Title

Testing an Online Training Session on Couples' Perinatal Sexual Changes among Healthcare Professionals and Paraprofessionals

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PRÉCIS

A brief online training session offered to perinatal healthcare workers improves their knowledge, attitudes and perceived counselling skills regarding couples' sexual changes during and after pregnancy.

ABSTRACT

Introduction: During and after pregnancy, couples have to adapt to sexual changes. While many couples have questions and preoccupations regarding those changes, they are rarely addressed by professionals and paraprofessionals in perinatal healthcare, mainly because of lack of knowledge and training. An online training session that addressed couples' perinatal sexual changes tailored for healthcare perinatal professionals (nurses and midwives) and paraprofessionals (doulas) was developed, implemented, and evaluated. **Methods**: Participants completed four steps: 1) a baseline (T1) online questionnaire assessing training needs and measures on knowledge, attitudes, and perceived counselling skills regarding couples' perinatal sexual changes; 2) a two-hour online training session on the topic with theoretical and practical content; 3) an online post-training satisfaction questionnaire; and 4) a one-month follow-up (T2) assessment using the same measures as in T1. **Results**: Of the 74 participants (20 nurses, 20 midwives, 34 doulas) who completed the study, 37.8% had previous training in sexuality and 18.9% in perinatal sexuality. Results showed pre- to post-training significant increases in knowledge and attitudes towards couples' perinatal sexual changes, characterized by more positivity, flexibility, openness, and sense of competence regarding the topic. There were also significant pre- to post-training increases in perceived utility, comfort, intention, and sense of self-efficacy related to counselling skills regarding couples' perinatal sexual changes. After training, more participants discussed couples' sexual changes with couples during and after pregnancy. After training, significantly fewer participants reported lack of knowledge, lack of training, and lack of discomfort as barriers to discussions on couples' perinatal sexual changes,

while more reported lack of time as a barrier. Global satisfaction towards the training was high. **Discussion**: This training can help foster more discussions on the topic from perinatal professionals and paraprofessionals to better meet couples' needs for information and support.

KEYWORDS

Sexual Health; Childbirth Education; Midwifery Education; Preventive Health Care; Public Health

QUICK POINTS

- Couples experience multiple sexual changes during and after pregnancy.
- Sexual changes are rarely addressed by healthcare providers, due to a lack of knowledge.
- An online training session on couples' perinatal sexual changes for nurses, midwives and doulas was created.
- After training, participants showed better knowledge, attitudes, and perceived counselling skills.
- Training healthcare providers can help perinatal professionals and paraprofessionals better meet couples' sexual needs.

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INTRODUCTION

Couples' relationships and sexual well-being are affected by multiple changes during and after pregnancy. Recent reviews have highlighted sexual changes that can occur in couples during the perinatal period.[1-6] Despite variability in reported experiences and exceptions, a gradual downward trend in most sexual behaviors (e.g., frequency of intercourse and other sexual activities) is observed during pregnancy (with a marked decrease in early and late pregnancy), followed by a relatively inactive period of sexual behaviors in early postpartum, and then a gradual increase in sexual behaviors throughout the first year following the birth and beyond. This pattern is also likely followed by general sexual function, including the dimensions of sexual desire, arousal, orgasm, pleasure, and sexual satisfaction, which can in turn lead to the development or worsening of sexual problems (e.g., lack of desire, dyspareunia) during the perinatal period. Changes in sexual behaviors and sexual function are simultaneously influenced by physiological (e.g., fatigue, pain, pelvic tears), psychological (e.g., depression, fears, beliefs) and socio-cultural (e.g., religion) factors, and these changes affect all genders.

Because the perinatal period can pose challenges in terms of sexuality, pregnant and postpartum couples must adapt to changes in their sexual lives. Although pregnant and postpartum individuals who are not in a coupled relationship may also experience sexual changes, the couple's sexual adaptation during and after pregnancy is important because sexuality is an essential element of the couple's relationship and is intrinsically linked to the quality and stability of the relationship.[7-9] Moreover, in their study of 261 pregnant women, Vannier and Rosen found that experiencing more sexual distress and sexual problems was associated with lower sexual and relationship satisfaction, highlighting the interdependence of sexuality and relationship well-being.[10] Furthermore, the quality of the relationship can in turn affect – in the short, medium and long term – the well-being, quality and stability of the family,

the parent-child relationship, as well as the child's emotional, social and cognitive development.[8,9,11] In sum, a well-adjusted sexual relationship can foster the couple's relationship during periods of multiple sexual changes, such as in the perinatal period, which in turn can foster the family's and the child's development.

Faced with sexual changes during and after pregnancy, many couples have questions and concerns. They want to be informed, supported, reassured (especially regarding the normality and transience of the sexual changes), helped, advised, and referred to specialized resources if necessary.[1,2,4,5] Studies have in fact noted that sexual issues and concerns are highly common after pregnancy [9,12] and distress associated with those issues is also common during and after pregnancy [9,10]. However, couples do not tend to discuss the topic with healthcare professionals for various reasons, including discomfort and the perception that healthcare professionals should be the ones initiating the discussion about sexuality.[1,2]

Since sexuality is recognised as an integral part of human health [13], many authors have suggested that all perinatal healthcare providers (including midwives, doctors, nurses, childbirth educators, and lactation consultants) should address sexuality during their consultations with future and new couples. [4,12,14,15] Due to their close relationship with patients which unfolds throughout the pregnancy and after birth, maternity care providers including midwives have a unique opportunity to address sensitive topics such as sexual health issues during the perinatal period.[15,16]

Yet, despite knowledge about the importance of addressing sexuality during the perinatal period, couples' perinatal sexual changes are rarely addressed by professionals and paraprofessionals in perinatal healthcare classes, programs, consultations, and follow-up visits.[14,17,18] In an Australian longitudinal study, Woolhouse and colleagues found that less than one-quarter of 1507 women reported being asked directly about their sexual health by a general practitioner in the first three months postpartum, and only 13% reported being asked by a nurse about sexual problems since birth.[19] Furthermore, discussing sexual concerns is rarely done by nurses in general practice.[20,21] As for midwives, discussions about sexual issues with patients are also limited during and after pregnancy.[7,22] Although midwives in a qualitative

study from Sweden believed in the importance of incorporating sexuality into their clinical practice, they described many barriers preventing them from doing so.[15]

Perinatal healthcare providers are faced with multiple obstacles when discussing sexual issues with patients, including: discomfort; lack of time; fear of addressing such an intimate, private, sensitive and taboo subject; perception that sexuality is a non-priority subject; and lack of support at the managerial level.[15,17,22] Moreover, one of the main reasons endorsed by perinatal healthcare providers is the perception of lack of knowledge and training in human sexuality, which is linked to the lack of experience and counselling skills regarding perinatal sexuality (e.g., skills needed for counselling and assessing sexual changes and problems in couples during and after pregnancy).[17] Nurses in general practice have reported poor or insufficient knowledge and training in sexual health.[21,23] Lack of knowledge and training is also a recurrent obstacle perceived by midwives in discussing sexual issues with patients.[15,22] Two recent Canadian studies with midwives found that their training in human sexuality is limited and that they perceived a gap in their knowledge, which does not prepare them adequately to encounter a range of sexual issues within their practice.[7,16]

Providing tailored training regarding couples' perinatal sexual changes could help address these problems and the training needs of perinatal healthcare providers. With more knowledge and training, healthcare providers could more easily respond to the needs of couples for increased information and support about sexual changes during the perinatal period. Therefore, the goal of this study was the development, implementation, and evaluation of a new online training session that addressed heterosexual couples' perinatal sexual changes. The training was designed for perinatal healthcare professionals (nurses and midwives) and paraprofessionals (doulas).

METHODS

This study was approved by the Comité d'éthique de la recherche du Centre intégré universitaire de santé et de services sociaux de l'Estrie – Centre hospitalier universitaire de Sherbrooke (CIUSSS de l'Estrie – CHUS), in Sherbrooke, Quebec. Recruitment of nurses,

midwives, and doulas took place from January 2017 to September 2017 through multiple sources, including professional associations, medical clinics, and paraprofessional organizations. Participants who were interested in the study contacted the principal researcher by email. Eligible participants (18 years and older, presently working as a nurse, a midwife or a doula in the province of Quebec) were then invited to access the web-based platform *Qualtrics* to take part in the study. A letter of information and a consent form were presented to participants on the first page of the online questionnaire and informed consent was obtained from all participants before accessing the main questionnaires of the study.

Participants completed the 4 stages of the research project over the course of two months: 1) an online baseline questionnaire (T1) assessing sociodemographic information, training needs, and knowledge, attitudes, and perceived counselling skills related to couples' perinatal sexual changes (30 minutes); 2) a 2-hour online training session (i.e., a webinar; interactive online training) that focused on the development of knowledge and counselling skills, with an additional professional reflection component; 3) a one-week post-training online satisfaction questionnaire (10 minutes); and 4) a one-month post-training online questionnaire (T2) that included the same measures of knowledge, attitudes and perceived counselling skills assessed at T1 (15 minutes). A pre-test post-test design was used to compare changes between before and after the online training session.

Participants' sociodemographic profiles were assessed with 12 questions, including questions about their training and current employment status. Training needs were assessed with 5 questions, including previous training in sexuality and perinatal sexuality and expectations about the online training session. Knowledge of couples' perinatal sexual changes was measured with the first part of the *Polomeno's Perinatal Sexuality Questionnaire* that includes 61 true-false items.[24] Questions presented different facts (true and false) related to perinatal sexual changes (physiologic and psychological), such as "A fetus is always calmer after its mother has had an orgasm", "Most couples resume sex 8 weeks after childbirth", and "The risk of domestic and sexual violence increases during pregnancy". Correct answers are summed and transformed into percentages, with possible scores ranging from 0 to 100, and higher scores representing better knowledge. Attitudes about including and discussing couples'

perinatal sexual changes and problems with patients in professional consultations were measured with the second part of the same questionnaire that includes 59 items rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).[24] Items regarding attitudes referred to the importance that the health professional gives to the subject in professional consultations (e.g., "Sexuality is a concern for new parents"), and the professionals' degree of comfort and openness to integrate and discuss the subject with patients during consultations (e.g., "I feel comfortable discussing sexuality during pregnancy with the 2 partners present"; "I avoid answering questions relating to perinatal sexuality"). Possible scores range from 59 to 295, with higher scores demonstrating more positive attitudes about including and discussing perinatal sexual changes with patients in professional consultations, reflected by more flexibility, openness, and comfort regarding the subject. Face and content validity for the *Polomeno's Perinatal Sexuality Questionnaire* has been demonstrated.[24] Internal consistency was good for both parts of the questionnaire: Cronbach's alpha for attitudes was .85 and the Kuder-Richardson-20 Formula index for knowledge was .81.

Perceptions regarding perinatal sexuality counselling skills (e.g., skills needed for counselling and assessing sexual changes and problems with couples during and after pregnancy) were measured with a questionnaire designed for this study, that includes 48 items inspired by Raymond's work on healthcare professionals' attitudes toward sexuality.[25] This questionnaire assessed 4 dimensions of the professionals' perceptions regarding their counselling skills: 1) perceived utility ("Regarding perinatal sexuality, do you think it is necessary to…"), 2) comfort ("Regarding perinatal sexuality, are you comfortable…"), 3) intention ("Regarding perinatal sexuality, do you have the intention to…"), and 4) sense of self-efficacy ("Regarding perinatal sexuality, do you feel able to…"). For each dimension, 12 counselling skills used with patients during professional consultations were evaluated. The complete list is presented in Table 1 and includes initiating the discussion, discussing, questioning, informing, answering questions, suggesting solutions, evaluating, and referring. For example, participants expressed their degree of comfort with initiating the discussion on sexual changes and problems during and after pregnancy with patients, then their degree of comfort discussing the matter with patients during their professional consultations, and so on for each of the 12 skills.

Each answer is assessed on a Likert-type scale ranging from 1 (Absolutely not) to 7 (Absolutely). For each of the 4 dimensions, mean scores of the 12 skills were computed, with higher scores corresponding to better perceived counselling skills regarding couples' perinatal sexuality. A composite score of general perceptions of counselling skills, including all 4 dimensions, was also computed. Cronbach's alphas show good internal consistency for general perceptions (.97) and for all dimensions individually (perceived utility=.92; comfort=.93; intention=.94; sense of self-efficacy=.94).

The online questionnaire also included a question that evaluated the participants' frequency of discussion about sexual changes and problems with patients during the perinatal period, on a Likert-type scale ranging from 1 (Yes, always) to 5 (No, never). An additional option was also considered for participants who did not have direct contact with patients, but data is not presented here. Barriers regarding discussing couples' perinatal sexual changes with patients was also measured using a 10-item list developed to cover 10 major obstacles reported by professionals in the perinatal sexuality literature. The 10 obstacles listed were: lack of time; lack of knowledge; lack of training; lack of experience; it is not part of my job; discomfort; intimate, private, sensitive and/or taboo subject; sexuality is not a priority; the patient would be uncomfortable; and another professional in my workplace already does it. Each barrier included a binary yes/no option and participants could choose multiple choices.

After training, participants completed an online satisfaction questionnaire. Overall satisfaction regarding the training was first evaluated with 1 item on a 4-point Likert scale from 1 (Completely satisfied) to 4 (Completely unsatisfied). Satisfaction about the training was also evaluated with a questionnaire of 19 questions rated on a 4-point Likert scale ranging from 1 (Strongly disagree) to 4 (Strongly agree). Satisfaction items evaluated general and personal attainment of the training' 3 objectives, content, facilitation techniques, length, format and the group leader's capacities. Using the same scale, participants were also asked to evaluate the perceived effect of the training on their intentions and counselling skills during professional consultations, and were asked if they would recommend the training.

The online training session consisted of a 2-hour group interactive webinar on the platform WebEx. Considering the delicate and sensitive topic discussed in the training, a

maximum of 10 participants were invited per group.[26,27] The group leader, who was also the principal researcher of this study, had training in sexology and experience in group engagement and in working with couples facing sexual changes during the perinatal period. The development of the online training session was based on a multi-level approach that was consistent with the latest Canadian Guidelines for Sexual Health Education [28]. Grounded in the information-motivation-behavioral skills model (IMB model), this approach promotes multiple-level sexual education by focusing simultaneously on knowledge (information), motivation (attitudes, which includes comfort and beliefs), and behavioral skills (including intention, self-efficacy, communication, and resources). [28] This multi-level approach is also promoted by the World Health Organizations' critical sexual health curriculum for health professionals [29], which identifies 4 pillars of sexual education for all healthcare professionals: attitudes (including comfort), knowledge, skills, and values. Previous studies on midwives' and nurses' training in sexuality have highlighted the association between these core concepts: more knowledge on sexuality is associated with more positive attitudes (including comfort), which is also linked to a better a better sense of self-efficacy and more confidence. [16,23,30] This approach takes in consideration that all three components are interrelated and inter-influence one another; a comprehensive sexual education program should therefore include all 3 components. Therefore, the online training session had three objectives: 1) improve knowledge regarding couples sexual changes during and after pregnancy; 2) improve professional attitudes towards the topic, which relies on fostering a positive attitude of comfort, openness, and flexibility towards the subject; and 3) improve actual and/or anticipated perceived perinatal sexuality counselling skills (e.g., skills needed for counselling and assessing sexual changes and problems with couples during and after pregnancy).

The online training session had 3 major sections, as well as an introduction and a conclusion. After the group leader's personal presentation (background, qualifications, interests, etc.), the importance of talking about sexuality and perinatal sexuality (e.g., couples sexual changes during and after pregnancy) was discussed. The couples' and professionals' perceptions of perinatal sexuality were then briefly overviewed, with the presentation of the training objectives, thus completing the introduction. The first major section of the training

session was a lecture presentation covering theoretical content on perinatal sexuality changes during the entire perinatal period (the what). Changes in sexual activities, desire, satisfaction, the relationship, and other sexual variables throughout pregnancy, labor and birth, postpartum, and the breastfeeding period were presented. Physiologic, psychological and socio-cultural factors affecting the couples' sexual lives were also discussed. The second part of the online training session offered content on perinatal sexuality counselling skills (the how). After the presentation of general sexual intervention models, key steps of a good professional consultation in perinatal sexuality were presented. For example, the first step is initiating the discussion and includes asking permission to the patient to discuss sexuality, and then normalizing sexual changes in the perinatal period. The training continued with examples of key sentences and questions that could be used in different parts of the consultation, such as when initiating a discussion about sexuality. Lists of resources, references and further training opportunities in human sexuality were also shared with the participants, facilitating the referral process and the professionals' continuing training. In the third part of the online training session, participants were presented with 3 case scenarios depicting typical sexual experiences encountered by couples during the perinatal period. Participants reflected on these scenarios and discussed possible actions, obstacles, and facilitating factors for each case. At any time during the training, participants were invited to ask questions or share personal reflections and experiences. Participants received a PDF version of the presentation after the training for future reference.

To evaluate the short-term impact of this online training session on perinatal healthcare professionals' and paraprofessionals' knowledge, attitudes and perceived counselling skills, descriptive analyses, non-parametric tests (McNemar's test for binary variables and Friedman's test for ordinal variables to compare them between two time points) as well as paired *t* tests with bootstrapping were conducted with SPSS 25. A bootstrapping procedure (with 1000 samples) was used in all analyses to alleviate any doubts on statistical assumptions and to present robust estimates of the between-time difference, which include effect sizes (an effect size of .5 is considered a medium effect and .8 a large effect). Variables that were not normally distributed were subject to non-linear transformation by reflection and squared mean at T1 and

T2 to obtain normality. According to GPower [31], the sample size needed for those parametric tests to reach a statistical power of .80 with an alpha level of .05 was 27.

RESULTS

A total of 87 participants were recruited, but 13 dropped out at different points in the study because of a lack of time or schedule conflicts. Participants who did not complete the study included nurses (n=8), doulas (n=3), and midwives (n=2). In the end, 74 of participants (85.1% retention rate) completed all 4 phases of the research and were included in this analysis: 20 nurses (27.0%), 20 midwives (27.0%) and 34 doulas (45.9%). All 74 participants were from Quebec, Canada, and were between 21 and 65 years old (M=36.31, SD=9.60). As for work experience, nurses had 1 to 37 years of practice, while midwives had 8 months to 19 years, and doulas had 3 months to 21 years of practice. Table 2 presents other participants' sociodemographic characteristics. Only 28 participants (37.8%) had received previous training in sexuality and 14 (18.9%) had received previous training in perinatal sexuality.

Preliminary analyses revealed no significant difference between the 3 types of professions in the participants (nurses, midwives, and doulas) regarding all studied variables (knowledge, attitudes, practices; $P>.05$). Thus, the 3 professions were combined together and analyses were performed on the entire sample. While all 3 professions may not have the same training requirements, additional analyses were also done excluding doulas from the sample, then comparing them to nurses and midwives together. Since results were similar, doulas were included in the final sample.

All variables were normally distributed at T1 and T2, except for knowledge, intention, and general perceived counselling skills. One-month after training, participants significantly increased their knowledge about perinatal sexual changes experienced by couples, had more positive attitudes regarding discussing and including the topic in their consultations, and improved on all 4 dimensions of perceived counselling skills: the perceived utility of discussions and consultations on couples' perinatal sexual changes, the comfort towards those actions, the

intention of being more proactive regarding those discussions and consultations, and the self-efficacy regarding those actions all increased (Table 3).

Friedman's test revealed that participants discussed couples' perinatal sexual changes more often with couples after the training ($\chi^2(1, N=70) = 12.10, P<.001$). More precisely, the proportion of professionals who always discussed the topic with patients increased from 10.8% to 12.9%, and those who discussed it often, from 24.3% to 42.9%. Conversely, the percentage of participants who sometimes discussed couples' perinatal sexual changes decreased from 27.0% to 22.9%, rarely from 27.0% to 17.1%, and never from 6.8% to 1.4% post-training.

Participants continued to report some barriers to discussing couples' perinatal sexual changes and problems with patients after training, but McNemar's test revealed significant differences for 4 barriers only (Table 4). One month after training, fewer participants reported lack of knowledge, lack of training, and discomfort as barriers to perinatal sexuality discussions about couples' perinatal sexual changes. In contrast, more participants reported lack of time as a barrier to sexual discussions one month after training.

Finally, overall satisfaction regarding the online training session was high, with 48 (65.8%) participants being very satisfied, 22 (30.1%) rather satisfied, 1 (1.4%) rather dissatisfied, and 2 (2.7%) very dissatisfied. More particularly, 93.2%, 93.2% and 89.2% of participants respectively, agreed that the 3 training objectives (increase knowledge, attitudes and perceived counselling skills) were attained. Most of participants also agreed that this training improved their knowledge (91.9%), their attitudes (93.2%), and their perceived counselling skills (89.2%) related to couples' perinatal sexual changes. A positive impact of the training on their professional practice was perceived by 95.9% of the participants, while 93.2% of them intended to apply their newly learned skills in their work. Content was judged adequate and relevant by 94.6%, and 90.5% said it met their needs. Facilitation techniques (i.e., group engagement techniques) were considered helpful to the learning process for 89.2%, whereas 73.0% considered they promoted active involvement. The proposed exercises and learning activities were appreciated by 78.4% of the participants, the training's length was judged adequate by 89.2%, and the training format was judged adequate by 93.2%. The group leader's capacity to clearly and dynamically communicate with participants was underlined by 95.9% of

participants. Finally, a total of 95.9% of participants would recommend this training session to their colleagues, and 94.6% thought this training session should be offered to all perinatal professionals.

DISCUSSION

The findings of this study suggest that a 2-hour online training session on couples' perinatal sexual changes can have a positive impact for the professional practice of healthcare professionals and paraprofessionals in the short-term (1 month). The results indicate that following participation in this novel online training session, midwives, nurses, and doulas had better knowledge on sexual changes and problems in the perinatal period and had more positive attitudes towards including and discussing perinatal sexual changes and problems with patients during professional consultations, which translated into more comfort, openness, flexibility, and a sense of competence regarding counselling skills related to the subject. Perinatal healthcare providers also showed better perceived counselling skills in professionals consultations: after training, they felt it was more necessary to include discussions and consultations about couples' perinatal sexual changes in their regular practice, they felt more comfortable doing so, they reported higher intentions to do so, and they felt they were better equipped and able to do so. Moreover, participants engaged in significantly more active discussions around couples' perinatal sexuality with their patients following the training, feeling that lack of knowledge, lack of training and discomfort regarding sexuality had decreased as barriers to discussions.

Although more participants acknowledged the importance of addressing sexuality with couples in the perinatal period, more participants also reported the lack of time as a barrier to discuss sexuality with patient following the online training session. With increased knowledge, positive attitudes, and perceived skills to incorporate sexuality into their clinical practice, participants could have felt they had less time to explore everything they had learned and now wanted to include in their consultations. Since the lack of time is not necessarily under the sole

control of the healthcare provider, it seems important that this barrier be taken into consideration at the managerial level when planning perinatal healthcare consultations.[15,17]

It is nonetheless difficult to compare the results of this study to other studies, since published results regarding similar training initiatives offered to perinatal healthcare workers remain scarce. Training for nurses about general sexual healthcare has been evaluated to some extend and results suggest similar improvements in knowledge, attitudes and discussions regarding general sexuality following training.[23] However, a focus on couples' perinatal sexual changes is nonetheless missing in the current literature. When specific training programs that address couples' perinatal sexual changes are evaluated, perinatal healthcare workers are not the targeted population for those training and the variables for comparison are therefore not the same. For example, Heidari and colleagues [32] evaluated an educational intervention for pregnant couples, which improved their sexual function and satisfaction, while Bahadoran and colleagues [33] concluded that both face-to-face education or group education benefit couples when it comes to sexual education during pregnancy, with a positive effect on sexual function in men and women. In both cases, unfortunately, comparison with results from this study is futile. As such, this study contributes to reducing the gap in the literature on the subject, with a unique focus on training perinatal healthcare workers regarding couples' perinatal sexual changes.

While some participants reported some technical problems with the online platform used for the online training session (*WebEx*), the online format itself was greatly appreciated and made it more easily accessible to participants from all over the province of Quebec, Canada. Considering time and geographic constraints associated with traditional in-person training, an online training session can be a useful method of training for healthcare professionals. The practical portion of the online training session was also appreciated by many: the sharing of concrete and practical tools for counselling was perceived as one of the greatest strengths of the training session. Some participants would have appreciated more time for interactions, discussions and more practical activities, such as role-playing and clinical cases. Hence, this online training session would benefit from an additional hour in a revised future version, allowing more time for these activities. We believe that this is a realistic modification.

Implications

This brief online training session on couples' perinatal sexual changes targeted 3 fundamental components of any healthcare provider's core training in human sexuality: knowledge, attitudes, and perceived counselling skills. Studies focusing on midwives' and nurses' training in sexuality have already demonstrated the importance of acting simultaneously on those 3 dimensions since they are closely linked to one another.[16,23,30] Indeed, more knowledge about sexuality is associated with more positive attitudes (including comfort), which in turn is linked to a better sense of self-efficacy, more confidence, and better counselling skills. It is therefore important to encourage further development of brief training programs like this one, which focuses simultaneously on knowledge, attitudes, and perceived counselling skills for healthcare professionals and paraprofessionals. Such programs could bridge the gaps frequently observed in human sexuality training for midwives and for nurses in general practice.[7,15,16,21-23] Even more, such a training program is consistent with the expected holistic clinical practice guidelines including sexual health during and after pregnancy supported by different professionals healthcare organisations such as the Canadian Association of Midwives [34], the Canadian Association of Perinatal and Women's Health Nurses [35], and the American College of Nurse-Midwives [36].

Healthcare providers need to take a proactive role in addressing and discussing sexuality with couples during the perinatal period.[12,14-16] Before doing so, they first need to know physiologic and behavioral changes and possible problems in sexuality during this period, then develop positive attitudes towards the topic and towards its inclusion in professionals consultations, and finally develop the appropriate counselling skills to deal with patients' sexual changes. A brief online training session like the one developed for this study can facilitate this process and could be integrated in the basic training and continuing education training for any perinatal professional and paraprofessional, including midwives and nurses.[7,15,16,20,21] To follow suit with the results found in this study, a similar online training session on the same topic could be offered to students and residents in midwifery, nursing, obstetrics-gynecology, and family medicine.

By being provided with more opportunities to discuss sexuality during the perinatal period with professionals and paraprofessionals, couples who struggle with sexual concerns and problems during and after pregnancy could gain more information and support on the subject. More opportunities for education, normalization, and reassurance regarding couples' perinatal sexual changes by different perinatal healthcare providers can help meet the sexual needs of couples in times of significant changes in their sexual lives.[3,4,6,9-12,14,19] With more and better knowledge about how sexuality can change around the time of pregnancy and after a child's birth as well as being provided with more support around these issues when needed, couples can better adapt to the sexual changes that can occur during this period, and this can in turn foster a better relationship well-being in both partners.

By using a pre- and post-test design, including a diverse sample of perinatal healthcare providers, and evaluating simultaneously knowledge, attitudes and perceived counselling skills, this study contributed to promote a better understanding of the changes regarding perinatal sexuality in healthcare professionals. However, the study has some limitations. The absence of other perinatal healthcare providers in our sample, such as obstetricians-gynecologists and family doctors, should be taken in consideration and their inclusion in future studies is encouraged. Efforts to recruit these perinatal healthcare providers were unsuccessful, possibly because their professional associations were preoccupied with other priorities at the time of the study. Moreover, the 15% drop-out rate suggests that perinatal professionals and paraprofessionals may have limited time to allow for complementary sexual education, especially nurses whose dropout rate was 28% in comparison to 9% for midwives and 8% for doulas. More details on the reasons for dropping-out could help future recruitment. Should time constraints be one of the main issues, more flexibility and support for training in professionals could be promoted at the management level. The absence of a comparison control group is also a limitation of this study, which is a recommendation for future studies to better isolate the effects of the training.

Whereas the sample size was small, all analyses conducted with this sample revealed good statistical power, even if some effect sizes were weaker (<.5). Another limitation of this study is the length of the follow-up; a one-month post intervention assessment measured only

the short-term impact of the training session. A longer length of time between the training and the post-training assessments (6 months or more) or a longitudinal design with multiple post-training assessments (e.g., one-month, 6-month, and one-year) would allow us to test whether the results are maintained over longer periods of time. It is also important to take into consideration that since the entire sample was from the province of Quebec in Canada, the possible dominant cultural context, still permeated at different degrees with a legacy of the Christian dogma, could have influenced the findings. Finally, while the focus of this article is made on sexual changes affecting heterosexual couples, as is the focus of most of the scientific literature on the sexual changes during and after pregnancy, it is important to recognize and include more diverse relationship configurations and individuals from the lesbian, gay, bisexual, transgender, and queer **communities (LGBTQ+)**.

CONCLUSION

This brief online training session on couples' perinatal sexual changes offered to midwives, nurses, and doulas had a positive impact on their knowledge, attitudes and perceived counselling skills in the short-term. By extension, this can positively impact couples who struggle with sexual changes during and after pregnancy and who need support.

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Table 1. 12 Counselling Skills Evaluated in the Questionnaire on Professionals' and Paraprofessionals' Perceived Counselling Skills Regarding Couples' Perinatal Sexual Changes

Counselling Skills
1. Initiate the subject with the patient
2. Let the patient himself initiates the subject
3. Discuss the subject with the patient
4. Discuss the subject with the patient's partner
5. Question the patient
6. Question the patient's partner
7. Inform the patient
8. Answer questions from the patient
9. Suggest solutions to the patient
10. Evaluate the patient's sexual health
11. Evaluate the patient's partner' sexual health
12. Refer the patient if needed

Table 2. Sociodemographic Characteristics of Perinatal Healthcare Professionals' and Paraprofessionals' Participating in the Online Training Session (N=74)

Sociodemographic Characteristic	**Value**
Relationship status, n (%)[a]	
Single	10 (13.5)
Married	40 (54.1)
Common law	31 (41.9)
In an exclusive relationship, without cohabitation	1 (1.4)
Divorced	4 (5.4)
Ethnic/cultural background, n (%)	
Canadian	64 (86.5)
French	1 (1.4)
African	1 (1.4)
First Nations	1 (1.4)
Other	5 (6.8)
I prefer not to answer	2 (2.7)
Religion, n (%)	
Roman Catholic	31 (42.5)
Protestant	1 (1.4)
No religion	32 (43.8)
Other	5 (6.8)
I prefer not to answer	4 (5.5)

[a] Percentages total greater than 100 because respondents could choose multiple answers.

Table 3. Perinatal Healthcare Professionals' and Paraprofessionals' Knowledge, Attitudes, and Perceived Counselling Skills Regarding Couples' Perinatal Sexual Changes Before and After the Online Training Session (N=74)

Variables	**Time**			
	T1 - Before training mean (SD)	**T2 - 1-month post-training mean (SD)**	***P* Value**	**Effect size**
Knowledge [a]	71.84 (6.00)	84.67 (16.53)	<.001	.71
Attitudes [b]	161.24 (18.74)	175.15 (26.03)	<.001	.65
Perceived counselling skills [c]				
General perception	4.52 (1.06)	5.43 (1.03)	<.001	.69
Perceived utility	4.77 (1.11)	5.49 (1.17)	<.001	.53
Comfort	4.38 (1.26)	5.34 (1.08)	<.001	.66
Intention	4.68 (1.24)	5.44 (1.21)	<.001	.53
Sense of self-efficacy	4.19 (1.23)	5.43 (1.06)	<.001	.83

[a] Range from 0 to 100; higher score represents better knowledge.

[b] Range from 59 to 295; higher score represents more positive attitudes.

[c] Range from 1 to 7; higher score represents better perceived counselling skills.

Table 4. Changes in Time in Frequency of Perceived Barriers to Discussions on Couples' Perinatal Sexual Changes for Perinatal Healthcare Professionals and Paraprofessionals (N=74)

Barrier	**Time**		
	T1 n (%)	**T2 n (%)**	***P* Value**
Lack of time	22 (29.7)	47 (63.5)	<.001
Lack of knowledge	52 (70,3)	26 (35.1)	<.001
Lack of training	54 (73.0)	20 (27.0)	<.001
Lack of experience	25 (33.8)	32 (43.2)	.281
It is not part of my job	2 (2.7)	6 (8.1)	.219
Discomfort	33 (44.6)	17 (23.0)	.003
Intimate, private, sensitive and/or taboo subject	30 (40.5)	19 (25.7)	.072
Sexuality is not a priority	6 (8.1)	9 (12.2)	.549
The patient would be uncomfortable	26 (35.1)	23 (31.1)	.710
Another professional in my workplace already does it	3 (4.1)	1 (1.4)	.500