ISGE
GYNECOLOGICAL ENDOCRINOLOGY
THE 18TH WORLD CONGRESS
7-10 MARCH 2018 FLORENCE, ITALY

Failure to predict ovulation by Apps when applied to menstrual cycles of women trying to conceive

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Context: Women seeking to conceive hope to do so quickly, so many use Apps to track cycles and predict ovulation.
Objective: To determine whether popular Apps provided accurate results.
Methods: Android and iOS Cycle tracking Apps were downloaded from stores and examined for information on their calculation method and accuracy. Standardised data was inputted into Apps to generate a prediction for a 28 day cycle. The accuracy of prediction was compared to actual probability of ovulation, calculated from menstrual cycles of women trying to conceive.
Patients: 949 women >18 years old, seeking to conceive naturally; 82 were excluded due to cycle lengths <23 or >35 days or due to perimenopause and 99 had no luteinising hormone surge. Mean age was 32 years (range: 18–50) and on average, the participants had been trying to conceive for 15 months (range: 1–162).
Interventions: Volunteers collected daily urine samples and completed diaries recording their menstrual cycle characteristics. Urinary luteinising hormone was measured, with day of ovulation defined as day following surge.
Main Outcome Measures: Probability of ovulation for each day for each cycle length was determined from the volunteer's cycles. Accuracy of App predicted day of ovulation was calculated by comparison of simulated result with ovulation probability.
Results: There was a wide spread in possible day of ovulation for any given cycle length in women trying to conceive, such that for a 28 day cycle ovulation was possible from day 11-20. A total of 73 Apps for cycle tracking were downloaded none of which provided information on method employed to determine ovulation day. Only 1 App provided information on the accuracy, indicating it was 60%. 55 Apps predicted ovulation day using input information of cycle length, cycle variability and last menstrual period. When a simulated 28 day cycle was applied, the majority gave day 15 as day of ovulation, which has a 19% probability of being the true day of ovulation. The highest probability possible was 21% for the prediction of day 16.
Conclusions: For any given cycle length there is a wide spread in possible day of ovulation, such that using cycle length alone it is not possible to predict day of ovulation with accuracy. Many cycle Apps attempt to predict ovulation, but the best prediction was only correct for 1 in 5 women. Therefore, information provided by calendar based Apps should be treated with caution by women trying to conceive.

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