

# Professional's skills in assessment of perineal tears after childbirth—A systematic review

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## ABSTRACT

**Perineal tears are one of the most common complications of vaginal births and may cause discomfort and pain long time after childbirth. Visual and digital examination of perineal tears is the most common way to assess and classify a perineal tear. Recent research indicates that many tears diagnosed are misclassified. The aim of this systematic literature review was to outline research that investigates healthcare professionals' clinical knowledge in assessment and classification of perineal tears in connection with childbirth. Searches were performed in PubMed and CINAHL. Six studies on the topic were identified and used to collect data for questionnaires. An integrative review was used in the analysis. Poor knowledge in perineal anatomy and lack of training in clinical assessment and classification of perineal trauma was evident among both physicians and midwives. These findings indicate that healthcare providers lack adequate knowledge and that they make incorrect assessments and errors in classification of perineal tears. The training in assessment and classification is crucial. Midwives are in a unique position to improve the standard of care in this field since they are often the first and many times the only to assess the injury.**

**Keywords:** Perineum Injuries; Perineal Tears; Obstetrics/Midwifery Education; Clinical Competence; Review; Childbirth

## 1. INTRODUCTION

Perineal tears are the most common complications of vaginal births. The true incidence of perineal tears is not known for several reasons, for instance incomplete as-

essment by clinicians [1,2], confusion about definitions [3] and variation in practices and reporting on minor perineal tears [4,5]. Two British studies [4,6] describing the incidence of all tears found that approximately 85% of the women had some form of tear after birth. Not all of them required suturing [4].

Pain in the perineum is common after vaginal birth whether the woman had a tear or not [7,8]. Women can experience pain and discomfort related to perineal tears for weeks and even months after delivery [9,10]. Persisting perineal pain can inhibit the woman from being fully mobile and sitting comfortably. This might influence the women's ability to bond to and breastfeed the baby [11]. Dyspareunia after childbirth is common and seems related to the severity of the trauma sustained [12,13]. The connection between perineal third or fourth degree tears and anal incontinence after childbirth is well documented. Although significant incontinence only affects a minority of women, its symptoms may have devastating effects on the quality of life for the women affected [14]. A dilemma with health problems related to perineal tears is that women do not necessarily address the problem at postnatal controls. Problems such as perineal pain, sexual dysfunction and incontinence are often only disclosed when specifically asked for [9].

The midwives assess, classify and suture most tears classified as perineal first or second degree tears [4,15] and episiotomies. A physician is required if there is a suspicion that the tear involves the anal sphincter muscles, perineal tear grade three or four, or an otherwise complicated tear, for example a tear that bleeds so much that it makes suturing difficult [15]. Visual and digital examination of the wound is the most common way to assess and classify a perineal tear [16]. However several studies indicate that many tears diagnosed with this method are misclassified [1,2,17,18]. After the introduc-

tion of anal ultrasound as a diagnostic method it was discovered that a large proportion of women without clinically detected sphincter tears had defects to the anal sphincter on ultrasound scan [17].

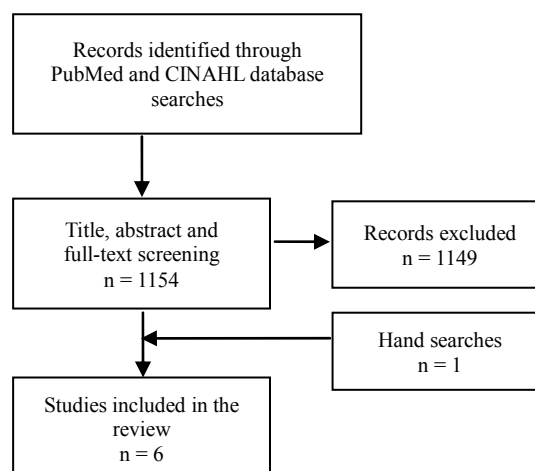
There is no congruence in what can be considered the golden standard when diagnosing perineal tears [19]. Women with second degree tears are the group most likely to develop anal incontinence postpartum, suggesting the possibility that a proportion of anal sphincter tears remain undetected at delivery [20]. The suggested reason for the extent of the clinically undetected sphincter tears is, apart from the fact that bleeding and tissue oedema make the diagnoses difficult, that many healthcare providers have too little training in perineal assessment and basic anatomy [2,21].

The aim of this systematic literature review was to outline research that investigates healthcare professionals' clinical knowledge in the assessment and classification of perineal tears in connection with childbirth.

## 2. METHODS

The literature searches were performed between May 2012 and Mars 2013 in the electronic databases PubMed and CINAHL. Articles between 1983 and 2012 were viewed. The search terms were: perineum; perineum/injuries; perineal tears; perineal laceration; perineal rupture; perineal trauma; "perineal second degree tears"; perineal first degree tear; perineal third degree tear; episiotomy, anal canal injuries; obstetric perineal tears; assessment; audit; "professional knowledge"; obstetrics education; midwifery education; gynaecology education; obstetric standards; midwifery standards; obstetric skill; midwifery skill; obstetric labour complications/diagnosis; classification; evaluation. Combinations of these key words were also used. English language was used as a limitation when searching for articles. At the start the search also included studies in Swedish, Danish and Norwegian but later English was used as language limitation as no studies of interest were found in these languages.

The total search resulted in 1154 articles. Included studies should intend to investigate healthcare professionals' knowledge in assessment by digital and visual examination of perineal tears after childbirth. Excluded were studies which only indirectly examined the clinical competence in assessment and classification of perineal tears, for example studies aiming to find different methods to assess perineal tears or studies trying to find the true incidence of occult perineal tears grade III and IV. Two of the authors (AM, AD) independently reviewed all citations by 1) title, 2) abstract and 3) full text. The majority could be excluded just by the title or after reading the abstract. The references of all included articles were also reviewed and one article was found this way [22], see **Figure 1**. Several articles read in full text were ex-



**Figure 1.** Flow diagram of screening process.

cluded because they did not meet the inclusion criteria. For example a study of McLennan *et al.* [23] was excluded because it did not investigate the current knowledge or perception of knowledge but whether residents had received formal training or didactics in episiotomy or perineal repair.

An integrative review focuses on results of research and integrates the findings from individual studies. It attempts to integrate and draw conclusions from studies using different methods enabling an overall conclusion to be made and the findings to be generalised to other populations with broader confidence [24]. Evaluation of included studies was guided by a literature review protocol by Polit and Beck [25, pp. 112-114].

## 3. FINDINGS

Six studies on the topic of healthcare professionals' knowledge in assessing and classifying perineal tears (**Table 1**) were identified [22,26-30], see description of included studies in **Table 2**. In all studies data were collected through questionnaires. In one study the questionnaire was filled out in the course of an interview to make sure the questions were correctly understood [30]. All studies also assessed other aspects of perineal management, for example knowledge in repair, which are not presented here since the focus of this review is assessment and classification. Studies that address the issue of knowledge in perineal anatomy were also included in the result. Five of the studies were from the UK and one was carried out in Spain.

The presentation of included studies was divided into three parts; 1) a quality assessment of included studies (see **Table 3**), 2) a short summary of the studies' results presented in three categories; anatomy, classification, perception on knowledge and training in perineal assessment and finally 3) a synthesis of the results.

**Table 1.** Classification of perineal injury grade 1 - 4.

First degree	Injury to perineal skin only
Second degree	Injury to perineum involving muscles but not the anal sphincter
Third degree	Injury to perineum involving the anal sphincter complex
III a	Less than 50% of External anal sphincter (EAS) torn
III b	More than 50% of EAS torn
III c	Both EAS and Internal anal sphincter (IAS) torn
Fourth degree	Injury to the perineum involving the anal sphincter complex (EAS and IAS) and anal epithelium

### 3.1. Anatomy

Two studies investigated the midwives' and doctors' knowledge in pelvic anatomy. Both studies indicate poor knowledge in perineal anatomy.

Cornet *et al.* [27] investigated residents' own perception of knowledge in perineal anatomy. A majority (62%) of the residents thought their knowledge in pelvic floor anatomy was inadequate. Sultan *et al.* [30] asked both doctors and midwives if they knew the muscles cut during an uncomplicated episiotomy. Of participants 69% of doctors and 25% of the midwives stated they knew which muscles were cut but over half of the ones stating they knew the muscles named them incorrectly.

### 3.2. Classification

Four studies analysed how well perineal tears were classified. All these studies indicate that many midwives and/or doctors classified perineal tears incorrectly.

The study of Mutema [28] was the only study that investigated classification of first degree tears as well as all the other tears. It established that more than a third of the midwives in two different hospitals did not know the correct classification of a perineal tear grade one. The situation was better for second degree tears but varied more between the two hospitals. In one hospital 30% of the midwives did not know the correct classification of a second degree tear while in the other hospital only 6% classified perineal tears grade two incorrectly. The percentages of correct answers decreased with the more severe tears and less than half of the midwives knew the correct classification of a perineal third degree tear. More than two thirds did not know the correct classification of a perineal tear grade four.

Andrews *et al.* [22] investigated whether a one day hands-on workshop in repair of episiotomy and second degree tears changed the clinical practice by improving participants' ability to accurately classify obstetric anal sphincter injuries (OASI) and manage perineal trauma

according to best practice. Due to a small number of participating doctors, midwives and doctors were analysed together. Most of the participants had performed more than 30 second degree perineal tear repairs before entering the course. Before the course the correct answers to questions on classification varied from 45% to 80% and after the course the proportion of correct answers ranged from 67% to 89%.

Fernando *et al.* [29] performed a systematic review of the literature and a survey of current practice among obstetricians and members of the Association of Coloproctologists in the UK. About 11% of consultants and 9% of trainees did classify second degree tears as "not defined". Three per cent of consultants and 5% of the trainees classified them as third degree perineal tears. A further 33% of the consultants classified a third degree tear as a second degree tear as did 22% of the trainees. There was a regional difference in the misclassification. The literature review revealed a lack of consistency in the classification of perineal tears when 65 obstetric texts in the Royal College of Obstetrics and Gynaecology (ROCG) library were analysed.

Sultan *et al.* [30] found that when midwives and doctors were asked to classify perineal tears 92% of the doctors and 99% of the midwives described first, second and third degree perineal tears. The remainder also mentioned fourth degree perineal tears. On questions about how midwives described injuries to different anatomic structures the percentage of correct classification varied from 61% to 84%. A further 15% of midwives thought all extended episiotomies and torn urethras were third degree perineal tears. The percentage of correct answers in classification among doctors ranged from 44% to 93%. None of the doctors thought all extended episiotomies were third degree perineal tears but 8% thought a torn urethra was considered to be a third degree perineal tear.

### 3.3. Perceptions on Knowledge and Training in Perineal Assessment and Classification

All six studies in this review addressed the matter of doctors and/or midwives own perception of training and current knowledge in anatomy and classification of perineal tears. All included studies showed that a majority of midwives and doctors recognise that their knowledge and training in perineal assessment and classification is poor.

A survey of Bick *et al.* [26] addressed the issue on how well midwives in the UK implement evidence based guidelines in their practice. The midwives were asked how confident they felt in assessing perineal trauma. Around a third of the midwives (34.3%) felt confident in assessing perineal trauma "all" the time; 55% were confident "most" of the time and 10.7% felt confident "some of the time". No midwives reported that they "never" felt confident. There was a significant positive correlation

**Table 2.** Description of included studies.

Study	Title	Aim	Method	Findings
Bick <i>et al.</i> 2012 UK Ref [26]	How good are we at implementing evidence to support the management of birth related perineal trauma? A UK wide survey of midwifery practice	To identify how midwives in the UK assessed and repaired perineal trauma and the extent to which practice reflected evidence based guidance.	Questionnaire sent to 1000 randomly selected midwives. Inclusion criteria were midwives in clinical practice that undertook perineal assessment and management within their current role. Response rate were 405 (40.5%) of whom 338 (83.5%) met inclusion criteria.	Slightly over a third of the midwives (34.3%) always felt confident assessing perineal trauma. Over half (55%) of the midwives felt confident most of the time and 10.7% some of the time. No midwife reported that they never felt confident. There was a positive association with number of years in practice as a midwife and what clinical pay scale (band) the midwife was on. No difference when adjusting for model of care.
Cornet <i>et al.</i> 2012 Spain Ref [27]	Management of obstetric perineal tears: do obstetrics and gynaecology residents receive adequate training? Result of an anonymous survey	To evaluate the perspective of residents in obstetrics and gynecology of their training and experience in the management of perineal tears that occur during assisted vaginal delivery.	Questionnaire sent to all third and fourth year residents in the Catalonia area (=72). The response rate was 46 (64%).	The majority of the residents thought that their knowledge of pelvic floor anatomy was poor (62%), although 98% felt confident that they would know when an episiotomy was correctly indicated. Experience in the repair of major degree tears was lacking and 70% had repaired fewer than 10 third or fourth degree perineal tears. Most did not carry out follow-up procedures. The majority indicated that more training in this specific area is necessary (98%).
Mutema UK 2007 Ref [28]	“A tale of two cities”: auditing midwifery practice and perineal trauma	An audit aimed to assess the adherence to standards in of management of perineal trauma sustained following vaginal delivery.	85 self-reported questionnaires were distributed randomly to qualified midwives attending their routine shifts at labour wards in two different general hospitals in the UK. The midwives were asked to complete the questionnaire during their shift. The study lasted one week to avoid discussion among midwives.	More than 90% of the midwives felt inadequately prepared to assess and/or repair perineal tears. There was a general lack of knowledge on the agreed classification of perineal trauma and most of the midwives felt inadequately trained in this area. Up to a third of the midwives who participated did not perform rectal examinations on assessment or after repairing the perineal tear.
Andrews <i>et al.</i> 2005 UK Ref [22]	Can hands-on perineal repair courses affect clinical practice?	To determine whether attending a hands-on training workshop in repair of episiotomy and second degree tears changed clinical practice by increasing participants' ability to accurately classify OASI and manage perineal trauma according to best practice.	208 midwives and doctors participated in hands-on workshops in repair of second degree tears and episiotomy. 71% completed a questionnaire prior to and eight weeks after the course, regarding repair of perineal tears and of classification of anal sphincter tears.	The majority of those attending the workshop were midwives with at least five years clinical experience. Almost two thirds of participants felt that their training prior to performing second degree perineal repairs was unsatisfactory. There was a significant improvement in the knowledge of midwives and doctors regarding the classification of OASI after attending the workshop.
Fernando <i>et al.</i> 2002 UK Ref [29]	Management of obstetric anal sphincter injury: a systematic review & national practice survey	To establish the evidence base for the recognition and management of OASI and to compare this with current practice amongst UK obstetricians and coloproctologists.	A review of the literature on management of OASI and a postal questionnaire survey of practice and knowledge of 910 consultants in obstetric practice, trainee obstetricians and coloproctologists. Response rate was 50.2%.	The literature review revealed a lack of consistency in the classification of OASI. In the survey 33% of consultant obstetricians and 22% of trainees considered a complete or partial external sphincter tear to be “second degree”. There was widespread regional variation in the misclassification of OASI as second degree perineal tear.

## Continued

Sultan <i>et al.</i> 1995 UK Ref [30]	Obstetric perineal trauma: an audit of training	To ascertain if trainee doctors and qualified midwives have adequate knowledge of perineal anatomy and whether a consistent definition of a third degree tear was adhered to. In addition, the level of satisfaction of trainee doctors and qualified midwives with regard to training in the repair of perineal lacerations was assessed.	A random selection of 75 midwives and 75 doctors were interviewed and a questionnaire was filled out. The same person interviewed all participants.	Considerable variation in the definition of a third degree tear. Less than 20% of doctors and less than 48% of midwives considered their training in perineal anatomy, perineal repair and recognition of anal sphincter tears to be of a good standard. Most doctors and midwives were not aware that anal incontinence was an important problem following birth. Up to a third of the midwives who participated did not perform rectal examinations on assessment or after repairing the perineal tear. Only 16% of midwives and 34% of doctors had come across women with obstetric related anal incontinence.
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OASI = Obstetric anal sphincter injury.

**Table 3.** Quality judgment of included studies.

Study	Title and abstract	Relevance of introduction	Presentation of results	Adequacy of discussion	Strengths and weaknesses
Bick <i>et al.</i> 2012 UK Ref [26]	Question in title is answered in the conclusion. Abstract is structured and adequate.	Relevant introduction. Describes earlier research and identifies the research problem. Introduction does not contain a hypothesis.	Aim is addressed and results are presented with both tables and quotations from the questionnaires.	Findings are discussed in the context of previous research. Discussion addresses weaknesses in the methodology of the study.	+Important focus finding out how well practice reflects evidence based guidelines. +Random selection of midwives. +Clear description of statistics used. +Large study. -Low response rate.
Cornet <i>et al.</i> 2012 Spain Ref [27]	Title is long but describes the study well. Abstract presents the aim in the background, but contains no background on the problem. The abstract summarises the method, results and conclusion adequately.	Relevant introduction. It uses earlier research to provide arguments for this study. The study has a clearly formulated hypothesis.	Aim is addressed and results are presented in descriptive statistics. The methods and how the results were analysed are well described. The questionnaire is presented in the study which makes it reproducible and clear to the reader.	Discussion is relevant and argues well for the findings. Findings are discussed in the context of other studies. Discussion addresses weaknesses in the methodology of the study.	+Questionnaire sent to all residents in the area. +Clear description of statistics used in the analysis. +Questionnaire presented in the article. -No test of actual knowledge, e.g. the question “do you know the perineal muscles” required only a yes/no answer. -The data is analysed in blocks and on the issue of perineal anatomy only one question represents the block. As a reader it’s not possible to find out answers on the other questions in the block. -Low response rate.
Mutema UK 2007 Ref [28]	Title from Dickens is probably a metaphor for the lack of emphasis on midwives as opposed to physicians receiving training in assessment and repair of perineal tears, despite the fact that midwives assess the majority of tears in the UK. Abstract clearly and concisely summarises the content of the article.	Relevant introduction. It uses earlier research to provide arguments for the need for this study. Introduction does not contain a hypothesis. Introduction points out the gap in knowledge that supports the need for the study.	Aim is addressed and results are presented as descriptive statistics in diagrams and tables as well as in text.	The discussion is relevant and argues well for the findings. Findings are discussed in the context of other studies. The discussion addresses weaknesses in the methodology of the study.	+Important to highlight the need of correct classification of all perineal tears and midwives’ role in assessing perineal tears. -No description of the statistic methods used. -Unclear how many declined or didn’t finish the questionnaire. -No way of ensuring that midwives did not discuss with one another. -In diagrams difficult to read exact numbers or percentages. This is not presented with accuracy in the text either.

## Continued

Andrews <i>et al.</i> 2005 UK Ref [22]	Title is adequate for part of the study but does not describe that the study also investigates knowledge in perineal anatomy and classification of perineal tears. There is no introduction to the problem presented in the abstract. No conclusion in the abstract.	Relevant introduction. It uses earlier research to provide arguments for this study. Introduction does not contain a hypothesis.	Aim is addressed and results are presented in descriptive statistics. There is no comparative analysis between midwives and doctors. The group was analysed together due to the small number of participating doctors.	Discussion is relevant and argues well for the findings. Findings discussed in the context of other studies. Authors discuss the practical implications of the study to clinical practice. Discussion addresses weaknesses in the methodology of the study.	+Good arguing in the discussion. +The questions are presented in the article. -The researcher arranging the course is the one performing the evaluation, and could therefore be biased. -Questions mostly about perineal tears grade three and four. However, the course is on repair of episiotomy and second degree tears. -Participants of the course might be the ones lacking knowledge more than nonparticipants.
Fernando <i>et al.</i> 2002 UK Ref [29]	Title is adequate and describes the content of the study.  Abstract presents the aim but contains no background on the problem. Method, result and conclusion summarised adequately.	Relevant introduction. It uses earlier research to provide arguments for the need for this study. Introduction does not contain a hypothesis.	The literature review and survey are presented in combination. It makes it easy to follow for the reader. Aim is addressed and results are presented in descriptive statistics.	Discussion is relevant and argues well for the findings.  Findings are discussed in the context of other studies.  No discussion on the study's method.	+Interesting with literature review and investigation of coherence to evidence based practise. +Clearly presented statistics. +Large study. -No way of knowing if the participants answered the question on classification out of knowledge or if they looked it up or discussed the correct answer with colleagues. -Low response rate. -No methods discussion.
Sultan <i>et al.</i> 1995 UK Ref [30]	Title is adequate and describes the content of the study.  No introduction to the problem in the summary. The description of aim, method, results and conclusion is adequate.	Introduction does not argue for the need of the audit except for the commonness of perineal tears and the complications perineal trauma can impose on women. Introduction does not contain a hypothesis.	Aim is addressed and results are presented in descriptive statistics. There is no comparative analysis between midwives and doctors.	Discussion is relevant and argues well for the findings.  Discussion is educational and a reflection on the confusion on definitions of perineal tears. No discussion on the study's method.	+The study presents how the midwives and doctors consider the training received, along with current knowledge. +Interviews performed to ensure good understanding of questions. +Random selection of study objects. -No description how random selection was performed. -No comparative analysis between midwives and doctors. -No methods discussion.

between the number of years as a qualified midwife and higher band (more senior clinical post) and confidence in assessing perineal trauma. There was no correlation between level of confidence and model of maternity care or location of care. When midwives were asked whether they always performed rectal examination as routine when assessing perineal trauma less than half of the midwives (42.4%) did this "all" the time, 13.1% "most" of the time, 27.2% "some" of the time and 17.3% "never" performed a rectal examination when assessing perineal trauma. Higher band was associated with a higher number of midwives performing rectal examination "all" the time. There was no association between years as qualified midwife, model of care or location of practice and rectal examinations.

The Spanish study by Cornet *et al.* [27] found that 91% of the residents thought it was necessary to receive more theoretical training and 98% thought there was a need for a theoretical-practical course on pelvic floor anatomy and on the repair of perineal injuries. Mutema [28] found that 90% of the midwives in the study felt inadequately prepared to assess or repair perineal tears in both units. All of the midwives would have liked to attend a course in assessment and repair of perineal tears if the trusts facilitated it. Andrews *et al.* [22] found that 24% of the midwives and doctors thought their training was poor when performing their first unsupervised perineal repair; another 40% thought it could have been better. Fernando *et al.* [29] did not find any research in the literature review on studies comparing different

methods of training. The survey disclosed that 64% of consultants and trainees reported either lack of or unsatisfactory training in the management of perineal tears grade three or four. Finally, Sultan *et al.* [30] revealed that only 39% of the midwives and 16% of doctors thought their training in recognising a third degree perineal tear was of good quality when performing their first unsupervised perineal repair.

### 3.4. Synthesis of the Research Findings

These findings point out a lack of knowledge in perineal anatomy among both doctors and midwives. This deficiency in anatomic understanding leads to impaired assessment of perineal tears grade 1 - 4 following vaginal birth. This adversely affects the ability to classify correctly and a large proportion of both doctors and midwives make errors in the classification of the injuries. Both professions perceive they have inadequate knowledge in the topic of perineal assessment after childbirth, experience that they lack training in the assessment of perineal injuries and consider their clinical training under the supervision of experienced tutors to be insufficient. This insecurity among professionals highlights a need for a more in-depth theoretical knowledge as well as improved clinical training for both professions. There is also a strong focus in the literature on the less frequent perineal tears, grade three and four, and little scientific or health care focus on the most common perineal injuries grade one and two that a majority of postnatal women suffer from after childbirth.

## 4. DISCUSSION

Considered individually, all of the studies included in this review have methodological flaws (**Table 3**). When considered together, the flaws do not outweigh the evidence produced to support the need for better training in perineal anatomy, and assessment and classification of perineal tears. None of the studies were of very high quality due to different methodological problems, lack of validated questionnaires, no control of whether the responders discussed or looked for the correct answer and small study populations. The fact that the healthcare professionals themselves perceive that their knowledge and training is inadequate is enough to conclude that training needs to be better. Studies with the aim of finding out the true prevalence of occult third and fourth degree tears strengthen the validity of the findings in this review. In these studies an expert re-examined the perineal tears that had been assessed and classified by the midwife or doctor that assisted the birth and found that a large part of the so called occult third and fourth degree tears were in fact overt [1,2].

It is a concern that midwives and doctors do not know

the correct names of the muscles involved when performing an episiotomy, the most common surgical procedure in obstetrics [30]. It can be argued that it is less important that healthcare professionals know the correct names as long as they assess and suture the perineal tears correctly. On the contrary it can also be argued that it is essential to have a precise language that enables professionals to communicate knowledge, perform research and develop skills. In order to evaluate the effectiveness of different methods and to improve the standard of knowledge it is important to establish good procedures in how the evaluation process can be validated.

Many questions remain unanswered because of weak descriptions in the methods. In most studies it was not possible to control whether healthcare professionals communicated or searched for correct answers before filling out the study questionnaire [22,28,29]. A strong point is that in all studies the midwife or doctor was asked about their own perception of their training and knowledge in perineal assessment. Five studies were from the UK and one from Spain. This makes it difficult to evaluate the generalizability of the studies since education and practices vary between different countries [30].

It is important that more research on the topic of knowledge in assessment and classification of perineal tears is carried out. The Description of Essential Competencies for Midwives from the International Confederation of Midwives (ICM) [31] includes principles for prevention of pelvic floor damage and perineal tears, indications for performing an episiotomy, principles underpinning the technique for repair of perineal tears and episiotomy, skills to perform an episiotomy when needed and to repair first and second degree perineal or vaginal lacerations as well as an episiotomy if needed. These skills are listed as basic and essential for midwives. However, knowledge of perineal anatomy, rectal palpation and ability to classify perineal tears are not mentioned [31]. McLennan *et al.* [23] revealed that a majority of four-year residents received no formal training in pelvic floor anatomy or episiotomy repair and had insufficient supervision when engaged in such activities. Furthermore, Nielsen *et al.* [32] who performed a study on Objective Structured Assessment for Technical Skills for episiotomy repair found that 60% of residents who failed because of technical skill did so because they did not fully evaluate the injury either before or after repair.

An alarming finding in this review is that a majority of midwives and doctors felt inadequately trained in perineal anatomy and assessment of perineal trauma. This shows the importance of conducting research on the best methods for training in assessment of perineal tears. There is also a need for research on assessment and classification of perineal tears grade one and two, which are

the most common tears [4] and to determine the golden standard for assessing perineal tears. It would improve the credibility if a validated questionnaire was created to be used as a measuring tool before and after interventions so that studies can be reproduced in different countries. In Norway a randomised controlled trial is currently being carried out with the aim to investigate consistency between midwives' classification and estimation of the size of the perineal tear, with and without a tool to assist the assessment of the tear (Clintrials.gov ID. NCT01278979).

### Methodological Considerations

Searches in databases is a common and efficient way to find publications, but there are recognised limitations associated with inconsistent search terminology and indexing problems which may yield only about 50% of the eligible studies [24,33]. The searches on knowledge in assessment and classification of perineal tears proved to have an inconsistent search terminology which made the database searches alone an unreliable source to use for finding articles on the topic requiring that a large number of titles and abstracts had to be read through. Therefore, reference lists in relevant studies found were scrutinised and the search was extended with new search terms. One problem with the topic of perineal tears is that many studies in obstetrics have perineal tears as a secondary outcome measure, but the primary outcome may be on birth positions, augmentation or instrumental deliveries. It proved to be hard to keep these studies out despite using combinations of search terms aimed at narrowing the search to the specific topic of knowledge in assessment and classification of perineal tears. Another problem that occurred was that almost all research done on the topic assessment/diagnosing and classifying of perineal tears focuses only on perineal tears grade three and four. Even though congruence of the incidence of these tears remains uncertain they represent a small proportion of all tears diagnosed clinically [18]. On the topic of the current knowledge among healthcare professionals when assessing perineal tears it was not possible to find randomised controlled trials.

To evaluate the quality of the studies a guide of overall critique from Polit and Beck was being used [25]. Peer-reviewed studies were not used as a limitation for the search in CINAHL because by including all studies, even those of poor quality, it is possible to map out what is good and bad with earlier research [33]. Quality scoring in observational studies is as controversial as it is in randomised controlled trials and may lack demonstrated validity and therefore affect the validity of the results [24]. In this review the quality of the studies is discussed but there is no attempt to follow a quality scoring. Due to the non-experimental design in the studies found on the

topic of assessment of perineal tears this review is presented as an integrative review.

### 5. CONCLUSIONS

The findings in this review provide evidence that healthcare providers lack adequate training in assessment and classification of perineal tears and in perineal anatomy. The training of healthcare professionals in assessment and correct classification of perineal tears is urgent. Midwives are often the first, and many times the only, to assess and classify perineal tears. Therefore, they are in a unique position to improve the standard of care in this field.

The consequences for the women who suffer from incorrectly assessed and classified tears, and as a result receive wrong treatment, may be both personal suffering and increased health care costs due to need of re-suturing or incontinence treatment. There are also legal aspects where incorrect treatment may lead to litigation issues.

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