

RESEARCH ARTICLE

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Use of alternative and complementary therapies in labor and delivery care: a cross-sectional study of midwives' training in Catalan hospitals accredited as centers for normal birth

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Abstract

Background: The use of complementary and alternative medicine (CAM) and complementary and alternative therapies (CAT) during pregnancy is increasing. Scientific evidence for CAM and CAT in the field of obstetrics mainly covers pain relief in labor. Midwives are responsible for labor and delivery care: hence, their knowledge of CAM and CAT is important. The aims of this study are to describe the professional profile of midwives who provide care for natural childbirth in Catalan hospitals accredited as centers for normal birth, to assess midwives' level of training in CAT and their use of these therapies, and to identify specific resources for CAT in labor wards.

Methods: A descriptive, cross-sectional, quantitative method was used to assess the level of training and use of CAT by midwives working at 28 hospitals in Catalonia, Spain, accredited as public normal birth centers.

Results: Just under a third of midwives (30.4%) trained in CAT after completion of basic training. They trained in an average of 5.97 therapies (SD 3.56). The number of CAT in which the midwives were trained correlated negatively with age ($r = -0.284$; $p < 0.001$) and with their time working at the hospital in years ($r = -0.136$; $p = 0.036$). Midwives trained in CAT considered that the following therapies were useful or very useful for pain relief during labor and delivery: relaxation techniques (64.3%), hydrotherapy (84.8%) and the application of compresses to the perineum (75.9%). The availability of resources for providing CAT during normal birth care varied widely from center to center.

Conclusions: Age may influence attitudes towards training. It is important to increase the number of midwives trained in CAM for pain relief during childbirth, in order to promote the use of CAT and ensure efficiency and safety. CAT resources at accredited hospitals providing normal childbirth care should also be standardized.

Keywords: Midwife, Complementary and alternative medicine (CAM), Training

Background

Complementary and alternative medicine (CAM) comprises a very wide group of therapeutic practices that are not habitually used by conventional or allopathic health professionals [1-6].

The percentages of the population who report having used CAM at least once vary considerably, from 80% in Africa, 70% in Canada, 49% in France, 46% in Australia, 42% in the US, 40% in China, 31% in Belgium and 18%

in Holland [7,8]. According to a study by the Spanish Ministry of Health's Observatory of Natural Therapies, 95% of the Spanish population are aware of natural therapies and 23% have used one [8]. The US National Center for Complementary and Alternative Medicine (NCCAM) defines a complementary therapy as one that is used together with conventional medicine, whereas an alternative therapy is one used in the place of conventional medicine [9].

The term "integrative medicine" is used to refer to the combination of conventional and alternative medicine practices that meets the requirements of scientific evidence, safety and effectiveness [9-12]. Though regulations

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and funding vary from country to country, healthcare professionals are increasingly likely to prescribe alternative and complementary therapies (CAT) [13-15]. At the National Conference on Nursing and Medical Education, it was recommended that training for healthcare professionals should include CAM [16]. There is no consensus on current educational programs in different countries, but there is clearly a need to relate CAM training with evidence-based medicine [17-23]. In Spain, as CAM training for healthcare professionals is not regulated, their familiarity with the area varies widely [8]. CAM and CAT are offered as optional subjects at certain nursing schools, but not in a systematic way [24]; as a result, students do not gain a thorough grounding in the use of these therapies [11]. On qualifying, nurses who are interested in furthering their knowledge of CAM must seek postgraduate training available at certain universities or professional institutions [5-25]. In Spain, midwife training is a specialty of nursing [5]. In 2002, the International Confederation of Midwives published guidelines for basic midwifery knowledge, skills and behaviors that are essential to risk-free practice. Competency No. 4 includes comfort measures in labor, such as emotional support and non-pharmacological methods of pain relief [26]. In Spain, the current training program for midwives comprises two years of full time study, with a total of 3534 hours. Two thirds of the program is devoted to practical training in hospitals and outpatient centers. The theoretical training includes aspects such as the use of non-pharmacological techniques for pain relief during birth, including relaxation and breathing techniques, emotional support, techniques to promote mobility during labor, and the application of cold compresses to the perineum [5-26]. The amount of practical training in CAT given depends on the extent to which these treatments are used at the hospital where the student is training. Postgraduate training for midwives is usually shared with nurses and other health professionals. There are few specific training resources in CAM and CAT for trainee midwives.

Pettigrew (2002) stated that almost 70% of expectant mothers use some kind of CAM at the end of pregnancy, and that some of the practices tend to be self-prescribed [27]. Other studies suggest that the use of traditional medicine and CAT is not significantly associated with adverse obstetric events. [28] Scientific evidence for CAT in the field of obstetrics mainly covers pain relief in labor by relaxation and yoga [29] acupuncture, acupressure and hypnosis [30-32] warm water immersion during labor [33,34] and continuous support [35] as well as perineal pain relief through the application of cold compresses to the perineum [36]. There are contradictory recommendations on the use of the transcutaneous electrical nerve stimulation (TENS) technique – which is already applied

in other clinical processes – for pain relief in the first stage of labor [32-37] and there is no consensus on the use of sterile water injections in the lumbar region [32-38]. More scientific evidence is required in these two areas. All these techniques are suitable for low-risk pregnancies and deliveries [25]. During the twentieth century, childbirth care in Spain became increasingly medicalized. However, pressure from women's groups, associations and institutions led the health authorities to promote approaches to labor and delivery care that involve less intervention [34]. Various healthcare protocols and strategies have emerged to support normal, non-medicalized birth; improving the quality of professional care, taking a woman-centered approach, giving up harmful, unnecessary practices and maintaining current levels of safety [39-44]. The participation of the midwife in normal delivery care is central to all these strategies, and most of them include birth plan templates with various proposals for alternative pain relief methods (CAT). The idea is that expectant mothers should be able to choose from a range of tools that ease discomfort and pain during delivery [39,45,46] and so midwives must be familiar with CAT [47]. At the same time, health authorities have designed various strategic plans to improve the model of healthcare and to ensure that it reflects the philosophy of reducing the level of intervention. In 2007, the Spanish Ministry of Health and Consumer Affairs published a document entitled *Estrategia de atención al parto normal en el Sistema Nacional de Salud* (Strategy for Care in Normal Birth in the National Health System). The Spanish state is divided politically into Autonomous Communities, which have legislative and executive powers in the area of health. In Catalonia, which is one of these 17 autonomous regions, the regional Ministry of Health (the government body responsible for ensuring universal healthcare in Catalonia) has developed a policy of accrediting hospitals that are considered ready to provide care which respects the physiology of normal birth. The Ministry of Health provides subsidies for these hospitals to adapt their facilities, promote a training plan for professionals and acquire specific equipment. Recognized institutions are called "hospitals accredited for normal birth" and all of them belong to the public health system. In these hospitals, midwives are responsible for labor and delivery care. Hence, it is also in these hospitals that the importance of midwives' knowledge and training in CAT or alternative methods of pain relief during birth is evident [8-48]. Therefore, the aim of this study was to establish the level of CAT training of midwives at hospitals accredited as centers for normal birth, and to determine the infrastructure and resources available in these hospitals to offer CAT to women during birth.

Our objectives were to describe the professional profile of midwives who work in delivery rooms in Catalan

hospitals that are accredited as centers for normal birth; to determine the level of training and use of CAT by these midwives; and to identify specific resources in the labor wards of accredited Catalan hospitals.

Methods

Study design

The study was descriptive and cross-sectional, and a quantitative method was used.

Study area

The study was conducted in Catalonia, where there are some 70 hospitals in total. We centered on the 28 public hospitals which, by 2011, had been accredited by the regional Ministry of Health as hospitals for normal birth.

Subjects

The study population comprised the 455 midwives who work at these hospitals.

Midwives were included in the study if they had worked for at least six months at one of the hospitals. This was considered the minimum amount of time required to ensure that midwives had experience in applying the normal birth care protocol. Midwives who did not wish to take part in the study and midwives in training were excluded.

Measuring instruments

A questionnaire drawn up by the research team was used to gather information from the midwives. It was based on two questionnaires compiled by Sara and Hastings-Tolsma (2009) [49,50]. The new questionnaire was adapted to the social, cultural and healthcare context and to the objectives of this study. The number of therapies under study was increased. Therapies were selected taking into account the results of studies in the literature on the CAT most frequently used during childbirth. In addition, questions on midwives' knowledge and training in CAT were adapted to the Spanish educational system.

Description of the questionnaire

The questionnaire can be found in Additional file 1. In the first section, the midwives provided personal and professional information. The aim of the second section is to examine midwives' training in CAT. In this section, midwives wrote down the number of hours of training they had received on each one of the proposed therapies, and stated when the training had taken place and the number of years' experience they had in its use. The third section was designed to find out midwives' perceptions of the degree of usefulness of CAT during labor and delivery, using a 5-point Likert scale. A specific table was drawn up for data on the material resources at the hospitals accredited as centers for normal birth. These data were supplemented by information from nursing

supervisors on the labor wards (see Table 1). A pilot test of the questionnaire was carried out in November 2011 in order to revise contents and wording, and to estimate the completion time. The test was administered to ten midwives from one of the hospitals in the study, who completed the questionnaire twice in a fifteen-day period. Parts of the questionnaire that were difficult to understand were modified. The correlation between the two phases of questionnaire administration was measured using bivariate analysis. In the analysis of quantitative variables (Spearman's rank correlation coefficient) and the analysis of qualitative variables (Pearson's χ^2 test), the correlations between the two questionnaires were higher than 88%.

Statistical analysis

We conducted a descriptive analysis of the midwives' sociodemographic and professional variables, variables related to the hospitals in the study, and variables referring to CAT training. Descriptive statistics were summarized using the frequencies (percentages) for categorical variables. Means, standard deviations, medians, minimums and maximums were reported for all continuous variables. To compare variables, we used X^2 for categorical variables, the student's t-test for independent groups for categorical variables with two categories that met the applicability criteria, assuming equal variance, and the Pearson's correlation for two quantitative variables. A value of $p < 0.05$ was considered to be significant. The software used for the analysis was SPSS Statistics v20.

Ethical aspects

This study was approved by the University of Barcelona Bioethics Committee and the Ethics and Clinical Research Committee of the first two hospitals where data were compiled. The other hospitals authorized the study after examining the project and after being notified of the authorization granted by the Bioethics Committees of the University and the two first hospitals. An information session was held in each of the participating hospitals to explain the study aims and to request collaboration. At the end of the talk, a copy of the questionnaire was given to each midwife, along with an informed consent form. The nursing supervisor at each of the hospitals was in charge of keeping the questionnaires until the research team collected them two weeks later.

Results

Of the 465 questionnaires administered at the start of the study, 237 were returned fully completed. The overall response rate was 54.06%. The response rate for different hospitals varied between 100% and 13.33%.

All of the nursing supervisors were women, with an average age of 46.82 years (SD 7.9). Of the midwives, 3.4% were male and 96.6% were female and the average

Table 1 Midwives training in complementary and alternative therapies, 237 midwives

	N (%)	Training hours Average/SD	Years of experience Average/SD
Deep-breathing exercises training	180 (75.9)	30.76/53.72	10.11/9.23
Relaxation techniques training	176 (73.8)	33.29/53.88	10.59/8.99
Continuous support training	132 (55.7)	58.32/85.82	9.97/9.04
Postural therapy training	127 (53.6)	27.56/44.53	7.77/6.69
Application perineum compresses training	123 (51.9)	9.38/24.69	5.4/4.7
Massage training	108 (45.6)	35.59/65.86	7.71/6.71
Guided imagery training	101 (42.6)	21.02/26.81	8.79/8.07
Hydrotherapy training	88 (37.1)	23.24/36.34	5.18/5.27
Homeopathy training	72 (30.4)	16.25/16.94	2.83/1.51
Training in sterile water injections administration	66 (27.8)	5.18/5.5	3/2.23
Music therapy training	65 (27.4)	15.83/21.9	7.38/6.81
Reflex therapy training	60 (25.3)	43.74/61.91	5.47/5.67
Yoga training	41 (17.3)	88.86/158.18	5.57/6.23
Herbal medicine training	41 (17.3)	44.68/76.68	4.91/5.62
Therapeutic touch training	40 (16.9)	25.38/22.37	6.31/7.13
Transcutaneous electrical nerve stimulation (TENS)	38 (16)	5.81/7.21	3.9/2.35
Aromatherapy training	32 (13.5)	15.4/15.23	4.78/4.48
Flower essences training flower essences	29 (12.2)	31.44/24.65	4.49/3.9
Acupressure training	23 (9.7)	57.8/85.61	3.9/2.4
Acupuncture training	19 (8)	110/134.4	5.12/8.14
Hypnosis training	18 (7.6)	18.77/22.96	5.3/6.73
<i>Reiki training</i>	13 (5.5)	41/74.84	8.25/6.18
<i>Ear puncture training</i>	8 (3.4)	91.43/112.46	8/11.4
<i>Orthomolecular medicine training</i>	4 (1.7)	33.5/25.6	2.75/2.36

Midwives are trained in different therapies. The best training therapy is breathing technics 75.9% and the worse is orthomolecular medicine 1.7%. In bold the 3 therapies more training in *italics* the 3 worse.

age was 41.21 years (SD 10.28). A total of 75.1% (n = 178) worked full-time and 18.4% (n = 43) part-time. A total of 76.4% (n = 181) had trained in Catalonia, 3.8% (n = 9) in the rest of Spain, 9.3% (n = 22) in South America and 9.3% (n = 22) in the rest of Europe. On average, midwives had worked for 14.64 years in the specialty (SD 12.3); 9.4 years in delivery care at their hospital (SD 8.9); and 6.2 years in care for normal childbirth (SD 7.38). Of the midwives surveyed, 89.87% (n = 213) stated that they had trained in some form of CAT. On average, they had trained in 7.58 of the therapies under study (SD 4.21; minimum 1, maximum 23). If we exclude therapies that already form part of basic midwifery training, the percentage of midwives who trained in CAT after completion of basic training was 30.4% (n = 72), in 5.97 therapies on average (SD 3.56; minimum 1, maximum 18). Midwives were mainly trained in breathing techniques 75.9% (n = 180), relaxation techniques 73.8% (n = 176), continuous support 55.7% (n = 132), postural therapy 53.6% (n = 127) and the application of compresses to the perineum 51.9% (n = 123). Very few midwives were trained in ear acupuncture 3.4%

(n = 8) and orthomolecular medicine 1.7% (n = 4) (see Table 2). Midwives trained in CAT considered that the following therapies were quite or very useful for pain relief during labor and delivery: relaxation techniques, hydrotherapy and the application of compresses to the perineum. However, they considered that the following CAT were hardly or not at all useful: acupuncture needles, sterile water injections in the lumbar region, hypnosis and TENS (see Table 2). A total of 39.3% of the midwives worked in a level I hospital (low technical complexity), 28.6% in a level II hospital (average technical complexity) and 32.1% in a level III hospital (high technical complexity). In Catalonia, there were 79,820 deliveries in 2011, of which 44,481 took place at the hospitals under study. The average number of births per hospital was 1594.04 (SD 934.9). A total of 6,075 women requested care for natural childbirth, but only 4,752 of them received such care. The percentages of natural births ranged from 71.51 to 5.66% at the Catalan hospitals under study. The hospital resources for providing care during normal births using CAT varied widely (see Table 3). We studied midwives'

Table 2 Perceived usefulness of Scientific evidence recommended therapies

For pain relief in labour		Nothing or any	Regular	Rather or much	Total:
Acupuncture needles applications	N (%)	10(55.5)	5 (27.7)	8 (44.4)	18 (100)
Perineum compresses		3 (3.6)	17 (20.5)	63 (75.9)	83 (100)
Hydrotherapy		7 (8.8)	5 (6.3)	67 (84.8)	79 (100)
Hypnosis		2 (20)	3 (30)	5 (50)	10 (100)
Water injections		8 (34.7)	5 (21.7)	10 (43.4)	23 (100)
Massage		4 (4.8)	18 (21.4)	62 (73.8)	84 (100)
Relaxation techniques		7 (5)	43 (30.7)	90 (64.2)	140 (100)
Deep-breathing exercises training		6 (3.8)	44 (28)	107 (68.1)	157 (100)
Postural therapy		2 (1.8)	18 (15.9)	92 (82.1)	112 (100)
Transcutaneous electrical nerve stimulation		8 (38)	4 (19)	9 (42.8)	21 (100)

perceptions of the usefulness of CAT for pain relief during labor and birth. No statistically significant differences were found for gender, specialty training school, length of time that the hospital had been accredited as a normal birth center, type of work contract, length of time since training in the specialty, level of care provided by the hospital and years of experience in providing care for normal delivery *versus* the number of CAT in which the midwives had trained, as well as the hours and total years of training in the CAT under study. The total number of CAT in which the midwives were trained correlated negatively with age ($r = -0.284$; $p < 0.001$) and with the years in which midwives had been working at the hospital ($r = -0.136$; $p = 0.036$).

Discussion

The response rate in this study was 54.06%, which is similar to that found in other studies [51]. One explanation for the high non-response rate is that midwives with no CAT training did not complete the questionnaire. This, together with the fact that the questionnaire was only administered in hospitals accredited as centers for normal birth, could explain why midwives in this study had a high percentage (89.87%) of CAT training. This result corroborates the findings of Bjerså (2012), who observed that 80% of nurses had CAT training [52]. The percentage of training is lower in other studies. Forcades (2004) reported that 54% of cases medical students consider that they have sufficient knowledge of alternative

Table 3 Hospital resources of the 28 hospitals studied in reference to natural birth

Classification	Therapies	Resource owned hospitals. N (%)	Number of hospitals that allow women bring home her remedy. N (%)	
Biological techniques	Phytotherapy	4 (14.3)	2 (7.14)	
	Orthomolecular medicine	0		
Mind-body medicine	Hydrotherapy	Bath	12 (42.9)	
		Hot water bottles	21 (75)	
		Shower	27 (96.4)	
	Music therapy	Radio-cd	22 (78.6)	2 (7.14)
		Perineum compresses	24 (85.7)	
	Postural therapy	Birth bed	27 (96.4)	
Balls		28 (100)		
Whole medical systems	Homeopathy	3 (10.7)	5 (17.85)	
	Acupuncture needles	0		
Manipulative and body-based practices	Water injections	12 (42.9)		
	Massage aromatherapy reflex therapy	Massage oils	8 (28.6)	3 (10.7)
		Essentials oils	4 (14.3)	3 (10.7)
	Transcutaneous electrical nerve stimulation	TENS	9 (32.1)	
Energetic therapies	Bach remedies	1 (3.6)	4 (14.28)	

medicines [53]. Shorofi (2010) stated that 40% of nurses were not trained in CAT [54]. In Catalonia, the Nurses' Association of Barcelona considers that 25.5% of nurses use alternative therapies [11] and Fernandez (2010) found 58.8% of nurses who care for cancer patients have CAT training [55]. The basic midwifery training program in Spain includes relaxation and breathing techniques, position changes and continuous support for women during labor and birth. These techniques are recommended for all women, whether they want a more natural or more medicalized birth. When we excluded these techniques from the total number of alternative therapies in which midwives in this study were trained, we found that only 30.4% (72) had training in other *more specific* CAT. These data are similar to those found in a study carried out in Germany by Wiebelitz (2009) [56]. Midwives' opinions about the use of CAT differed: Some considered that more solid evidence was required to recommend them, whilst others believed that they were useful and safe during pregnancy [27-57]. Midwives' perceptions of the utility of CAT may be due to the fact that they were unaware of the institutional recommendations on pain relief techniques and had little experience in their application. The results show a negative correlation with age and midwives' years of work at the hospital: midwives who were older and had more years of experience tended to have less CAT training [58]. Indeed, age may influence attitudes towards training [59].

Conclusions

It is important to reach a consensus on the definitions of normal birth, so that we can compare data from different hospitals. The results of this study indicate that some midwives are trained in CAT but cannot apply the therapies, due to a lack of specific equipment or insufficient resources in their hospitals. Consequently, more resources should be made available for the use of CAT in normal birth care, in terms of training, infrastructure and equipment. CAT should be included in the care protocols for labor wards, so that professionals can use them in their daily work. In 1995, the WHO stressed the importance of qualifications for CAT professionals and providers, and the need to incorporate CAT in the training of healthcare professionals, so that they would become qualified to offer these therapies. Current training depends on individual initiative. Therefore, it may be affected by a lack of knowledge of CAT, a lack of initial training, little interest in the subject and insufficient resources. It is important to stress to midwives the importance of CAT training, so that they can provide suitable care for women who want to use these therapies. Therefore, it is essential to increase the courses for midwives so that they can broaden their knowledge of CAT for birth and provide effective care for women. Health authorities

must ensure safe interventions and good practices, incorporate CAT into courses for health care professionals and into the health system, and contribute to standardizing the effective and safe use of CAT.

Additional file

Additional file 1: Questionnaire for midwives.

Abbreviations

CAM: Complementary and alternative medicine; CAT: Complementary and alternative therapies. In this study, the concept of CAT includes all non-pharmacological techniques for pain relief during birth; TENS: Transcutaneous electrical nerve stimulation.

Competing interests

None of the authors had competing interests. This study was funded by a grant (PREUI 12/06) from the Research Committee of the UB University School of Nursing.

Authors' contributions

EMS contributed substantially to the conception and design of the study, the collection of data, the compilation of results and the final report. This study is part of EMS's doctoral thesis. AVS helped to validate the questionnaire and assisted in the statistical analysis of data. JGT supervised the design of the study, contacted some of the hospitals to obtain authorization to gather data, sought funding for the study and made considerable intellectual contributions to the revision of the manuscript. All the authors read and approved the final version of the manuscript.

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