 15% of the 15 to 59 years old Egyptian people. This disease alone consumes about 20% of the Ministry of Health and Population total annual budget to treat infected individuals. Rigorous institutional-based study is needed to assess the impact of this high proportion of c-sections and identify the exact medical and non-medical needs for csection deliveries for future planning and effective policy interventions. In the three surveys, childbearing at  $\leq 18$  years or  $\geq 35$  years, living in high SES, maternal overweight/obesity, pregnancy with high-risk birth weight or multiple babies, delivery in a private sector were found as significant factors associated with c-section delivery in Egypt except for SES in EDHS-2014.

**Conclusions:** Obtained results demonstrated that the proportion of csections in Egypt has been increasing steadily in recent years and has reached an alarming level. The proportion of c-sections documented in the last EDHS conducted in 2014 quadrupled the maximum threshold recommended by the WHO. The increase in number of birth deliveries occurred in the private sector appears to be associated with a shift towards delivery in private facilities. This increase in the private sector, particularly among mothers who were potentially at low risk of csections requires an urgent need to adopt critical policies and strategies that able to halt the steady rise in c-sections in Egypt and improve reproductive health and mothers and babies health outcomes. In the meantime, an in-depth institutionalbased study collecting data on the exact indications associated with c-sections in Egypt is also necessary.

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