New approach and strategy in the assessment of labour pain – Czech version of the labour coping pain assessment tool.

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Abstract

OBJECTIVES: To create a Czech version of the Labor Coping Scale (LCS) evaluation tool intended for midwives when caring for a woman with labor pain, to evaluate its psychometric properties and to find out the opinion on it in clinical practice.

MATERIALS AND METHODS: Are use a combination of methods. By using repeated back translation, the Czech version of the LCS tool was created. It included an assessment of the tool's content validity index and a questionnaire survey determining the midwives' approach to labor pain (N = 419), supplemented by a focus group method (N = 16 midwives).

RESULTS: A new evaluation tool for the management of labor pain was created - the Pain Coping Scale, which assesses the management of labor pain, not intensity, like previous evaluation scales. It is a tool that maps 5 areas on a scale of 0–10.

CONCLUSION: As part of her work, a midwife should be able to adequately assess a woman's management of labor pain, using a suitable tool, to reveal the factors that influence the development and experience of labor pain, and then choose an appropriate strategy in the care of a woman with labor pain. A new LCS labor pain assessment tool could help with this in the Czech environment.

Abbreviations:

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*A	- I-CVI Content validity index	K*	- Kappa index
ACOG	- American College of Obstetricians and Gynecologists	LCS	- Labor Coping Scale
		N	- number of respondents
CI	- Coping intervention	N (in tables)	- Title
CNS	- Central nervous system	PC	- Values index
CS	- Coping scale		
ISPOR	- The leading professional society for health economics and outcomes research		

ORIGINAL ARTICLE

INTRODUCTION

Labor pain is a specific obstetric phenomenon, different from classic pain (Iliadu *et al.* 2009). Subsequently, the organism reacts to labor pain. Labor pain and its experience, perception and response of the woman's organism to labor pain is influenced by the already mentioned physiological, psychosocial and cultural influences (Beige *et al.* 2010; Mander, 2014). The etiology and influences influencing the perception and management of labor pain are described in Figure 1. In the 19th century, there was an increased interest in clinical practice in the study of labor pain, mainly in the possibility of its suppression, the use of pharmacological methods. On the contrary, in the 20th and 20th centuries, studies came out stating that labor pain has a positive effect on the course of childbirth. Labor pain is supposed to help the descent of the fetus and speed up the birth itself, which, on the other hand, is perceived as having a positive meaning for the course of the birth (Karlsdottir & Lundgren, 2014). Another positive effect of labor pain is the establishment of firm contact between mother and child (Burvill *et al.* 2002; Caton *et al.* 2002; Enkin *et al.* 2000; Gaskin *et al.* 2008). Thus, more relationships began to be observed, such as the occurrence of labor pain, factors that influence the experience of labor pain, the effect of hormones on the intensity of the experience of labor pain, and possible methods for its management and mitigation (Baker *et al.* 2010; Fillingim *et al.* 2010, Rachmawati *et al.* 2012). This led to a greater awareness of possible methods among health workers, midwives, but also women. In order to do this, however, it is also necessary to be able to properly assess, diagnose the intensity and manage labor pain by a woman (Gentz, 2001; Gibson, 2014; Henry & Nand, 2004). And evaluation scales were created to assess labor pain. These scales were mostly used to assess other types of pain. However, it was found that the assessment of labor pain is specific, the intensity should not be evaluated, but rather the coping, the experience of labor pain (Kuliukas *et al.* 2016; Leap *et al.* 2010; Loeser, 2000). And a new assessment technique, the Labor Coping Scale, was created (Escott *et al.* 2004; Gaskin, 2008; Henrique *et al.* 2018; Iliadu, 2009).

Assessment of labor pain

Labor pain is one of the most common causes that disrupt the well-being and needs of the woman, the mother and her well-being during childbirth. Well-being, a state of physical well-being without pain, is one of the basic needs of an individual (Burvill, 2002).

Assessing and evaluating coping with and adapting to labor pain during the first part of labor is therefore important from the point of view that a woman's well-being with a sense of coping with pain is subsequently reflected in the overall experience and experience of childbirth (Abushaikha & Oweis 2005; Alehagen, 2005; Enkin, 2000; Gibson, 2014; Lundgren & Dahlberg, 2002; Whitburn, 2014). Labor pain can be assessed today using many standardized techniques Visual analogic scale; numeric rating scale (McCaffery, 1979); Pain Map; McGills questionnaire; Melzack pain scale (Melzack *et al.* 1983), Facial scale and others that evaluate verbal and non-verbal manifestations. However, we must not forget that the predetermined criteria for the chosen evaluation technique may not adequately describe the phenomenon of labor pain itself (IASP, 2012; Mander, 2014). It is therefore appropriate to assess labor pain with multiple options and comprehensively. In the case of labor pain, it is also important to assess the overall condition, anamnestic data, which also takes into, account individual factors influencing the management and experience of labor pain, which are determined using the woman's anamnestic data. The aim of the study was therefore to create a Czech version of the LCS assessment tool (ACOG, 2018; Escott *et al.* 2000; Roberts *et al.* 2010; Simkin, 2002; Slade *et al.* 2000).
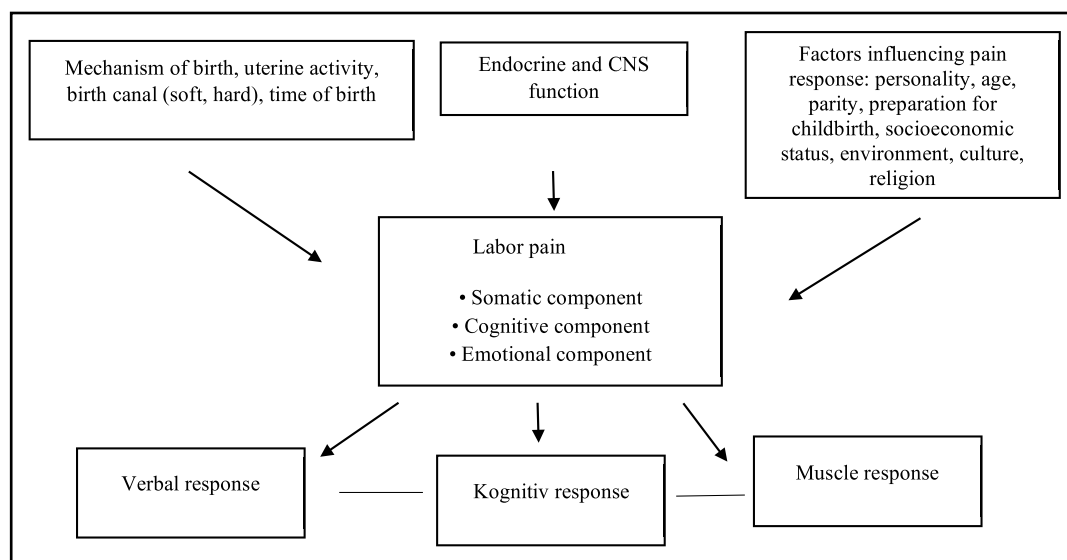
Fig. 1. Etiology of the phenomenon of labor pain (Source: Own, 2020)

METHODS AND PROCEDURES

The basic aim of the study was to create a Czech version of the LCS assessment tool. A combination of several research methods was used in the methodology, which led to the selection of a suitable instrument, the creation of the Czech version and its evaluation by clinical practice, including the assessment of the validity index and the evaluation of the instrument by experts in practice in the form of a focus group. The process of creating the Czech version of the LCS tool was preceded by a questionnaire survey focused on knowledge and the use of appropriate coping strategies in the care of a woman during childbirth. The respondents were midwives working in delivery rooms in the Czech Republic who agreed to participate in the survey. The study took place in 5 consecutive phases. The subject of this communication is a description of the creation of the Czech version of the LCS tool. The process of selecting a suitable tool and creating the Czech version of the LCS tool took place in five stages. In the first phase, an analysis of literary sources using the Prisma method was carried out, a literature review was carried out and a suitable tool was selected from the available sources (Moher *et al.* 2009).

This was followed by obtaining the approval of the author of the Labor Coping Scale evaluation tool to start the process of creating the Czech version of the LCS. In the second phase, repeated back-translation took place, in which 3 translators participated. International recommendations were respected during the translation (Hsiung *et al.* 2016; Wild *et al.* 2005;
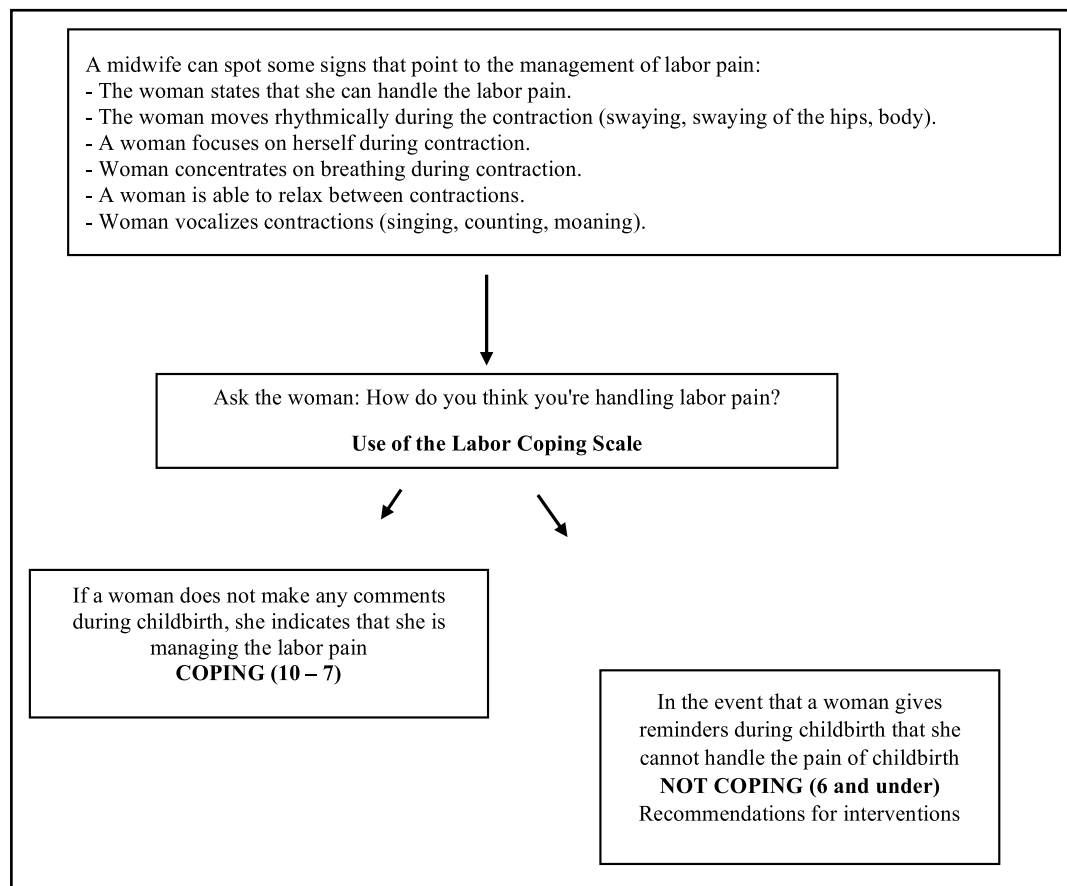
Liu *et al.* 2011; Polid *et al.* 2007; Squires *et al.* 2013). It displays the translation analysis Table 1, where the kappa index and content validity were also evaluated for individual expressions. Subsequently, the I-CVI and kappa index were evaluated for all translation areas to support the validity of the tool (Patton, 2002). As the minimum accepted value of the I - ICV score for the inclusion of the translated item in the evaluation tool, in accordance with the recommendation of Wild (2005), the value was ≥ 0.78, whereby each item was considered ideal. Kappa index K^* was interpreted as satisfactory at values of K^* 0.40-0.59, good = 0.60 – 0.74; excellent = $K^* ≥ 0.74$. The content validity index for the selected items ranged from 0.4 to 1.0. For Kappa values, the range was 0.337 - 1.00, which meant the minimum values of the content validity index, and kappa did not reach 6 areas for translations 2 and 3. The obtained values helped to choose translation version 1 and to modify the Czech pilot version of LCS.

For further argumentation of the translation and substantiation of the translation, a questionnaire survey was conducted evaluating user-friendliness and midwives' approach to labor pain in Czech clinical practice. Subsequently, interviews were conducted with midwives from clinical practice using the focus group method 1 and 2 (N = 16). In the third phase, individual translations of the tool were assessed with the help of an expert group of midwives and other experts from clinical practice (N = 10 midwives). The accuracy of the translation was assessed, a three-point translation scale (1 = YES - accurate; 2 = MAYBE

Tab. 1. Quantitative analysis of translation – panel of experts (Source: Own, 2020)

Analysis of translation	Version 1			Version 2			Version 3			Final version		
Part	N	CS	CI	N	CS	CI	N	CS	CI	N	CS	CI
Expert 1	1	1	2	1	1	2	1	1	2	1	1	1
Expert 2	2	2	2	1	1	1	1	1	1	1	1	1
Expert 3	1	2	1	1	2	1	1	2	1	1	1	1
Expert 4	1	2	2	1	2	2	1	2	2	1	1	1
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1
Expert 7	1	2	2	1	2	2	1	2	2	1	1	1
Expert 8	1	1	2	2	1	1	1	2	2	1	1	1
Expert 9	1	2	3	1	2	3	1	2	3	1	1	1
Expert 10	1	1	1	1	1	2	1	1	2	1	1	1
A	9	5	4	9	6	5	10	5	4	10	10	10
I-CVI	0,9	0,5	0,4	0,9	0,6	0,5	1,1	0,5	0,4	1,0	1,0	1,0
PC	0,010	0,246	,205	0,010	0,205	0,246	0,001	0,246	0,205	0,001	0,001	0,001
Kappa*	0,899	0,337	0,245	0,899	0,497	0,337	1,000	0,337	0,245	1,000	1,000	1,000

* Experts 1 – 10 (N = 1 – 10); The use of a 3-point translation evaluation scale by experts; (1 - exactly; 2 = good, but not accurate; 3 = inaccurate); N = title; CS = coping scale; CI = coping intervention; *A = ; I-CVI = content validity index; PC =values index; Kappa* = kappa index

A midwife can spot some signs that point to the management of labor pain:
- The woman states that she can handle the labor pain.
- The woman moves rhythmically during the contraction (swaying, swaying of the hips, body).
- A woman focuses on herself during contraction.
- Woman concentrates on breathing during contraction.
- A woman is able to relax between contractions.
- Woman vocalizes contractions (singing, counting, moaning).

Ask the woman: How do you think you're handling labor pain?
Use of the Labor Coping Scale

If a woman does not make any comments during childbirth, she indicates that she is managing the labor pain
COPING (10 – 7)

In the event that a woman gives reminders during childbirth that she cannot handle the pain of childbirth
NOT COPING (6 and under)
Recommendations for interventions

Fig. 2. Edward Deming´s model "Plan, Do, Check, Act" (Source: Roberts *et al.* 2010)

- good, but not completely accurate; 3 = NO - inaccurate). In the fourth phase, the actual translation of the Czech version created on the basis of the second and third phases into English was carried out. In the fifth phase, the back-translation was checked and the preliminary pilot version of the Labor Coping Scale evaluation tool was modified based on the previous phases and a discussion with experts - experts from the field (2 midwives, 1 doctor), translator B and the authors of the evaluation tool. Inconsistencies in the translation that arose during the translation of individual versions were agreed upon. The very use of the tool and the procedure for pain assessment in women giving birth, followed by the choice of an appropriate intervention, is described in Figure 2.

Czech version of the Labor Coping Scale assessment tool

The Labor Coping Scale is an assessment technique and adequate individualized support for midwives to help women cope better with labor pain and use non-pharmacological coping strategies to help women manage labor pain during the birth process (Burvill, 2002; Henry A & Nands). The Labor Coping Scale assessment tool was created in 2017 (Roberts *et al.* 2010). It has been used since 2018 in Great Britain in institutional and community care (ACOG, 2018; Roberts *et al.* 2010). Until now, it was only available in the English language. The authors of the tool have not yet evaluated its psychometric properties, in this respect this fact was limiting in the evaluation of the Czech version of the tool. A new assessment tool – the Labor Pain Coping Scale was designed to be simple, quick, suitable for labor pain assessment and subsequently to help midwives provide an appropriate labor pain management intervention. The tool serves to support women in labor to adequately deal with labor pain, manage it and use non-pharmacological coping strategies. The Labor Coping Scale tool is compiled on the basis of five areas that are appropriate for a woman to monitor during childbirth. The first area is the evaluation of the level of coping with pain, which is evaluated on a scale of 0 - 10. Midwives evaluate the state of adaptation to pain numerically in the areas: 0 - 3 "Not coping well" (no coping); 4-5 "Coping" (moderate coping); 6–10 "Coping well" (high coping). Together with the woman, the midwife assesses the level of coping with labor pain, and whether the woman needs help, in what way and to what extent, and using what coping strategies are recommended. Other areas focus on the emotional state of the woman, methods affecting labor pain, use of position changes during childbirth. According to the authors of the tool, it is recommended to assess labor pain and its management in women at least every 2 hours (ACOG, 2018; Roberts *et al.* 2010).

DISCUSSION

Labor pain represents a special category of pain where its physiological meaning is intertwined with patho-physiological mechanisms (Mander, 2014). Labor pain is a specific phenomenon that clearly affects the care provided to mothers and is influenced by a number of factors, including the woman's personality, her cultural habits, traditions, but also the influence of personality traits, as well as the influence of physical phenomena of the external environment, physical and psychological the status of women and more. However, as already mentioned, labor pain is natural for the birth process itself. For that reason, it should be approached that way. It is important for midwives to understand labor pain comprehensively and as a natural phenomenon of childbirth, and subsequently to be able to evaluate labor pain and choose a coping intervention based on the woman's subjectivity (Iliadu, 2009). Labor pain should be assessed using the correct technique and adequate methods should be chosen to help a particular woman in her specific situation manage labor pain. A new evaluation technique - the Labor Coping Scale - can be helpful for better assessment of labor pain and subsequently the choice of interventions for women in labor. As the authors state, the Labor Coping Scale is one of the appropriate methodological visual aids for midwives and other medical personnel to practically see that the more adequate help is offered to the woman, the higher the level of ability to cope with labor pain and childbirth (ACOG, 2018; Roberts *et al.* 2010). All this should lead to a change in the understanding of the care provided during childbirth for a woman in labor (Hodnett, 2012). Managing childbirth and childbirth pain and the woman's readiness supports the effective cooperation of the mother and the midwife, which supports the physiology of the entire process and supports the reduction of risks and complications during childbirth and in the postpartum period, thereby reducing women's negative experiences with childbirth itself (Loeser, 2000; Rachmawati, 2012; Simkin, 2002; Whitburn, 2014). This could also be reflected in the arguments that acceptance of pain further reduces the need for maternity services, which are linked to complications and thereby shorten the length of hospitalization in the postpartum period. We must also not forget that prenatal preparation, which is also taken as a coping strategy, a method in the care of a woman with labor pain, already intervenes in the comprehensive care of labor pain. Only in this case, with an overall approach to the woman, can the midwife correctly and qualitatively provide adequate care in the form of adequate strategies that will help the woman meet her needs during pregnancy and childbirth (Caton, 2002; Klomp *et al.* 2013; Kuliukas *et al.* 2016). As part of a broader study, a Czech version of the LCS assessment tool was created, which could replace existing assessment techniques and help midwives work better with labor pain in clinical practice. A new assessment tool for labor pain in Czech clinical practice should help improve cooperation between midwives and women in labor, support the elimination of risks and complications during and after childbirth, and reduce negative experiences with labor pain itself (Roberts *et al.* 2010).

CONCLUSION

A broader study of the usability of the Labor Coping Scale assessment tool in clinical practice, assessment of validity and psychometric properties. For better use of the tool, a recording sheet was created, which is again only in English. Thus, the creation of a Czech version of this record sheet with recommendations for use in clinical practice will be a requirement. Overall, it will be appropriate to further verify it in other healthcare facilities, in maternity wards in the Czech Republic from the point of view of midwives, but also of women in labor. As part of the study, a new Czech version of the Labor coping scale evaluation tool was created - Coping scale of labor pain. This is the first Czech version of the tool, which brings a new approach to the assessment of labor pain. The tool assesses women's adaptation, so-called coping, to labor pain, not the intensity of labor pain, as is the case with the instruments used so far. This tool otherwise only exists in an English version, used in England and the USA only since 2018. ACOG (2018) issued a report on the positive use of this LCS technique in clinical practice in midwifery compared to other techniques and its standardization based on the Roberts research (ACOG, 2018; Roberts *et al.* 2010). There aren't even many studies on the use of this tool yet. Part of the wider study before starting the re-translation process was also an evaluation of the midwives' approach to caring for women during childbirth, how they evaluate labor pain, what methods most often used to affect labor pain. A focus group method was also part of it, when the opinion on the Czech version of the LCS evaluation tool was ascertained. The results indicate that midwives in Czech clinical practice are not used to evaluating women's adaptation to labor pain, nor to labor pain in general, documenting interventions that would help women adapt to labor pain. One of the fundamental comments of the focus group participants, who evaluated the user-friendliness of the assessment tool in Czech clinical practice, was the finding of a certain unpreparedness of Czech midwives for the assessment of labor pain from a psychosocial point of view and the documentation of provided coping strategies in the medical documentation. Another reminder was the current administrative burden of midwives during the care provided and the extension of the documentation by another tool, or another document. Of course, these are arguments that have their weight and it is necessary to take these factors into account. On the contrary, some midwives welcomed it and could imagine it is use in clinical practice. The tool is simple, understandable,

practical from the point of view of midwives. During the course of the study, there were only isolated comments that led to minimal modifications. The tool also includes interventions to help women and midwives work with labor pain. Some midwives were unfamiliar with some methods. For that reason, we expect the Labor Coping Scale evaluation tool to be included in the obstetric documentation in the contracted health-care facility in the foreseeable future. Administrative use is possible both in printed and electronic form. And supplementing with further research into the usability of the tool in Czech clinical practice. For this, it will also be appropriate to spread awareness about the possibilities of interventions helping women and midwives to manage labor pain. It is clear that a new assessment tool could replace existing pain assessment tools. The assessment of labor pain and the choice of the right technique for managing labor pain have an overall effect on managing the entire birth process. This should lead to the prevention and elimination of obstetric and postpartum complications, better establishing contact between mother and newborn, and faster development of lactation. As part of the study, a new Czech version of the Labor coping scale evaluation tool was created - Coping scale of labor pain. This is the first Czech version of this tool for a new approach to the assessment of labor pain. The tool assesses women's adaptation, so-called coping, to labor pain, not the intensity of labor pain, as is the case with the instruments used so far. This tool otherwise exists only in the English version, used in England and the USA only since 2018. There are not many studies on the use of this tool yet.

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DECLARATION OF COMPETETING INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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