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The midwifery-led care model: a continuity of care model in the birth path

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Abstract. *Background and aim of the study:* The birth path is affected by a fragmentation in the patient care process, creating a discontinuity of this last one. The pregnant woman has to interface with many professionals, both during the pregnancy, the childbirth and the puerperium. However, during the last ten years, there has been an increasing of the pregnancy care operated by the midwife, who is considered to be the operator with the right competences, who can take care of every pregnancy and may avail herself of other professionals' contributions in order to improve the outcomes of maternal and neonatal health. *Aim:* To verify whether there are proofs of effectiveness that support the *caseload midwifery care* model, and if it is possible to apply this model in the birth path in Italy. *Methods:* A revision of literature has been done using some search engine (Google, Bing) and specific databases (MEDLINE, CINAHL, Embase, Home - ClinicalTrials.gov). There has also been a consultation of the Italian regulations, the national guidelines and the recommendations of WHO. *Results:* The search string, properly adapted to the three databases, has given the following results: MEDLINE 64 articles, CINAHL 94 articles, Embase 88 articles. From this selection, 14 articles have been extracted: 1 systematic review, 3 controlled random trial, 7 observational studies, 3 qualitative studies. *Conclusions:* The caseload midwifery care seems to be an effective and reliable organisational/caring method. It responds to the criterions of quality and security, to the needs of women not only during the pregnancy but also during the post-partum phase. For these reasons, it seems very useful also for the birth path in the Italian reality. (www.actabiomedica.it)

Key words: midwifery, caseload, birth path, autonomy, continuity of patient care

Introduction

The World Health Organization has identified the improvement of the quality of life of the mother and child as one of the world-wide priority health objectives. It recommends that assistance at the birth path guarantees to mother and child in perfect health with the level of care as low as possible compatible with safety (1). In the last ten years there has been a growing appreciation of pregnancy assistance by the midwife, as the professional who possesses the best skills (2) to assist pregnancy, childbirth, the puerperium and the low risk newborn. The midwife's professional work also makes use of the contribution of other professionals to improve both maternal and neonatal health outcomes. In fact, the identification of a pathological condition requires the intervention of the physician as a consultant. It is therefore necessary that good communication and interaction between midwife and physician be established, to schedule an assistance plan (3).

The recent popularity of the care model based on therapeutic continuity has raised some questions

regarding the reliability of the midwifery led model, which, according to the indications of the National Committee of the birth path (4), should guarantee quality and safety criteria and improve continuity of care, alongside traditional care models. The National Birth Program Committee has in fact forwarded to the different regions the Guidelines (5-6) for definition and organization of autonomous assistance by midwives to low-risk pregnancies (7). Then the Committee that supports the Regions in the construction of the new network of birth points has promoted organizational guidelines for the provision of care models for low risk women with pregnancy, childbirth and puerperium.

An excellent example is the one given by the Emilia Romagna Region which recognizes the autonomy of the midwife for taking charge of pregnant women at low risk and post-birth. The resolution of the regional council of the Emilia Romagna Region (8) recognizes in fact that the midwife can take charge of pregnancy, childbirth and puerperium at low risk as a competent professionals and guarantor of the promotion and respect of physiology.

Even the Objective Maternal-Child Project (3) sees in family counselling centres and in midwives a central role for the management of the physiological pregnant woman. Also the agreement signed by the Health Ministry in 2010 between the Government, the Regions and the autonomous provinces of Trento and Bolzano on the document concerning "Guidelines for the promotion and improvement of quality, safety and appropriateness of welfare interventions in the path birth and for the reduction of caesarean section "gave the start to an appropriate reorganization of the network of birth points (5).

A year later, Guidelines are produced for assistance with physiological pregnancy (6), which, in addition to giving important information to women and professionals about the most appropriate treatments in distinct circumstances during pregnancy, specifically considers the organization of care with an assessment of the effectiveness of continuity. Haggerty and Coll. (9) summarize the continuity reported in the literature in three levels: the continuity of information (physical and emotional anamnesis must be available and known to all operators), the continuity of care (consistency of care), the relational continuity (knowing who assist, not changing operators over time, ensuring that there are not too many people present).

The emphasis is therefore placed on the continuity of care linked to health outcomes, maternal satisfaction and the reduction of the use of medical procedures, such as epidural, induction / acceleration of labor, episiotomy and neonatal resuscitation. This perspective therefore promotes organizational and welfare models in which pregnancy, childbirth and puerperium and low-risk newborns are managed independently by obstetric personnel, also because that the birth event is, in most cases, physiological,

In Italy, these organizational models, already present in some Regions, are in reality very limited and implemented with fragmented methods. In particular, if in some healthcare companies' areas with complete management of the midwife can be found, within the operative obstetrics units, these organizational models are nevertheless affected by a limited continuity of care so that women are assisted at the end of the pregnancy and they take advantage of the midwife limitedly to the moment of the birth and to the days of admission to the hospital. Home puerperium is sometimes not really expected. It follows that the birth path is affected by a fragmentation in the assistance process, creating a welfare discontinuity. The pregnant woman finds herself interfacing with various professionals both during pregnancy, childbirth and the puerperium.

This can also be attributed to the fact that in Italy, during the last decades, a clinical/organisational model has been promoted. It is mainly based on the contrast of low-risk factors and on the technological approach to obstetric pathology. This model, while positively influenced the rate of morbidity and maternal infant mortality, over time has determined an approach sometimes excessively medicalized to the birth path.

The international scene is more varied. In many industrialized countries, midwives are considered to all effects the figures of reference for pregnant women (midwifery-led care model), while in other countries, it is the gynaecologists who hold the responsibility for assistance (medical-led care model). In other cases, finally, the responsibility for assistance is shared between these professionals (shared care model). The countries that have more than others implemented the

midwifery-led care model are Canada (10), Australia (11), United Kingdom and Sweden (12), Netherlands and Norway (13), and Denmark (14).

This model can be explicated through the case loading or the midwives' team. The case loading is based on the fact that a midwife takes care of a defined number of pregnancies per year; a group of clients that will be followed during all the pregnancy and even during the delivery and the puerperium. In order to organize rest periods and the absences for the holidays, this midwife will be exchanging with a substitute. The caseload midwifery care model has been theorized and promoted by Gaskin (15) also, who reported the obstetrics and the home births to the forefront of modern society. For what concerns the team organization, a midwife takes care of a determined woman's health, even if another midwife of the team takes care of the woman anyway. Generally, teams are composed of five or six midwifes, as described from Dawson and Coll. (16). It is evident that this model is not only focused on the caring process based on the obstetric risk, but also on the continuity of patient care understood as a continuum of delivery and support throughout the birth path.

Aims

The purpose of this study was to explore the skills of the continuity care of patient operated by the midwife and to research the evidences that support such model.

In particular, the aim was to verify whether there are efficacy trials that support the caseload midwifery care model. The questions that have guided this work are the following: Is the midwifery-led care model a safe caring model based on the evidences? Is the continuity of care provided by the midwife during pregnancy and childbirth as safe as the one provided by physicians or multi-professional teams? Is it therefore possible to propose its implementation in the obstetric units in Italy?

The second aim was to explore evidence of customer satisfaction with the midwifery-led care model, and to verify also the satisfaction from the midwives who are part of a midwifery-led care model, in terms of job satisfaction and of a good balance between private and professional life.

Method

In order to answer the research questions, a literature review was carried out by means of a strategy to find evidence of the effectiveness of a project managed independently by midwives, on a care model for pregnancy, delivery, puerperium and low-risk infants.

It was chosen to use some search engines (Google, Bing), specific databases (MEDLINE, CINAHL, Embase), and a database dedicated to clinic trials (Home – ClinicalTrials.gov).

A search string containing the following terms and limits was generated: ("Midwifery" [Mesh] AND "Continuity of Patient Care" [Mesh] OR Midwifery Led Model.

Research focused on the most recent publications (from 2016 to the end of 2018). It was decided to set the starting point of the time limits of the research to 2016 as it dates back to that year a Cochrane review of Sandall and Coll. titled "Midwife-led continuity models versus other models of care for childbearing women" (11).

The search string, appropriately adapted to the three databases used, has given the following results: MEDLINE 64 articles, CINAHL 94 articles, Embase 88 articles.

The difference in the number of the results resides, particularly for CINAHL, in the inclusion of editorials, articles or publications produced by Professional Association, business organisation, not indexed newspaper articles or brochures dedicated to the patients or to the sanitary operators. The inclusion criterions of the publications have been the following: systematic revisions, observational and/or experimental studies, qualitative studies concerning the patients' and/or the operators' satisfaction, descriptive and transversal studies. The exclusion criterions of the publications have been the following: case report, studies made in developing countries or in rural realities.

As a result, priority has been given to experimental studies and systematic reviews, while studies in countries where socioeconomic resources are modest have been excluded, because the organisation of case-

loads is completely different and the results of the intervention can be distorted by disadvantaged sanitary conditions. The editorial articles, the announcements of the business organizations and the case reports, even if interesting, do not give a measurable result, and for that reason they were not chosen. Even the articles lacking in abstracts were discarded. From the initial selection were then included in the review 14 articles of which: 1 systematic review, 3 randomised controlled trials, 7 observational studies, 3 qualitative studies.

Table 1. Flow chart diagram

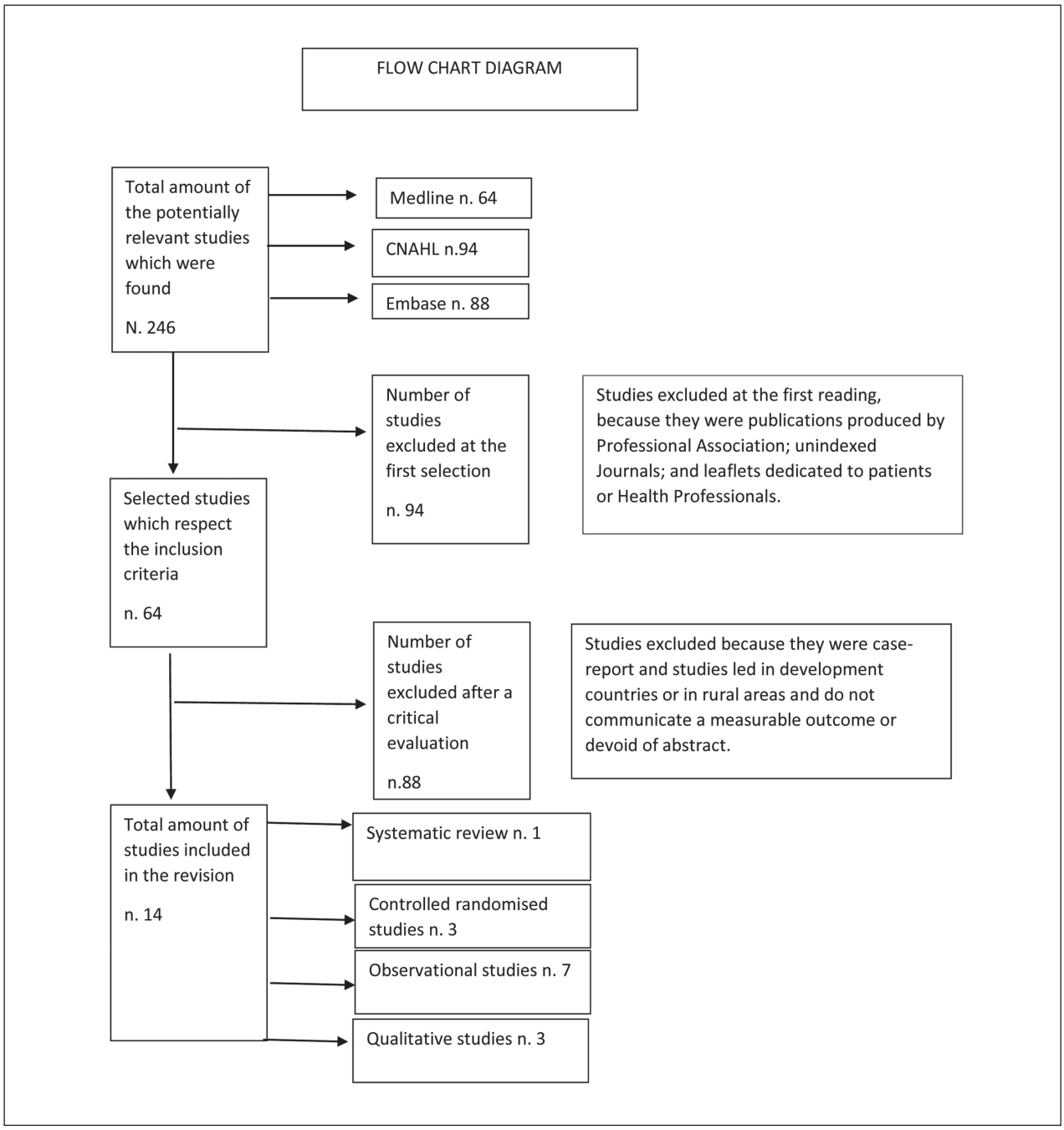

Table 2- Table of the items included in the revision

		Summary table of the items included in the revision						
ID	**Authors**	**Title Journal Years**	**Typology**	**Aims**	**Partecipants**	**Procedure / instruments**	**Results**	**Discussions**
1	Sandall J, Soltani H, Gates S, Shennan A, Devane D.	Midwife-led continuity models versus other models of care for childbearing women. Cochrane db syst rev 2016	Systematic review	A comparison between models of continuity of care offered by the midwives and other models of assistance for pregnant women.	17,674 pregnant women	15 controlled randomized trials led in Australia, Canada, Ireland and United Kingdom	Primary outcome in the midwife led model is a less presence of: analgesia (epidural/spinal), operative vaginal birth (forceps/vacuum), preterm birth, neonatal losses. Women assisted by a midwife have more often a spontaneous birth	The two outcomes 'Womens' satisfaction' and 'cost-effectiveness comparison' of the midwife- led model are defined and measured in a different way among the various studies; this does not allow to provide a synthetic esteem of the effect
2	Wernham E ,Gurney J,StanleyJ, Loschmann L.E, Sarfati D.	A Comparison of Midwife-Led and Medical-Led Models of Care and Their Relationship to Adverse Fetal and Neonatal Outcomes A Retrospective PLos med 2016	Retrospective panel study	A comparison between midwife and medical care models and their relationship with fetal and neonatal outcomes	244,047 pregnanciesn: 223,385 of pregnan women (91.5%) assisted with the midwife led care and 20,662 (8.5%) with the medical led care	After an examination of the datas of term births, more adverse outcomes for the newborns were shown in women who were supported by midwives rather than in women supported by physicians, in New Zealand	They have shown that some perinatal outcomes are less favourable for the group of women assisted by midwives	Authors conclude that it hasn't been possible to determine in a definitive way if an assistential model was related to fewer neonatal deaths; medical-led care was associated with less neonatal deaths
3	Farquhar, Cynthia , McCowan, Lesley , Fleming, S	Letter to the editor PLos med 2016	Retrospective panel study	A comparison between Midwifery-led model versus other models	Disadvantaged prengnant women, different ethnic groups, residing in rural and remote areas	The authors have seen the births' results in women who have been taken care of by midwives and have compared them to those who went to physicians and private midwives, who ask for a payment for the service	Selected C-sections for medical patients is around 32.8%, those for the midwife assisted patients is around 7.4%	The collection of the data such as perinatal mortality and NICU hospitalisations is not well specified, some data base may provide untrue data.
4	McLachlan HL, Forster DA, Davey MA, Farrell T, Flood M, Shafiei T Waldenström U.	The effect of primary midwife-led care on women's experience of childbirth: Results from the COSMOS randomised controlled trial', Bjog-int j obstet gy 2016	Randomized controlled trial	Determine the effect of midwife-guided primary care on women's birth experiences	2314 low-risk pregnant women	Postal questionnaire sent 2 months after the delivery. Melbourne, Australia	Women in caseload were more positive towards the delivery experience compared to those in standard care. They said that during labour they felt more proud of themselves and less anxiou	Compared with standard maternity care, caseload midwifery care may improve women's experiences of childbirth
5	Forster DA, Davey MA, Biro M A, Farrell T, Gold L, Flood M, Shafiei T, Waldenströ U.	Continuity of care by a primary midwife (caseload midwifery) increases women's satisfaction with antenatal, intrapartum and postpartum care: results from the COSMOS randomised controlled trial. BMC Pregnancy and Childbirth 2016	Randomized controlled trial	Investigates the degree of satisfaction of women in the assistance provided in the caseload compared with that one provided in standard care during pregnancy, childbirth and puerperium	2314 women were randomized: 1,156 to loading care and 1,158 to standard care	Questionnaire sent to women who have given birth in Royak Women's Hospitsl, Melobourne, Australia	The assistance provided in the caseload compared to the one provided in the standard care was associated to a major grade of satisfaction about the assistance during pregnancy, delivery, hospitalised/home puerperium	The limit of the study is that it was an esperimentation on low risk English speaker women at the time of the booking for the pregnancy
6	Allen J, Kildea S, Hartz DL, Tracy M, Tracy S	The motivation and capacity to go "above and beyond": Qualitative analysis of free-text survey responses in the M@NGO randomised controlled trial of caseload midwifery Midwifery 2017	A randomised, uncontrolled, parallel group multi-site trial	Discover if women assigned to caseload care describe their midwife differently than those assigned to standard care.	1748 pregnant; 871 in the case of midwives and 877 in standard care	Postnatal survey 6 weeks post-partum; they were thematically analised. The study was led in two academic hospitals in Australia	The answer rate to the survey was around 52% (n = 901). The interviewed people of both groups have described midwives as competent and kind	These concepts highlight some of the active factors which have moderated or mediated the effects of the midwifery care in the process of M@NGO
7	Jepsen I, Mark E, Foureur M, Nøhr EA, Sørensen EE.	A qualitative study of how caseload midwifery is experienced by couples in Denmark. Women and birth 2017	Qualitative study	Explore and elaborate the experiences of women and their partners assisted by midwifes	10 couples	Interviewed ten couples who were observed from the beginning of labour until birth, in Denmark	From the point of view of women and their partenrs, having a midwife meant being recognised and treated as individuals, working as a team	One drawback of caseload midwifery was that the woman risked to be disappointed if her expectations of having a known midwife at birth were not fulfilled

(continued)

Table 2 ***(continued)*** - Table of the items included in the revision

8	Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE.	A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives Midwifery 2016	Qalitative study	Deepen the knowledges on the working and living conditions of midwives in the caseload and on how this model of assistance is is funcional in a hospital obstetrics unit.	13 midwives working in the prenatal clinic	Observations followed by interviews in Denmark	High quality assistance produces a high job satisfaction. The disadvantages of midwives' personal lives are counterbalanced by the feeling of doing a meaningful and important job.	The organisation of the job seems quite demanding and for this reason mifwives have shared their uncertainties on the organisation of their private life, especially those who have little children.
9	Newton MS , McLachlan HL , Forster DA , Willis KF	Understanding the 'work' of caseload midwives: A mixed-methods exploration of two caseload midwifery models in Victoria, Australia Women and birth 2016	Qualitative study	Explore the opinions and experiences of caseload midwives and those working in standard care	288 midwifers caseload interviewed after six months and 323 after two years.	Midwives' interviews were deepened six months and two years after starting the job, Victoria, Australia	The results of the survey reflects that midwives perceive themselves as "true midwives", despite the big load of responsabilities	Probably, further studies will be necessary in order to better analize the caselo midwives outcomes
10	Jepsen I, Juul S, Foureur M, Sørensen EE, Nøhr EA	Is caseload midwifery a healthy work-form? – A survey of burnout among midwives in Denmark. Sexual and Reproductive Healthcare 2017	Study of planning and setup	To investigate the level of burnout among midwives working in the caseload compared to other midwifery care models.	61 midwives	The Copenhagen Burnout Inventory was used in order to measure the burnout amongst midwives working in a third level maternity Unit in Denmark	The answering rate was around 82%. Midwives in Denmark don't feel like having a high level of burnout compared to Sweden and Australia	The results are valid for this Maternity Unit, but the results are difficult to generalize to other contexts
11	Perdok H, Jans S, Verhoeven C, van Dillen J, Batenburg R, Mol BW, Schellevis F, de Jonge A.	Opinions of professionals about integrating midwife- and obstetrician- led care in the Netherlands. Midwifery 2016	Descriptive study	Investigates the opinions of professionals regarding the integration of the two models	400 midwives and 942 doctors	A questionnaire sent online to midwives and physicians in the Netherlands	The interviewed have agreed that there are conflicted interests related to the payment matter, which represents a possible obstacle to the integration for the maternity assistance	To change the maternity care system, an implementation strategy should be chosen that accounts for differences in interests and opinions between professionals
12	Perdok H, Jans S, Verhoeven C, Henneman L, Wiegers T, Willem Mol B, Schellevis F, de Jonge A.	Opinions of maternity care professionals and other stakeholders about integration of maternity care: a qualitative study in the Netherlands. BMC Pregnancy Childbirth 2016	qualitative study	To deepen the opinions of professionals on the integration of midwife-led care	21 partecipants: stakeholder, midwives, physicians	17 interviews, 4 focus group, 2 of which were online in the Netherlands	Three main themes were identified with regard to integrating maternity care: client-centred care, continuity of care and task shifting between professionals. Participants considered the current payment structure an inhibiting factor, whereas a new modified payment structure based on the actual amount of work performed	Important factors for a successful implementation of integrated maternity care are an appropriate payment structure and maintenance of the autonomy of professionals
13	Dawson K, McLachlan H, Newton M, Forster D.	Implementing caseload midwifery: Exploring the views of maternity managers in Australia - Anational cross-sectional survey. Women Birth 2016	Descriptive study	To explore the workload of the midwife in the Australian public maternity system	253 Australian managers	An online cross-sectional survey on maternity managers of public hospitals which offers birthing services all over Australia	63% (149/235) of participants were from metropolitan, regional and remote areas, and from hospitals with very small to very large birth numbers. Only 31% reported that their hospital offers caseload midwifery, and an estimated 8% of women received midwifery caseload care	Although the number of services offering caseload midwifery care has increased nationally, access remains relatively limited
14	Cummins AM, Denney-Wilson E, Homer CSE.	The mentoring experiences of new graduate midwives working in midwifery continuity of care models in Australia. Nurse Educ Pract 2017	Qualitative descriptive study	To explore mentoring experiences of newly graduated midwives who worked in obstetrics care models	13 newly graduated midwives	Semi-structured interviews were mainly held by phone or Skype with only two face to face interviews in Australia	Having a mentor was important, knowing they could call their mentor at any time helped them in transitioning from student to midwife	With the expansion of midwifery continuity of care models in Australia, mentoring should be used as a precious source for midwives in transition

Results

Of the 14 studies selected, two deserve special attention in addition to the previously mentioned study by Sandall J and Coll. (11) and by Wernham and Coll. (17) because they directly address the health outcomes of patients and infants that have been followed by Midwife-led continuity models. The remaining articles propose qualitative and quantitative studies of the led-care midwifery versus other models, perceived from the customers or the midwives, or studies on the organizational modalities of the caseload. The systematic review of "Midwife-led continuity models versus other models of care for childbearing women" by Sandall and Coll. (11) provides an exhaustive summary of the best clinical situation available, comparing different welfare models. The first concerns assistance based on midwifery, which deals with the planning, organization and delivery of assistance to the pregnancy from the initial visit to the postnatal period with medical staff advice when appropriate. This is the care model in teams, where women are followed by a group of midwives (usually 6 or 7) who can alternate with each other. A woman may receive assistance during pregnancy, during childbirth and after childbirth from different midwives. The second model takes into account the assistance offered by a gynecologist obstetrician during the pregnancy and the birth (not necessarily the same professional), while nurses and midwives take care of intra-partum and postnatal patient care under medical supervision. The third examines the assistance provided by the general practitioner, who refers to the obstetrician if necessary. Nurses and midwives involved in intra-partum care and immediately after childbirth have no power of decision and a physician is present at the time of childbirth. In shared care, responsibility for the organization and delivery of care, from initial to post-partum visit, is shared among several health professionals. The revision consists of 15 randomized controlled trials (n= 17674 women), carried out in Australia, Canada, Ireland, United Kingdom, so within systems of health assistance financed by public money. It summarized in a critical way the studies on the efficacy of the model of continuous assistance offered by midwives (in caseload or in team) compared with standard models. Within the primary outcomes we can observe a minor frequency of regional analgesia (epidural/ spinal analgesia): 14 trials, n=17674; related risk (RR): 0.85; usually defined as 95% confidence interval (RC 95%): 0.78, 0.92; operative vaginal delivery (forceps/ vacuum): 13 trials, n= 17501; RR: 0.90; RC 95%: 0.83, 0.97; preterm delivery: 8 trials, n= 13238; RR: 0.76; RC 96%: 0.64; fetal loss/ neonatal deaths: 13 trials, n= 17561; RR: 0.84; RC 95%: 0.71, 0.99. Women assisted by a midwife are also more likely to have a spontaneous birth: 12 trials, n = 16687; RR: 1.05; IC 95%: 1.03, 1.07.

Within the secondary outcomes taken in consideration it appeared that in the model centered on the midwife there are less frequently amniorexi (4 trials, n =3253; RR: 0.80; RC 95%: 0.66, 0.98), episiotomy (14 trials, n= 17674; RR: 0.84; RC 95%: 0.77, 0.92), fetal loss/neonatal deaths before 24+0 weeks (11 trials, n= 15645; RR: 0.81; RC 95%: 0.67, 0.98) and, on the contrary, less recourse of analgesia/anesthesia during labour (7 trials, n= 10499; RR: 1.21; RC 95%: 1.06, 1.37); major average duration of labour (3 trials, n= 3328; average difference in hours: 0.50; RC 95%: 0.27, 0.54) and major probability of being assisted during delivery by a known professionals' (7 trials, n= 6917; RR: 7.04; RC 95%: 4.48, 11.08).

No differences were seen in terms of percentage of C-sections, complete perineum, prenatal recoveries, pre-delivery hemorrhages, inductions, use of oxytocin during delivery, analgesia with opioids, beginning of breastfeeding, low weight at birth, Apgar score after 5 minutes ≤7, neonatal convulsions, recovery in NICU, average duration of recovery.

The two outcomes 'women's satisfaction' and 'cost-effectiveness' of the model centered on the midwife are defined and measured in a different way in the different studies; this does not allow a synthetic esteem of the result.

The study of Wernham and Coll. (17) has on the contrary showed that some perinatal results are less favorable for the group of women assisted by midwives.

Among the 244,047 of pregnancies included in the study, 223,385 (91.5%) were assisted with the midwife led model of care, and 20,662 (8.5%) with the medical led care. The correct odds ratio has shown that the medical led care method was associated to a lower probability of: Apgar score after 5' <7 (OR 0.52; RC up to 95% (RC 95%) 0.43-0.64); intrauterine hypoxia

(OR 0.79; RC 95% 0.62-1.02); asphyxia delivery-related (OR 0.45; RC 95% 0.32-0.62); neonatal encephalopathy (OR 0.61; RC 95% 0.38-0.97).

The authors concluded that it was not possible to determine if this model was associated with less neonatal deaths; with an odds ratio for medical led care compared with the midwife led model of 0.80 (0.54-1.19) regarding perinatal mortality; 0.86 (0.55-1.34) regarding stillbirth and 0.62 (0.25-1.53) regarding neonatal mortality. Authors were not able to differentiate women belonging to the group of midwife- led model who have somehow benefited from a medical consultation. In order to better understand this study, a description of the delivery path of the New Zealand Health Service is needed. From 1990 the Health System supplies free assistance to maternity offering to take the woman in charge by a midwife, moreover it is possible to decide which professional takes in charge the woman and if needed to require a medical consultation.

Only a minimum part of the population (8.5%) seeks for the private assistance of a gynecologist, a fee-paying service. The population assisted by the physician is with high class origins, elective C-sections for the physician's clientele is around 32.8%, those for the clientele assisted by midwives is 7.4%, as described by Farquhar and McCowan, (18). Midwives assist women who come from difficult situations, of different ethnic groups, who live in rural and remote areas and the extraction of the data, such as perinatal mortality, NICUs recoveries is not well specified, and some data base might offer false data. The only two trials identified in the selection are secondary studies which come from one same trial which had the aim of verifying the outcomes of the assistance with the caseload midwife care and the standard care.

The randomized controlled trial" by McLachlan and Coll. (19) has examined the past of the women related to the birthing event. It was given a questionnaire by mail after two months from delivery. Caseload women reported a more positive birthing experience, compared to those with the standard care (adjusted odds ratio 1.50, 95% RC 1.22–1.84), moreover they reported of feeling more in control of their bodies during labour, more proud of themselves, less anxious and have more propensity for having another positive experience with pain.

Also the study by Forster and Coll. (20) aimed to examine the score of satisfaction of women in the assistance during pregnancy, delivery and puerperium. The assistance given in the caseload *c*ompared with that supplied in the standard care was associated to a major degree of satisfaction for the assistance during the pregnancy (OR 3.35; 95 % RC 2.79, 4.03), delivery (OR 2.14; 95 % CI 1.78, 2.57), hospitalized puerperium (OR 1.56, 95 % RC 1.32, 1.85) and puerperium at home (OR 3.19; 95 % RC 2.64, 3.85).

In addition, also the study by Allen et al (21), proposes to explore if women assigned to caseload model consider their midwife in a different way compared to those women assigned to standard care. This study was led in two academic hospitals in two Australian cities. The caseload model provided prenatal, intrapartum and postnatal assistance by a primary midwife or a "back-up" midwife; taking advantage also of medical consultations as recommended by national guidelines. The standard model included the assistance of a general physician and/or a gynecologist. A total of 1784 women were randomized between December 2008 and May 2011; 871 on caseload model and 877 on the standard model. The reply rate to the survey after six weeks, including the free text replies, was of the 52% (n=901). The interviewed women of both groups have described midwives as educational, competent and kind. The caseload participants have perceived midwives with qualities such as "Empowering" and "Endorfic". The caseload midwifery care attracts, motivates and allows midwives to go beyond the usual assistance. This allows women to feel competent, contained and safe throughout the pregnancy, labour and delivery.

Jepsen and Coll. (22) carried out "A qualitative study of how caseload midwifery is experienced by couples in Denmark". From the point of view of women and their partners, being assisted with caseload meant being recognized and cured as individuals. The partner felt considered, acknowledged and trained to work in team together with the midwife.

Discussion

This review gives an image of reliability of the caseload midwifery care model, even if the studies are

affected by heterogeneity of patient care and setting models. In the light of the evidences of the literature, the caseload midwifery care shows to be a reliable and safe organisational/patient care model. The maternal and neonatal outcomes are similar to those seen in standard models, in particular among the primary outcomes, it is noted a low frequency of: regional analgesia (epidural/spinal), operative vaginal delivery (forceps or vacuum), premature delivery, foetal/neonatal deaths. Moreover, the women assisted by a midwife of the caseload have had with a higher frequency a natural birth. It needs nevertheless to suit the model for the local conditions, holding in consideration the customs of assistance, the conditions allowing the implementation of such relief model, engaging all the professionals involved in the editing of lines drives shared. The literature evidences lead in synthesis to underline the potentialities of the therapeutic continuity applied to the assistance in the birth path and place the obstetric as a flywheel for the implementation of this model to the care system. The therapeutic continuity provided by the midwife acts by putting the woman/couple at the centre, offering containment and making the woman competent on her feelings. For all these reasons, it would be desirable for health care companies to take into account this model of care by starting shared projects.

Conclusions

Going into the national context, the introduction of such an innovative patient care model in the Italian panorama, suggests that the first step is to correctly recruit low-risk pregnant women, in order to enable the midwives to familiarise with the caring during the pregnancy, the delivery and the puerperium. It seems therefore possible to hypothesize a project of implementation of the midwifery-led care model in the birth path. The preliminary work should start with manners, involved operators and provided cures and it might be useful the certificate of assistance during the childbirth which collects all the facts concerning the assistance to the pregnancy and the delivery (32).

Therefore, while using national guidelines (7), it would be possible to draft local guidelines, involving all the operators, in order to share at the highest level the selection criterions of the patients and of medical consultancy requests. In order to recruit women it would be useful to use take-over assistance requests which can be found in family counselling centres. The organisation of the caring model is similar to the team care model, which means that a group of midwives (six or seven) takes charge of 35/40 women every year and gives assistance during all the pregnancy, involving also visits at home and during the puerperium.

The preference of the team care model rather than the caseload care model makes the project more attracting for the midwives, who could be overwhelmed by the workload or the dedication required by the caseload care model.

The availability should be of twelve hours; during the diurnal hours of working days the midwife, if not called, is available to practice post-natal visits or administrative works. The same work organization is proposed again the following day. As for the availabilities of the hospitals, when the night work exceeds the six hours, the following day is not considered a working one. The option of training other operators who usually do not work in the team can also be considered; these workers can be asked to make additional return, in order to cover the absences.

The midwives must have a driving license and a car. The kilometres made are payed according to the scheme of liquidation of the healthcare centre. The recruitment for the staff should be voluntary, between those who work there; every midwife presents her demand to cover the vacancy of the team. The selection is made by keeping into consideration the following criterions: the midwife's motivation to work in autonomy, good verbal and written communicative skills, capability to work in a team, knowledge and capacity to operate following the guidelines for the caring of the low-risk pregnancy, delivery and puerperium, ability to practice sutures of simple vaginal lacerations and episiotomies, ability in the management of shoulder dystocia, post-partum haemorrhage and neonatal resuscitation, at least two years of experience in hospitals, in the field of caring of the delivery and the puerperium.

It is considered appropriated to schedule a permanent training for: guidelines updating, ultrasound scanning, telephonic triage, neonatal reanimation and

periodic exercise on the main obstetric emergencies (shoulder dystocia, post-partum haemorrhage, and unplanned breech birth).

In order to make the insertion of the new midwifes more suitable, a one-month-period of mentoring is suggested, and a training course for what concerns the patient care during the low-risk pregnancy is also proposed.

A midwife leader or a team coordinator might be envisaged.

The ambulatories used by the team are located in family counselling centres/health houses or in the hospitals of reference.

The women generally should live in the territorial area for which the team is responsible for the patient care. An area of 200kmq with a population of 150.000/200.000 inhabitants can be hypothesized. The numbers can change in relation to the population density.

Eventually, in order to complete the project and measure the health outcomes obtained by this caring model, some performance markers need to be evaluated: number of natural deliveries, number of deliveries accelerated with oxytocin, number of operative vaginal deliveries, number of caesarean sections, number of healthy newborns transferred to neonatology because of complications, number of women with post-partum complications, number of women with post-partum complications during the first day. The collected data should then be discussed during periodic programmed audits in order to monitor the clinic outcomes. The eventual corrective actions should be based on the observations that arise from the audits. Such a project hypothesis, proposed here, requires sharing with the nursing and midwifery management and possibly also with the medical management. The success of the project lies in building rules shared between operators. This should be done in the production of guidelines and/or assistance protocols that indicate the levels of competence of professionals and trace the path of care based on evidence of effectiveness. Performance indicators and critical reviews of data collected and then discussed in dedicated audits will allow corrective action to be taken if necessary.

Limits

It still remains unclear if is better to organize the patient care offered by midwives in team care model or in caseload care model; thus, a further comparison between these two models would be useful. Other researches about the continuity of patient care developed by the midwives (34-36), which include the home birth (37) for both the low-risk and the high-risk women, would be appropriate.

Finally the health care managers are often sceptical towards midwifery-led care model, considering the staff as not suitable for the sudden lacks of hospital staff. So they perceive midwifery-led care model as a loss of hospital staff members, thinking that this model is more expensive than the traditional one.

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References

1. WHO Recommendations on antenatalcare for a positive pregnancy experience. WHO Library Cataloguing 2016; p. 176.
2. Ministero della Sanità. Regolamento concernente l'individuazione della figura e del relativo profilo professionale dell'ostetrica/o. [Regulations concerning the identification of the figure and the relative professional profile of the midwife.] D. M. n.740, 1994.
3. Ministero della Sanità. Progetto Obiettivo Materno Infantile. [Mother and Child Project Objective] D. M. 2000.
4. Ministero della salute, il Comitato per il Percorso Nascita nazionale istituito con tavolo di monitoraggio [The Committee for the National Birth Path] D.M. 29 luglio 2015.
5. Conferenza unificata stato-regioni e stato-città: Linee di indirizzo per la promozione ed il miglioramento della qualità**,** della sicurezza **e** del percorso nascita; [Guidelines for the promotion and improvement of quality, safety and of the birth path] Visto il Patto per la Salute 2010-2012
6. Ministero della Salute, Istituto Superiore della salute, CVEAS. Linea guida sulla gravidanza fisiologica [Guideline on physiological pregnancy] Linea guida 2011.
7. Ministero della Salute, Linee di indirizzo per la definizione e l'organizzazione dell'assistenza in autonomia da parte delle ostetriche alle gravidanze a basso rischio ostetrico (BRO) [Guidelines for the definition and organization of self-help by midwives to pregnancies with low obstetric risk] 2017.

8. Salute Emilia Romagna. Percorso Nascita [Birth Path] Direttiva Regionale alle Aziende Sanitarie DGR 533/2008.
9. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. BMJ 2003; 327(7425): 1219-21.
10. Abdullah P, Gallant S, Saghi N, Macpherson A, Tamim H. Characteristics of patients receiving midwife-led prenatal care in Canada: results from the Maternity Experiences Survey (MES). BMC pregnancy childb 2017; 17: 164.
11. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. Cochrane db syst rev 2016; 28; 4.
12. Symon A, Cheyne H, Downe S. Midwifery-led antenatal care models: Mapping a systematic review to an evidence-based quality framework to identify key components and characteristics of care. BMC pregnancy childb 2016; 19; 16(1): 168.
13. Berdún L, Escuriet R, Larios F. L, Rojas G.L. Maternity care in different countries. Midwife's contribution . Barcellona. Consell del col.legis d'infermeres de Catalunya. 2016. ISBN 978-84-608-7254-2
14. Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE. A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives. Midwifery 2016; 36: 61-69.
15. Gaskin IM. Spiritual Midwifery. Summertown, Tennessee, Kindle Edition 2002 https://www.amazon.it/Spiritual-Midwifery-English-Ina-Gaskin.../dp/B0026IUOFU
16. Dawson K, Forster DA, McLachlan HL, Newton MS. Operationalising caseload midwifery in the Australian public maternity system: Findings from a national cross-sectional survey of maternity managers. Women birth 2018; 31(3): 194-20.
17. Wernham E , Gurney J, StanleyJ, Loschmann L.E, Sarfati D. A Comparison of Midwife-Led and Medical-Led Models of Care and Their Relationship to Adverse Fetal and Neonatal Outcomes A Retrospective Cohort Study in New Zealand', Plos med 2016; 13(9): 1-17.
18. Farquhar, Cynthia , McCowan, Lesley, Fleming, S. Letter to the editor. PLOS MED 2016; pp.0-1
19. McLachlan HL, Forster DA, Davey MA, Farrell T, Flood M, Shafiei T, Waldenström U. The effect of primary midwife-led care on women's experience of childbirth: Results from the COSMOS randomised controlled trial', Bjog-int j obstet gy 2016; 123(3): 465-474.
20. Forster DA, Davey MA, Biro M A, Farrell T, Gold L, Flood M, Shafiei T, Waldenströ U. Continuity of care by a primary midwife (caseload midwifery) increases women's satisfaction with antenatal, intrapartum and postpartum care: results from the COSMOS randomised controlled trial. BMC pregnancy childb 2016; p. 28
21. Allen J, Kildea S, Hartz DL, Tracy M, Tracy S. The motivation and capacity to go "above and beyond": Qualitative analysis of free-text survey responses in the M@NGO randomised controlled trial of caseload midwifery. Midwifery. 2017; pp. 148-156.
21. Jepsen I, Mark E, Foureur M, Nøhr EA, Sørensen EE. A qualitative study of how caseload midwifery is experienced by couples in Denmark. Women birth 2017; 30(1): 61-69.
23. Jepsen I, Mark E, Nøhr EA, Foureur M, Sørensen EE.A qualitative study of how caseload midwifery is constituted and experienced by Danish midwives. Midwifery 2016; 36: 61-69.
24. Newton MS, McLachlan HL, Forster DA, Willis KF. Understanding the "work"of caseload midwives: A mixed-methods exploration of two caseload midwifery models in Victoria, Australia. Women birth 2016; 29(3): 223-233.
25. Jepsen I, Juul S, Foureur M, Sørensen EE, Nøhr EA. Is caseload midwifery a healthy work-form? – A survey of burnout among midwives in Denmark. Sex dev 2017; 11: 102-106.
26. Perdok H, Jans S, Verhoeven C, van Dillen J, Batenburg R, Mol BW, Schellevis F, de Jonge A. Opinions of professionals about integrating midwife-and obstetrician- led care in The Netherlands. Midwifery 2016; 37: 9-18.
27. Perdok H, Jans S, Verhoeven C, Henneman L, Wiegers T, Willem Mol B, Schellevis F, de Jonge A. Opinions of maternity care professionals and other stakeholders about integration of maternity care: a qualitative study in the Netherlands. BMC pregnancy childb 2016; 16: 188.
28. Cummins AM, Denney-Wilson E, Homer CSE. The mentoring experiences of new graduate midwives working in midwifery continuity of care models in Australia. Nurse educ pract 2017; 24: 106-111.
29. Dawson K, McLachlan H, Newton M, Forster D. Implementing caseload midwifery: Exploring the views of maternity managers in Australia - A national cross-sectional survey.Women birth 2016; 29(3): 214-22.
30. Gidaszewski B, Khajehei M, Gibbs E, Chua SC.Comparison of the effect of caseload midwifery program and standard midwifery-led care on primiparous birth outcomes: A retrospective cohort matching study. Midwifery 2019; 69: 10-16.
31. Bradfield Z, Hauck Y, Kelly M, Duggan R.It's what midwifery is all about": WesternAustralian midwives' experiences of being 'with woman' during labour and birth in the known midwife model. BMC pregnancy childb 2019; 19: 29.
32. Ministero della Salute. Evento nascita, il Rapporto CeDAP 2013[Birth event, the CeDAP 2013 Report] 2015
33. Perrone E, Lupi C, Basevi V, Battaglia S, Gargano G. La Nascita in Emilia-Romagna 15° Rapporto sui dati del Certificato di Assistenza al Parto (CedAP) 2017 [The Birth in Emilia-Romagna 15th Report on the data of the Certificate of Assistance at Childbirth (CedAP) 2017] Regione Emilia Romagna 2018
34. Walker S, Batinelli L, Rocca-Ihenacho L, McCourt C. Keeping birth normal': Exploratory evaluation of a training package for midwives in an inner-city, alongside midwifery unit. Midwifery 2018; 60: 1-8.
35. McCourt C, Rance S, Rayment J, Sandall J. Organising safe and sustainable care in alongside midwifery units: Findings from an organisational ethnographic study. Midwifery 2018: 26-34.

36. Coates R, Rocca-Ihenacho L, Olander E, Ayers S, Salmon D. A postgraduate Optimum Birth module to increase midwives' readiness to work in midwifery-led settings: A mixed-methods evaluation. Birth fam j 2018: 21.
37. Leon-Larios F, Nuno-Aguilar C, Rocca-Ihenacho L, Castro-Cardona F, Escuriet R. Challenging the status quo: Women's experiences of opting for a home birth in Andalucia, Spain. Midwifery 2019; 70: 15-21.

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