

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Transition into and out of daylight saving time and spontaneous delivery: a population-based study
<b>AUTHORS</b>	Laszlo, Krisztina; Cnattingius, Sven; Janszky, Imre

### VERSION 1 - REVIEW

<b>REVIEWER</b>	James Olcese Florida State University College of Medicine USA
<b>REVIEW RETURNED</b>	09-Jan-2016

<b>GENERAL COMMENTS</b>	<p>The goal of this report was to investigate whether the circadian rhythm disruption following the transition into and out of daylight savings time is associated with an increased risk of spontaneous delivery. Using the Swedish Medical Birth Register, the authors found no differences in the number of deliveries or in the length of gestation in women evaluated before or after the spring and fall exposure periods. Quite honestly, this would not be expected. However, since the circadian rhythm disruption imposes a phase shift on the circadian clock of the pregnant women it would have been far more appropriate for the authors to examine CIRCADIAN parameters of spontaneous delivery, such as the phase, amplitude and duration of labor. As labor typically begins at night (see Casper and Gladanac 2014 Fertility and Sterility 102: 319-320), the question would thus become whether daylight savings time (DST) changes when the labor process begins or ends, and how long the labor process lasts as compared to a control (i.e. non shifted group of pregnant women). Also of considerable interest along these lines would be the effects of DST on the risk of preterm labor. The authors should be able to provide these data.</p>
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<b>REVIEWER</b>	Prof James Olcese Florida State University College of Medicine Tallahassee, FL 32306-4300 USA
<b>REVIEW RETURNED</b>	27-Apr-2016

<b>GENERAL COMMENTS</b>	<p>This manuscript appears identical to the one reviewed at the beginning of 2016. As noted at that time, any examination of the repercussions of a phase shifting event, such as DST, would best be evaluated by examining circadian parameters of spontaneous delivery, e.g. phase, amplitude and duration of labor. Also the potential effects of DST on the risk of preterm labor should be discussed.</p>
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<b>REVIEWER</b>	Vincenzo NATALE Department of Psychology University of Bologna Italy
<b>REVIEW RETURNED</b>	01-May-2016

<b>GENERAL COMMENTS</b>	<p>Title: "Transition into and out of daylight saving time and spontaneous delivered: a population-based study"</p> <p>The aim of the research was to evaluate a possible effect of transition into and out of daylight saving time on spontaneous delivery. Authors considered fourteen years in the Swedish Medical Birth Register. Results did not show any significant differences between the week after the transition into and out of daylight saving time and the control week regardless of age or length of gestation.</p> <p>The manuscript is clear and well written. Data were numerically consistent. Discussion section could be shortened.</p> <p>I only have two possible suggestions to improve the robustness of the manuscript.</p> <p>As the same Authors rightly wrote, "the transition into and out of daylight saving time may disrupt the circadian rhythm and induce adverse changes in sleep quality and quantity that persist for several days". It is not yet exactly known how much time the adjusting phase takes. Taking into account this feature, it is a little bit questionable to consider as control the second and third week after the autumn and spring shift. Personally I would consider as control only the weeks before the shift.</p> <p>A second critical issue is the lacking of theoretical link. In other words it is not completely clear why the transition into and out of daylight saving time should increase or decrease the number of spontaneous delivery. Moreover the effects on human circadian system are not the same, but they depend on the direction of the transition. Authors could put forward more clearly an hypothesis if they consider also this aspect.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: James Olcese

Institution and Country: Florida State University College of Medicine, USA

Competing Interests: None declared

Comment:

The goal of this report was to investigate whether the circadian rhythm disruption following the transition into and out of daylight savings time is associated with an increased risk of spontaneous delivery. Using the Swedish Medical Birth Register, the authors found no differences in the number of deliveries or in the length of gestation in women evaluated before or after the spring and fall exposure periods. Quite honestly, this would not be expected. However, since the circadian rhythm disruption imposes a phase shift on the circadian clock of the pregnant women it would have been far more

appropriate for the authors to examine CIRCADIAN parameters of spontaneous delivery, such as the phase, amplitude and duration of labor. As labor typically begins at night (see Casper and Gladanac 2014 Fertility and Sterility 102: 319-320), the question would thus become whether daylight savings time (DST) changes when the labor process begins or ends, and how long the labor process lasts as compared to a control (i.e. non shifted group of pregnant women). Also of considerable interest along these lines would be the effects of DST on the risk of preterm labor. The authors should be able to provide these data.

Response:

We now present in more detail the hypotheses regarding the biological mechanisms by which the activation of the hypothalamic-pituitary-adrenal axis, including sleep deprivation and circadian rhythm disruption, may trigger spontaneous delivery (please see page 4, first paragraph). We address in the „Limitations” section the concern that we do not have information on circadian parameters related to the initiation of spontaneous delivery and duration of labour (page 20, second paragraph). We present the number of spontaneous preterm deliveries in the exposure and the main control period in Supplementary Tables 2 and 4.

Reviewer: 2

Reviewer Name: Prof James Olcese

Institution and Country: Florida State University College of Medicine, Tallahassee, FL  
32306-4300 USA

Competing Interests: none declared

Comment:

This manuscript appears identical to the one reviewed at the beginning of 2016. As noted at that time, any examination of the repercussions of a phase shifting event, such as DST, would best be evaluated by examining circadian parameters of spontaneous delivery, e.g. phase, amplitude and duration of labor. Also the potential effects of DST on the risk of preterm labor should be discussed.

Response:

Please see our response above.

Reviewer: 3

Reviewer Name: Vincenzo Natale

Institution and Country: Department of Psychology, University of Bologna, Italy

Competing Interests: None declared

Comment:

The aim of the research was to evaluate a possible effect of transition into and out of daylight saving time on spontaneous delivery. Authors considered fourteen years in the Swedish Medical Birth Register. Results did not show any significant differences between the week after the transition into and out of daylight saving time and the control week regardless of age or length of gestation.

The manuscript is clear and well written.

Data were numerically consistent.

Discussion section could be shortened.

Response:

We have shortened the “Discussion”.

**Comment:**

I only have two possible suggestions to improve the robustness of the manuscript.

As the same Authors rightly wrote, “the transition into and out daylight saving time may disrupt the circadian rhythm and induce adverse changes in sleep quality and quantity that persist for several days”. It is not yet exactly known how much time the adjusting phase takes. Taking into account this feature, it is a little bit questionable to consider as control the second and third week after the autumn and spring shift. Personally I would consider as control only the weeks before the shift.

**Response:**

We now present in more detail our rationale for defining the exposure period and the primary and secondary control periods (please see page 6, second paragraph and page 7, first paragraph). Based on the reviewer’s suggestion, we now analyze as a secondary control period also the week before the exposure week (page 7, first paragraph and Supplementary Tables 1 and 3).

**Comment:**

A second critical issue is the lacking of theoretical link. In other words it is not completely clear why the transition into and out of daylight saving time should increase or decrease the number of spontaneous delivery. Moreover the effects on human circadian system are not the same, but they depend on the direction of the transition. Authors could put forward more clearly an hypothesis if they consider also this aspect.

**Response:**

We now present in more detail the hypotheses regarding the biological mechanisms by which the activation of the hypothalamic-pituitary-adrenal axis, including sleep deprivation and circadian rhythm disruption, may trigger spontaneous delivery (please see page 4, first paragraph). We also present the hypotheses concerning differences in the effect of the spring and the autumn DST shift (page 5, second paragraph).

**VERSION 2 – REVIEW**

<b>REVIEWER</b>	Professor James Olcese Florida State University College of Medicine Tallahassee, FL 32306-4300 USA
<b>REVIEW RETURNED</b>	20-Jun-2016

<b>GENERAL COMMENTS</b>	This is a well-written and up to date exploration into the potential effects of acute temporal phase shifting due to daylight savings time (DST) on spontaneous delivery. The Introduction and Discussion sections of this revised manuscript are substantially improved. Although no effects of DST were identified, the results provide a strong population-based dataset for further analyses.
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<b>REVIEWER</b>	Vincenzo Natale Department of Psychology, University of Bologna
<b>REVIEW RETURNED</b>	19-Jun-2016

<b>GENERAL COMMENTS</b>	The revised version of the manuscript is really improved
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