Study of childbirth education classes and evaluation of their effectiveness

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Abstract

Background. Childbirth education classes are antenatal support services offered to pregnant women or to the couple, aimed at increasing their knowledge regarding pregnancy, labour, delivery, breastfeeding, parenthood and newborn care.

Objective. The aim was to evaluate the effectiveness of Birthing Classes through the analysis of the occurrence of C-section, epidural analgesia, behavior during labor and delivery of the women who participated to the course as compared to those who did not attend it. Moreover, the level of satisfaction of pregnant women who attended the course was measured with a questionnaire of 20 items handed out after the delivery.

Methods. To measure the satisfaction level of pregnant women, in the period from February 2017 to October 2017, a questionnaire of 20 items was used. In order to analyze the results of the births the medical records were consulted.

Results. In the period of time going from February 2017 to October 2017 there were 147 women who have delivered and who have filled in the questionnaire. According to the multivariable analysis, there were no differences in the frequency of C-sections between the two groups (OR=0.8, 95%CI=0.3-1.7, p=0.503), whereas the frequency of epidural analgesia was lower in women who attended the Birthing Class (OR=0.3, 95%CI=0.1-0.9, p=0.036). We also observed that women who attended the Birthing Class: 1) had a higher likelihood of using breathing techniques during the labor (OR=5.5, 95%CI=1.5-20.0, p=0.009); 2) had a higher likelihood of taking advantage of the visualization exercises during the labor (OR=2.5, 95%CI=1.1-6.0, p=0.039). There was no other relevant difference between the two groups.

Discussion. The benefits of perinatal education are difficult to evaluate systematically, and further research would be required to determine real effects and agree upon reliable indicators of effectiveness.

Conclusion. This study identified several positive factors that confirm the results of other studies indicating that antenatal classes are effective for women giving birth for the first time/nulliparous women, based on an analysis of childbirth outcomes, in order to improve maternal and neonatal health. Clin Ter 2020; 171(1):e78-86. doi:10.7417/CT.2020.2193

Key words: Courses, Birth, Health, Effectiveness, Parenthood

Introduction

Childbirth education classes are ante- and perinatal health promotion and educational activities offered to pregnant women and their partners, and represent an important public health and empowerment tool (1-2). They consist of a number of sessions provided by a midwife (3-4) and involving other professionals such as gynaecologists, paediatricians and anaesthetists. The objective is to increase knowledge regarding pregnancy, labour, delivery, breastfeeding, parenthood, newborn care and effective techniques for managing fear and pain during labour. The literature does not offer broad-reaching guidelines or standards for organising the classes and, as such, the number, methods and content of sessions often vary. There is a long history of antenatal information and education sessions (5) and the Italian-language terminology has evolved significantly: “corsi di psicoprofilassi obstetrica [obstetrical psycho-prophylaxis courses], corsi di preparazione al parto [delivery preparation courses] and corsi di preparazione alla nascita [birth preparation courses]” have been replaced by the term “corsi di accompagnamento alla nascita [childbirth education classes]” (6). In Italy, Childbirth education classes can be offered by public bodies (local healthcare units and hospital units) and by private providers (freelance professionals and associations). The percentage of women in Italy who attend childbirth education classes stands at 61.7% in the North, 55% in the Centre, 32.5% in the South and 36.7% on the Islands (7-8). The attendance figure for foreign national women is 23.3%, because courses specifically aimed at migrant women are rarely offered. All national (9-10-11-12-13) and international (14-15-16-17-18) guidelines recommend attending a childbirth education class. A review of international studies indicates that such courses are also referred to as “antenatal education classes”, the objectives of which are the same as childbirth education classes run by a midwife (19-20-21).

Numerous studies have shown that women who attend childbirth education classes are better able to manage anxiety during labour and delivery: a literature review carried out by
the Faculty of Health, Disciplines of Nursing and Midwifery, University of Canberra (Australia) indicated that antenatal education during pregnancy reduces anxiety during labour and delivery and increases partner involvement (22). Research by the University of Oxford (United Kingdom) also found that antenatal courses offered by the British National Health Service led to significant improvements in stress, anxiety and depression symptoms among pregnant women and their partners (23).

A study conducted by the Department of Midwifery and Nursing (Nigde University Nigde Zubeyde Hanum School of Health, Turkey) concluded that antenatal education seems to alleviate fear of childbirth and post-traumatic stress disorder symptoms after delivery (24).

Meanwhile, a systematic review and meta-analysis of clinical trials carried out by the University of Pécs (Hungary) determined that antenatal classes reduce fear of childbirth, as does the associated use of hypnosis (25). A study conducted by the University of Warsaw (Poland) found that attending childbirth education classes reduced levels of fear during labour and delivery (26). A prospective, observational multi-centre trial conducted to measure variables in pregnant women who attended antenatal education classes in various healthcare centres across the health districts in Valencia (Spain) found positive effects on the second stage of labour, lower episiotomy rates and early breastfeeding (27).

A randomised trial conducted by the National Institute of Public Health, University of Denmark evaluated the effects of an antenatal programme in which women in the intervention group reported increased levels of confidence in their own ability to handle the birth process (28).

A study conducted at the Department of Women’s Health Nursing and Midwifery, Graduate School of Medicine, Tohoku, involving Japanese couples, assessed the positive impact of antenatal courses on the postpartum period and on infant adjustment at 3 months postpartum (29).

One of the few studies conducted in the Arab world, carried out by the School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad (Iran), found significant results as regards the degree of pain experienced by women who attended the classes (30).

In Italy, two surveys on the birth experience conducted in 2002 and 2008 identified childbirth education class attendance as a factor associated with reduced incidence of caesarean section (31–32). The data is not unequivocal however; a 2017 study by the University of Pécs (Hungary) found that antenatal education classes are moderately effective in reducing the rate of caesarean section, by about 10% (33). A study by the Azienda Ospedaliero Universitaria Policlinico di Modena [University Hospital of Modena] between February 2017 and October 2017 identified childbirth education class attendance as a factor associated with reduced incidence of caesarean section (31-32).

The pregnant women were divided into two groups to be compared: Group A with all the women who attended a Birthing Class and Group B with all the women who did not attend a Birthing Class. All analyzed variables were of categorical type and were reported as absolute and percentage frequencies. Comparison of sociodemographic characteristics between the two groups of women were performed by means of Yates Chi-square tests.

The primary end-points of the study were: 1) occurrence of urgent and elective C-sections; 2) request of epidural analgesia. The latter was assessed in the subgroup of women who attended a specific Class in order to be eligible for epidural analgesia. The secondary end-points were: 1) behaviour shown by women during labour and delivery (arriving at the hospital at the right moment, taking advantage of free positions, breathing techniques, taking advantage of visualization exercises; 2) perceptions and emotions felt during labour and delivery (fear, trust in herself, loss of hope, pain, happiness, relaxation). The difference between Group A and Group B was measured with the Odds Ratio (OR) with 95% confidence interval and p-value. Odds ratios were estimated by using both univariate and multivariable logistic regression models. In the multivariable analysis, the effect was adjusted for occupation (student, housewife/unemployed, worker), nationality (Italian vs not Italian), other sons (yes, no). For each variable, the analyses were performed considering all non-missing available data and the number of missing records was reported, if any. All analyses were carried out with R 3.6.0 statistical software (The R Foundation for Statistical Computing, Wien) at p < 0.05 significance level.

Method

The sample consists of postpartum women who gave birth at the Azienda Ospedaliero Universitaria Policlinico di Modena [University Hospital of Modena] between February 2017 and October 2017. Postpartum women who did not speak Italian were excluded from the sample.

Having obtained informed consent, each postpartum woman was invited to fill out a 20-item questionnaire on childbirth education classes (the questionnaire is included here). The courses consisted of 8 classes organised by midwives, and included a session with a paediatrician and one with an anaesthetist. Obstetric outcomes were determined by consulting the clinical records of the women who had given birth in the aforementioned period.

Statistical Analysis

The pregnant women were divided into two groups to be compared: Group A with all the women who attended a Birthing Class and Group B with all the women who did not attend a Birthing Class. All analyzed variables were of categorical type and were reported as absolute and percentage frequencies. Comparison of sociodemographic characteristics between the two groups of women were performed by means of Yates Chi-square tests.

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Results

There were 147 women who delivered at the University Hospital of Modena between February 2017 and October
Eighty-four (57.1%) of them attended the Birthing Class (Group A), whereas 63 (42.9%) women who did not attend the Birthing Class (Group B). The principal reasons not to attend the Birthing Class were: 1) to have already attended it (42.9%); 2) it was not in compatible days / times (14.3%); 3) to have no time (12.7%); 4) to not consider it useful (9.5%); 5) to be not informed about the course (9.5%). Major socio-demographic characteristics of women are reported in Table 1. Only one woman had less than 20 years, whereas the majority of women had between 30 and 40 years (67.9% in Group A and 63.5% in Group B) or 20 and 30 years (25.9% in Group A and 25.4% in Group B). Women who had more than 40 years were 6.2% in Group A and 9.5% in Group B. There was instead a higher proportion of Italian women who attended the Birthing Class (95.1%) compared to those who did not attend the Birthing Class (77.8%) (p = 0.0043). The numbers of women with a master degree were comparable, being 53.1% in Group A and 46.0% in Group B. Finally, women who attended the Birthing Class were more likely to be a student (82.7% in Group A and 68.3% in Group B) rather than a worker (2.5% in Group A and 17.5% in Group B) (p = 0.0033) and were less likely to have other sons (38.3% in Group B and 73.0% in Group B) (p < 0.0001).

The association between attending the Birthing Class and the study end-point is shown in Table 2. According to the multivariable analysis, there were no differences in the frequency of C-sections between the two groups (OR=0.8, 95%CI=0.3-1.7, p=0.503), whereas the frequency of epidural analgesia was lower in women who attended the Birthing Class (OR=0.3, 95%CI=0.1-0.9, p=0.036). Concerning the secondary endpoints, we observed that women who attended the Birthing Class: 1) had a higher likelihood of using breathing techniques during the labor (OR=5.5, 95%CI=1.5-20.0, p=0.009); 2) had a higher likelihood of taking advantage of the visualization exercises during the labor (OR=2.5, 95%CI=1.1-6.0, p=0.039). There was no other relevant difference between the two groups.

The satisfaction towards the prenatal course is described in Table 3. Overall, 96.3% of women who attended the Birthing Class found it useful.

<table>
<thead>
<tr>
<th>Table 1. Characteristics of women included in the study.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (*)</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Less than 20 years old</td>
</tr>
<tr>
<td>Between 20 and 30 years old</td>
</tr>
<tr>
<td>Between 30 and 40 years old</td>
</tr>
<tr>
<td>More than 40 years old</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nationality (*)</th>
<th>Italian n (%)</th>
<th>Between 20 and 30 years old n (%)</th>
<th>Between 30 and 40 years old n (%)</th>
<th>More than 40 years old n (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian</td>
<td>77 (95.1%)</td>
<td>67 (82.7%)</td>
<td>12 (14.8%)</td>
<td>2 (2.5%)</td>
<td>0.0033</td>
</tr>
<tr>
<td>Other sons (*)</td>
<td>Yes n (%)</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.0000</td>
</tr>
</tbody>
</table>

*: data was missing for 3 women in Group A

<table>
<thead>
<tr>
<th>Table 2. Study endpoints.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A (n=84)</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Caesarean section</td>
</tr>
<tr>
<td>Epidural analgesia (*)</td>
</tr>
<tr>
<td>Behavior shown during labor and delivery</td>
</tr>
<tr>
<td>Understand the right moment to go to hospital – yes (**)</td>
</tr>
<tr>
<td>Take advantage of free positions – yes (*** )</td>
</tr>
<tr>
<td>Breathing techniques during the Labor - yes (****)</td>
</tr>
<tr>
<td>Take advantage of the visualization exercises - yes (****)</td>
</tr>
<tr>
<td>Emotions felt during labor and delivery</td>
</tr>
<tr>
<td>Fear – enough or very much (°)</td>
</tr>
<tr>
<td>Trust in myself – enough or very much (°°)</td>
</tr>
</tbody>
</table>
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Continua

| Loss of hope – enough or very much ("°") | 31 (50.8%) | 14 (29.8%) | 2.44 | 1.09 – 5.43 | 0.0295 | 1.52 | 0.62 – 3.73 | 0.3651 |
| Pain – enough or very much ("**") | 60 (98.4%) | 48 (98.0%) | NA | NA | NA | NA | NA | NA |
| Happiness – enough or very much ("***") | 46 (75.4%) | 29 (61.7%) | 1.61 | 0.83 - 4.36 | 0.1280 | 1.78 | 0.69 – 4.63 | 0.2361 |
| Relaxation – enough or very much ("****") | 16 (26.2%) | 6 (13.0%) | 2.37 | 0.85 - 6.64 | 0.1010 | 2.16 | 0.65 – 7.22 | 0.2100 |

Table 3. Overall satisfaction towards prenatal courses.

<table>
<thead>
<tr>
<th>Quality of the information proposed during the Birthing Class – adequate or excellent</th>
<th>Group A (n=84)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy (*)</td>
<td>88 (98.9%)</td>
</tr>
<tr>
<td>Labor and delivery (**)</td>
<td>75 (93.7%)</td>
</tr>
<tr>
<td>Post partum (***)</td>
<td>70 (92.1%)</td>
</tr>
<tr>
<td>Care for the newborn (****)</td>
<td>67 (91.8%)</td>
</tr>
<tr>
<td>Strategies for dealing with pain (***** )</td>
<td>65 (90.3%)</td>
</tr>
<tr>
<td>The course has allowed to overcome some fears and to feel more confident and competent – yes (°)</td>
<td>71 (88.7%)</td>
</tr>
<tr>
<td>During labor it was difficult to put into practice the concepts received during the course – yes (°°)</td>
<td>36 (52.9%)</td>
</tr>
<tr>
<td>The course was corresponding to the expectations – enough or completely (°)</td>
<td>72 (90.0%)</td>
</tr>
<tr>
<td>Overall satisfaction – useful or very useful or totally useful (°°°)</td>
<td>78 (96.3%)</td>
</tr>
</tbody>
</table>

(°): 6 records were not available due to missing data or information not being proposed during the Birthing Class
(**): 4 records were not available due to missing data or information not being proposed during the Birthing Class
(***): 8 records were not available due to missing data or information not being proposed during the Birthing Class
(****): 11 records were not available due to missing data or information not being proposed during the Birthing Class
(*****): 12 records were not available due to missing data or information not being proposed during the Birthing Class
(°): 4 records were not available due to missing data
(°°): 3 records were not available due to missing data

Discussion

It is known that the benefits of antenatal education are difficult to systematically evaluate and that further research is required to determine the real effects and agree upon reliable indicators of effectiveness (35-36-37). These difficulties seem to be attributable to data collection standards, different methodologies and types of classes, and the impact of what happens during labour and delivery. Nevertheless, numerous studies (14-16-17-30-31-32-3-39-40) agree that women who attend classes: are at a lower risk of caesarean section; less frequently request epidural analgesia and use alternative pain reduction techniques; present at the hospital in active labour; breastfeed exclusively and for longer; are at a reduced risk of postpartum emotional distress.

As regards this particular study: women who attended a CEC were more relaxed and happy, and succeeded in using pain management techniques much better than women who did not attend a CEC, as in Mehdizadeh A. (39).

The main reason for not attending a CEC was lack of time; this also emerged from the ISS reports (6).

As regards adequacy of the topics covered, it was found that contraception was not adequately discussed, echoing the findings of Grignaffini A. and Mehdizadeh A.(38-39).

Limitations

The exclusion of women who do not have a good understanding of written Italian led to a reduced sample size, given that 40% of the women who give birth at the Azienda ospedaliero Universitaria Policlinico di Modena are foreign nationals. Another limitation is that the questionnaire used was not validated.

Furthermore, our questionnaire did not involve interviewing partners, and few studies (41-42-43) have evaluated the effectiveness and acceptability of involving partners in the antenatal education process as a strategy for improving maternal and neonatal outcomes.

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QUESTIONNAIRE

Dear Mum, thank you for taking the time to help with this study. This questionnaire will only take a few minutes. The questions are simple, but if you have any doubts or difficulties, feel free to skip to the next question.

1. Age:
   - □ < 20 YEARS
   - □ 20 – 30 YEARS
   - □ 30 – 40 YEARS
   - □ > 40 YEARS

2. Nationality:
   - □ Italian
   - □ Other: __________

3. Education:
   - □ None / Primary school
   - □ Secondary school junior cycle
   - □ Secondary school senior cycle
   - □ Degree

4. Employment status:
   - □ Employed
   - □ Unemployed
   - □ Homemaker
   - □ Student

5. Do you have other children?
   - □ Yes How many? __________
   - □ No

6. Did you attend the class on epidural analgesia?
   - □ Yes
   - □ No

6a. If yes, did you request epidural analgesia?
   - □ Yes
   - □ No

7. Delivery method:
   - □ Vaginal
   - □ Caesarean section

8. During pregnancy, did you research topics such as labour, delivery, postpartum period, breastfeeding, etc.?
   - □ Yes
   - □ No

8a. If yes, via:
   - □ Books/Magazines
   - □ Internet
   - □ Gynaecologist
   - □ Attending Childbirth Education Classes
   - □ Clinic
   - □ Were you able to determine the right moment to go to the hospital?
   - □ Yes, labour had already begun when I arrived at the hospital, and I was admitted
   - □ No, I was sent home the first time
   - □ I had already been admitted to hospital
   - □ Other: __________

9. Were you able to use the upright positions during labour (standing, all-fours,
squatting, etc.)?  
- Yes  
- No  
- I was not aware of them

10. During labour, did the breathing techniques help you recover your strength between one contraction and the next, and reduce anxiety and tension?  
- Yes  
- No  
- I was not aware of them

11. During labour, were you able to perform visualization exercises to focus on yourself and not on the pain?  
- Yes  
- No  
- I was not aware of them

12. What did you experience during labour and delivery?  
(For each item, place an “X” in the most appropriate box)

<table>
<thead>
<tr>
<th>Fear</th>
<th>Confidence in myself</th>
<th>Loss of hope</th>
<th>Pain</th>
<th>Happiness</th>
<th>Relaxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot</td>
<td>Quite a lot</td>
<td>A little</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. When the pain was at its most intense:  
(For each item, place an “X” in the most appropriate box)

<table>
<thead>
<tr>
<th>I lost control</th>
<th>I listened to my body</th>
<th>I stayed focused on myself and my child</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot</td>
<td>Quite a lot</td>
<td>A little</td>
</tr>
</tbody>
</table>

15. Did you attend a childbirth education class during this pregnancy?  
- Yes  
- No

15a. If no, why not?  
- I didn’t have time  
- I attended one during a previous pregnancy
15b. If you did not attend a class, do you think it might have been useful?
   □ Yes
   □ No
   □ I don’t know

   If you DID NOT attend a childbirth education class, this is the end of the questionnaire.
   If you did attend a class, please complete the final questions in the questionnaire.

16. Give your opinion on the quality of the information provided during the childbirth education classes:

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Adequate</th>
<th>Inadequate</th>
<th>Not covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour and delivery</td>
<td></td>
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<tr>
<td>Postpartum period</td>
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<td></td>
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<tr>
<td>Breastfeeding</td>
<td></td>
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<tr>
<td>Newborn care</td>
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<tr>
<td>Pain management tech-</td>
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<tr>
<td>niques</td>
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<td></td>
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<tr>
<td>Contraception</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

17. Did the course help you overcoming fear and feeling safer and more competent?
   □ Very
   □ Quite
   □ A little
   □ Not at all

18. Was it difficult for you during labour to practice what you learnt at the course?
   a. Yes, very
   b. Yes, a little
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c. Not at all

18a. If you found it difficult, why?

a. I was not comfortable with the situation
b. I could not focus
c. I lost control
d. Other:

19. Did the course live up to your expectation?

a. Completely
b. Quite
c. A little
d. Not at all

20. Give a general opinion on the course on a scale from 1 (useless) to 5

(very useful):

1 2 3 4 5

Conclusion

Once again, this study confirmed that childbirth education classes are a health promotion and primary prevention tool within the antenatal support educational process, as indicated by the project on maternal and child health (Progetto Obiettivo Materno Infantile – POMI) (2). The midwife serves an essential role during the birth, providing the woman with support and encouragement and building her confidence in her ability to perform her new role as mother. The results obtained indicated that women who participated in childbirth education classes found them effective, with a satisfaction rating of 4.0 (using a satisfaction scale of 1 to 5). Further research is required to compare the results obtained with other Italian facilities using the same questionnaire, to improve service users’ satisfaction level, health promotion and ante- and perinatal education for future mothers and couples.

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