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Stenfelt, C., Armuand, G., Wanggren, K., Skoog Svanberg, A., Sydsjö, G., (2018), Attitudes toward surrogacy among doctors working in reproductive medicine and obstetric care in Sweden, *Acta Obstetricia et Gynecologica Scandinavica*, 97(9), 1114-1121. https://doi.org/10.1111/aogs.13342

Original publication available at:
https://doi.org/10.1111/aogs.13342

TITLE PAGE

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Running headline

Physicians' attitudes towards surrogacy

CONFLICT OF INTERESTS

None to declare.

ABSTRACT

INTRODUCTION*:* To investigate attitudes and opinions towards surrogacy among physicians working within obstetrics and reproductive medicine in Sweden.

MATERIAL AND METHODS: Physicians working within medically assisted reproduction (MAR), antenatal care and obstetrics were invited to participate in a cross sectional nationwide survey study. The study-specific questionnaire measured attitudes and experiences in three domains: Attitudes towards surrogacy, Assessment of prospective surrogate mothers, and Antenatal and obstetric care for surrogate mothers.

RESULTS: Of the 103 physicians who participated (response rate 74%), 63% were positive or neutral towards altruistic surrogacy being introduced in Sweden. However, only 28% thought that it should be publically financed. Physicians working at fertility clinics were more positive towards legalization as well as public financing of surrogacy compared to those working within antenatal and delivery care. The majority of the physicians agreed that surrogacy involves risk of exploitation of women's bodies (60%) and that there is a risk that the commissioning couple might pay ‘under the table’ to the surrogate mother (82%). They also expressed concerns about potential surrogate mothers not being able to fully understand the risks of entering pregnancy on behalf of someone else.

CONCLUSION: There is a relatively high support among physicians working within obstetrics and reproductive medicine for surrogacy to be introduced in Sweden. However, the physicians expressed concerns about the surrogate mothers’ health as well as the risk of coercion. Further discussions about legalization of surrogacy should include views from individuals within a wide field of different medical professions and laymen.

KEY WORDS: Attitude, Assisted reproduction, Legalization, Physician, Surrogacy

ABBREVATIONS: MAR=Medically Assisted Reproduction; IVF= In Vitro Fertilization

KEY MESSAGE: Physicians working within medically assisted reproduction, antenatal care and obstetrics were relative positive towards surrogacy being introduced in Sweden. However, they had concerns about the risk of coercion and exploitation of potential surrogate mothers from close family and others.

INTRODUCTION

Surrogacy means that a woman acts as a gestational "carrier", providing her body and becoming pregnant with the intention of handing over the child to someone else, the commissioning parent/parents (1). Surrogacy can be either altruistic or commercial (2) and The European Society of Human Reproduction and Embryology Task Force on Ethics and Law states that surrogacy is only an acceptable procedure if it is an altruistic act (1). The arguments against payment for surrogacy include the belief that surrogacy is an insult to human dignity, that it may involve potential exploitation of women who become surrogate mothers, and that inappropriate inducement and coercion of women may take place.

Surrogacy may be indicated in the absence of a functional uterus due to congenital limitations, or because of a hysterectomy in connection with cancer or other serious obstetric complications, so-called absolute medical indication. Medical contraindications such as heart and renal disease may also be indications for using surrogacy if the disease may lead to life threatening health problems during pregnancy (1, 3). It is also possible that social reasons may be an indication for surrogacy, for example same-sex male couples and male singles who yearn for children may want to create a family. A systematic review (3) found that the obstetric outcomes among surrogate mothers were similar to those following in vitro fertilization (IVF), and the children born after surrogacy had a similar incidence of preterm birth, low birth weight, and birth defects as children born after IVF and/or oocyte donation. The study found that surrogate mothers displayed no serious psychopathology and that the children showed no psychological differences compared to children born after medically assisted reproductive technology or natural conception.

In Europe, only Belgium, Greece, the Netherlands, and the UK allow surrogacy and only if it is altruistic (3). Some other countries however, do not have any legislation regulating surrogacy, making it possible for the procedure to be performed in these countries. This has resulted in so called cross-border surrogacy which involves using surrogate arrangements within or outside Europe (e.g. Greece, India, South Africa, Hong Kong, some states in the USA). It is not illegal to use cross-border surrogate arrangements but problems can arise if the commissioning parents want to be acknowledged as legal parents to the child when they go back to their country of legal residence (4).

In Sweden, a debate on surrogacy has been going on for many years but has now intensified. The movement for lesbian, gay, bisexual, and transgender has pushed for the legalization of

surrogacy and for including it in the Swedish healthcare system. The National Council on Medical Ethics in Sweden has presented a report regarding assisted reproduction (5) and concluded that altruistic, but not commercial surrogacy, can be an ethically acceptable method to create a family. However an investigation by the Swedish government resulted in a decision to not introduce altruistic surrogacy into the Swedish healthcare system (4). There are no statistics available about how many children have been born to Swedish citizens using cross-border surrogacy. However, it is estimated that approximately 50 children are born annually through this arrangement (4).

The aim of this study was to examine the attitudes and opinions towards surrogacy among physicians working within obstetrics and reproductive medicine in Sweden.

MATERIAL AND METHODS

A questionnaire was sent in 2016 to all physicians working with medically assisted reproduction (MAR physicians), both at public and private fertility clinics, and to all physicians heading maternity clinics (antenatal care consultants) and delivery departments (maternity ward consultants) in Sweden. Contact details were received from the Swedish Society for Obstetrics and Gynecology. In total 141 persons were sent the study-specific questionnaire together with information about the aim and a statement that participation was anonymous. In order to enhance the response rate any participation was completely anonymous. As a result, no reminders were sent.

Measures

The questionnaire was developed on the basis of clinical experience and earlier research. In addition, items previously used to measure attitudes among healthcare professionals working within reproduction medicine were used and adapted to the present study (6, 7). The questionnaire was validated and revised after a pilot study in which 10 experienced physicians working in the field of obstetrics and reproductive medicine gave their advice on how to design and phrase the questions. The questionnaire consisted of 38 items measuring opinions and attitudes in three areas: Attitudes towards surrogacy, Assessments of prospective surrogate mothers, and Antenatal and obstetric care for surrogate mothers.

Attitudes towards surrogacy were measured by 10 items. The participants were asked to indicate the extent to which they agreed with statements about aspects of legalization of

surrogacy and financing. Answers were given on a 5-point Likert scale (from 1=Strongly agree to 5=Strongly disagree). In addition, participants could indicate 'Cannot take a stand'.

Assessments of prospective surrogate mothers were measured by 12 items. The participants were asked to indicate the extent to which they agreed with statements about assessment of potential surrogate mothers, and what the requirements should be. The participants were also asked to indicate whether certain medical conditions and earlier pregnancy complications were to be acceptable (Yes or No) among potential surrogate mothers.

Antenatal and obstetric care were measured by 16 items. The participants were asked to indicate the extent to which they agreed with statements about certain circumstances surrounding pregnancy, childbirth and the time after the child's birth. Answers were given on a 5-point Likert scale (from 1=Strongly agree to 5=Strongly disagree). In addition, participants could indicate 'Cannot take a stand'.

Statistics

In order to reach sufficient power in the analysis the answers that were given on the Likert scale were dichotomized into Agree/Neutral (Answer 1 to 3) and Disagree (Answer 4 and 5). The answer 'Cannot take a stand' was treated as missing value. To validate the findings a sensitivity analysis where those excluded due to answering "Cannot take a stand" were first included in the Agree/Neutral answer category and subsequently in the Disagree category. The findings from these analyses were compared to the original dichotomization. Furthermore, data were grouped into three different groups, depending on where the physicians worked – MAR physicians, antenatal care consultants and maternity ward consultants. The opinions of these three groups regarding surrogacy were then analyzed using Pearson's Chi-square statistic. A p-value <0.05 (two-sided) was considered statistically significant. All analyses were performed using SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp).

Ethical approval

As the study did not involve patients and/or medical data and were anonymous no ethical approval was needed.

RESULTS

Of the 141 physicians approached, 103 returned the questionnaire yielding a response rate at 74%. Among the group of MAR physicians, 48 of 68 responded (71%), among the antenatal care consultants 24 of 33 responded (73%), and among the maternity ward consultants 29 of 40 (73%) responded, with no significant difference in response rate between the groups (p=0.965).

Attitudes towards surrogacy

In the total group, 64% were positive towards altruistic surrogacy being permitted, while only 17% were positive towards commercial surrogacy. However, there were differences between the professional groups; MAR physicians were most positive toward both forms of surrogacy, and antenatal care consultants were least positive (Table 1). Almost all physicians agreed that potential surrogate mothers should be offered support by an attorney-at-law before making the decision to undergo surrogacy (93%) and that a legal contract should be written stating the rules agreed upon during pregnancy and delivery (99%). Only 27% of the physicians believed that a potential surrogate mother could be fully informed about what being a surrogate might imply (data not shown). The most acceptable indications for approving surrogacy in the total group was absolute infertility caused by lack of a uterus; congenital absence of uterus (84%), or earlier hysterectomy because of benign disease (81%), obstetric complication (80%) or malignant disease (77%) (Table 2). As concerns regarding financing of surrogacy, the majority of the physicians agreed that the commissioning couples should be responsible for all expenses; only a few agreed that surrogacy should be publically financed (Table 1). However, in the sensitivity analysis performed the latter difference was no longer present when including “Cannot take a stand” as a “Disagree” answer in the analysis. The majority of the physicians agreed that surrogacy does involve exploitation of the surrogate mothers’ bodies, with MAR physicians agreeing less often with the statement (50%) than antenatal care consultants (78%) and maternity ward consultants (76%) (p=0.024, data not shown).

Opinions about assessment of prospective surrogate mothers

The physicians were asked who they believed should be responsible for assessing the suitability of a potential surrogate mother. The majority thought that a psychologist/behavioral specialist (91%) or an obstetrician (84%) should do the assessment.

About half of the physicians (52%) stated that a physician working at a fertility clinic should not assess the suitability of a potential surrogate mother (data not shown).

The majority thought that a potential surrogate mother should be between 25 to 35 years (93%), have a BMI between 20 and 30 (88%), and should be a non-smoker (94%), data not shown. Table 3 lists the extent to which different medical conditions could be acceptable among potential surrogate mothers. The majority of the physicians (97%) agreed that a potential surrogate mother should have previously undergone a complication-free pregnancy and childbirth, data not shown. Only about one third stated that a history of acute cesarean section or medically indicated elective cesarean section could be allowed among potential surrogate mothers, data not shown. Even a smaller percentage agreed that a cesarean section based on psychosocial indications (19%) should be allowed. In addition, the physicians stated that less severe conditions, such as early hyperemesis, mild symphysiolysis, and premature contraction without cervical weakness need not rule out surrogacy.

Attitudes and opinions about antenatal and obstetric care

A majority of the physicians agreed that the surrogate mother should be able to change her mind and opt for an abortion (Table 4). The majority also stated that the commissioning parents should be able to demand prenatal diagnostics, and, if the procedure revealed the presence of a chromosomal aberration, the parents-to-be would also be able to demand an abortion. There was a variety of opinions about lifestyle habits for the surrogate mother and if the commissioning parents should attend the maternity care visits or not (Table 4). A great majority of the physicians did not think that the surrogate mother should be delivered by cesarean section and that the commissioning parents should not be able to influence the mode of delivery. They also agreed that the surrogate mother should be able to keep the child if the child was conceived with the surrogate mother's own oocytes; there was less agreement about this if the child had been conceived with donor gametes or with gametes from the commissioning parents. However, in the latter case fewer MAR physicians thought that the women should be able to keep the child compared to antenatal care consultants and maternity ward consultants. A majority believed that the surrogate mother would need psychological support after giving the child to the commissioning parents.

DISCUSSION

This study was designed to evaluate the attitudes and opinions towards surrogacy among Swedish physicians working in the fields of reproductive medicine and obstetrics. The results show that just over 60% were positive or neutral towards altruistic surrogacy being introduced in Sweden. This is comparable with results from a recent study among healthcare professionals working in primary child healthcare in Sweden where 58% were positive towards surrogacy (8). These percentages are lower than those reported from a Romanian study where 78% of the physicians showed high acceptance (9) and a UK study where 72% of the medical students regarded surrogacy as an acceptable form of assisted reproduction (10). However, in both these countries, surrogacy is already incorporated in the healthcare system. The present study found that MAR physicians were more positive towards surrogacy being introduced as well as to it being publically financed compared to antenatal care consultants and maternity ward consultants. One possible explanation for this difference could be that physicians working at fertility clinics regularly meet patients with infertility problems and long-term longing for children and want to act to meet their needs. Similar results have been described earlier among nurses who had prior experience of donor families and therefore were more positive towards providing financial compensation for sperm donors (11). Likewise, a possible explanation to why antenatal care consultants and maternity ward consultants were less positive towards surrogacy may lay in them being more aware of the complications that may arise when caring for surrogate mother.

In the present study, a higher proportion of the physicians were positive towards altruistic surrogacy than towards commercial surrogacy. However, the majority still believed that surrogacy involves exploitation of the surrogate mothers' bodies and that there would be a risk that the commissioning couple might pay under the table to be able to engage a surrogate mother. There is a well-grounded fear of exploitation of women when payment is involved in surrogacy, especially in the case of cross-border surrogacy, and there are ongoing discussions about whether or not surrogacy by its nature undermines the human dignity of both the woman and child born through such arrangements (12-14). Swedish citizens who had used cross-border surrogacy do struggle with the decision to use cross-border surrogacy due to the Swedish media focus on the exploitation of surrogate mothers (15). This in turn led them to advocate for surrogacy to be allowed in Sweden in order to protect all parties involved.

Our study shows that absolute infertility due to absence of uterus was the most widely accepted indication for surrogacy, followed by medical reasons. Surrogacy for male same-sex couples was also regarded as acceptable, which is in line with findings from an earlier Swedish study (8), but contrary to findings in the Romanian study where the physicians indicated that medically assisted reproduction, where surrogacy was one of the methods, should only be available for heterosexual couples (9). However, in contrast with healthcare professionals working in primary health child care (8), the physicians in the present study were less prone to accept surrogacy for single women and men.

In the present study, a clear majority of the physicians stated that it would be important that the potential surrogate mother be offered an attorney-at-law before entering into an agreement to act as surrogate. A previous study among UK fertility clinics found that it is not uncommon that the commissioning parents and/or the surrogate mother do not have a clear understanding of the legal issues in connection with surrogacy, and neither about the role the commissioning parents should play during pregnancy (16). These uncertainties can be a source of conflicts as the persons involved may have different views on what is expected of them. To reduce the risk of conflict The American Society for reproductive Medicines' (ASRM) point out in their guidelines for surrogacy that the commissioning parents and the surrogate mother should receive qualified legal advice (17). In the present study, the majority of the physicians agreed that the surrogate mother should not have the right to change her mind and keep the child, which corresponds with earlier findings (10). Interestingly, if the child was conceived with either donor gametes or gametes from the commissioning parents the physicians were even less positive towards the surrogate women having that right. Thus, surrogate mothers without a genetic link to the child would have less right to keep the child than those who have a genetic link. It is difficult to predict the possible emotional burden for the surrogate mother when she hands over the child (3), and it is equally difficult to calculate the risk of pregnancy complications, even if the surrogate mother has undergone a previous uncomplicated pregnancy and childbirth. The ASRM guidelines for surrogacy recommend psychosocial evaluation and counseling of both parties where potential psychological issues and risks are to be discussed. In the present study however, the majority of the physicians did not believe that a potential surrogate mother could really become fully informed about what surrogacy might entail (17). In the present study, the majority of the physicians stated that less severe conditions in previous pregnancies, such as early hyperemesis, are to be acceptable among potential surrogate mothers, while severe gestational problems such as preeclampsia would

not. In making the decision, the increased risks of pregnancy complications in connection with gestational surrogacy must be taken into account. A meta-analysis showed that the risk of hypertension, pre-eclampsia and cesarean section was higher among women who had used oocyte donation, as in the case of gestational surrogacy, compared to IVF singleton pregnancies where the oocyte came from the women who carried the pregnancy (18).

Due to the relatively small sample size of this study, which became even smaller by excluding cases due to answering "Cannot take a stand", a sensitivity analysis of the findings in this study was performed in order to validate the findings. This analysis revealed that in most cases the findings remained the same. However, in cases where the MAR physicians had answered "Cannot take a stand" to a higher degree than the other two groups the statistical findings disappeared ("Surrogacy should be publically funded" in Table 1, and "A 30-day rule should apply even if the gametes come from the commissioning parents", "A 30-day rule should apply even if donor gametes have been used", and "The surrogate mother probably needs psychological support after childbirth and when relinking the child" in Table 4) and in one instance ("The surrogate mother should be able to reconsider and opt for an abortion", Table 4) a statistically non-significant result became statistically significant.

The major strength of the present study is that it was based on the total population of MAR physicians, as well as all antenatal care consultants and maternity ward consultants in Sweden. The relatively high response rate (74%) increased the likelihood of a representative sample, but there is a risk of selection bias as physicians interested in surrogacy might have participated to a higher extent than those who are not. Sweden is a small country with centralized reproductive and obstetric care, and as a consequence the number of physicians working in the area is relatively few. Due to surrogacy being a controversial topic in Sweden at present, we wanted to ensure that the participant and their attitudes towards surrogacy could not be identified. Therefore, we did not assess background variables other than medical specialty. We believe that anonymous design may have encouraged participation to a greater extent than if it had not been anonymous. However, as a drawback we have not been able to identify non-responders in order to assess the representativeness, nor been able to explore what other factors may have influenced the physicians' attitudes and opinions. Earlier research investigating other aspect of reproductive medicine has found that factors such as religious background (19), sex and age (6) are associated with healthcare professionals' attitudes. Note also that the attitudes and opinions expressed were based on hypothetical

situations, and it is possible that physicians would think differently if surrogacy were to be allowed in Sweden.

Conclusion

A majority of the physicians were positive towards altruistic surrogacy being introduced in Sweden. Only a small percentage believed that a potential surrogate mother can really be fully informed about what being a surrogate may imply. The physicians expressed doubts concerning whether the potential surrogate mother could clearly understand the risks of entering pregnancy on behalf of someone else, and expressed support for seeing to it that a clear legal contract was written between the involved parties. There were clear differences between the professional groups; MAR physicians were most positive towards surrogacy, and antenatal care consultants were least positive. Future discussions about legalization of surrogacy should include views from individuals within a wide field of professions such as reproductive medicine, child healthcare, psychiatric care as well as legal representatives and laymen.

FUNDING

Financial support was received from Swedish Research Council for Health, Working Life and Welfare.

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TABLES

TABLE 1. Proportion of physicians' agreeing or being neutral towards legalization and financing of surrogacy [a]

Attitudes[b]	MAR physicians, N=48 n (%)	Antenatal care consultants, N=24 n (%)	Maternity ward consultants, N=29 n (%)	*P* [c]
Altruistic surrogacy should be permitted in Sweden	31 (76)	8 (38)	17 (65)	0.014
Commercial surrogacy should be considered to be allowed in Sweden	11 (27)	0	4 (15)	0.023
Surrogacy should be publically financed	17 (43)	7 (33)	4 (14)	0.047
The commissioning parents should pay for surrogacy	32 (78)	19 (95)	24 (89)	0.175
The women should be offered an attorney-at-law before the decision to undergo surrogacy	37 (93)	13 (93)	25 (93)	0.999
A detailed legal contract should be written on what rules are agreed on during pregnancy and delivery	44 (100)	20 (100)	24 (96)	0.274

[a] All participants did not answer all questions; [b] Indicating 1 to 3 on a five-point Likert scale (Strongly agree/Agree/Neutral);
[c] Between professional groups

TABLE 2. Proportion of physicians' who found suggested indications for surrogacy as acceptable [a]

Indications for surrogacy [b]	MAR physicians, N=48 n (%)	Antenatal care consultants, N=24 n (%)	Maternity ward consultants, N=29 n (%)	*P* [c]
Couples where the woman is born without a uterus	44 (92)	15 (63)	26 (90)	0.004
Couples where the woman's uterus has been removed because of malignant disease	41 (85)	13 (55)	24 (83)	0.008
Couples where the woman's uterus has been removed because of benign disease	44 (92)	14 (58)	24 (83)	0.003
Couples where the woman's uterus has been removed because of obstetrical complication	42 (88)	15 (63)	24 (83)	0.039
Couples in which the woman is not allowed to carry a child due to medical reasons	37 (77)	13 (54)	18 (64)	0.128
Male same sex couples	24 (55)	10 (44)	14 (48)	0.674
Single men	9 (21)	6 (25)	7 (24)	0.890
Single women	11 (25)	6 (26)	9 (31)	0.845

[a] All participants did not answer all questions; [b] Affirmative answer (Yes) on suggestions of accepted indications for surrogacy; [c] Between professional groups

TABLE 3. Proportion of physicians finding different medical conditions and complications during previous pregnancy and postpartum period as acceptable among potential surrogate mothers [a]

Variables [b]	Total group n (%)
Medical conditions	
Rheumatic conditions	11 (11)
Diabetes mellitus type 1	3 (3)
Diabetes mellitus type 2	3 (3)
Essential hypertension	10 (10)
Pelvic pain	76 (79)
Back pain	81 (84)
Recurrent urinary tract infections	58 (60)
Ascending urinary tract infections	14 (14)
GBS-infection asymptomatic [c]	64 (65)
GBS-infection symptomatic [c]	29 (30)
Earlier pregnancy complication	
Hyperemesis before gestational week 12	85 (86)
Hyperemesis after gestational week 12	50 (51)
Hyperemesis leading to sick leave	43 (44)
Symphysiolysis not leading to sick leave	84 (85)
Symphysiolysis leading to sick leave	29 (30)
Carpal tunnel syndrome	79 (80)
Pregnancy induced hypertension	12 (12)
Preeclampsia	4 (4)
Gestational diabetes	10 (10)
Pregnancy induced pruritus	51 (52)
Hepatosis	12 (12)
Hemorrhagia in pregnancy	57 (59)
Premature contractions without cervical weakness	80 (81)
Premature contractions	48 (50)
Depression during pregnancy or postpartum period	2 (2)
Lactation psychosis	2 (2)
Growth restricted child	6 (6)

[a] All participants did not answer all questions; [b] Affirmative answer (Yes) on acceptable complications during previous pregnancy and postpartum period; [c] GBS = Group B streptococcal infection

TABLE 4. Proportion of physicians' agreeing with or being neutral towards given statements regarding the antenatal and delivery care of surrogate mothers [a]

Attitudes [b]	MAR physicians, N=48 n (%)	Antenatal care consultants, N=24 n (%)	Maternity ward consultants, N=29 n (%)	*P* [c]
Pregnancy				
The surrogate mother should be able to reconsider and opt for an abortion	33 (79)	21 (96)	25 (86)	0.195
The commissioning parents should be able to demand prenatal diagnostics during the pregnancy	30 (71)	12 (60)	15 (60)	0.534
The commissioning parents should be able to demand an abortion if the prenatal diagnostics finds a chromosomal aberration	27 (69)	13 (62)	15 (60)	0.717
The commissioning parents should be able to place demands on the surrogate mother regarding lifestyle habits during pregnancy	32 (70)	12 (60)	15 (56)	0.456
The surrogate mother should herself decide on lifestyle habits during pregnancy	27 (60)	16 (76)	11 (41)	0.044
The commissioning parents should attend the maternity care visits	31 (76)	17 (77)	19 (70)	0.836
The surrogate mother should decide if the commissioning parents should be allowed to attend the maternity care visits	29 (69)	12 (57)	21 (72)	0.499
Childbirth				
A surrogate mother should deliver by cesarean section	13 (28)	0	3 (10)	0.008
The commissioning parents should have a say in how the surrogate should be delivered	4 (9)	0	1 (3)	0.280
The commissioning parents should attend the delivery	25 (56)	11 (61)	20 (69)	0.514
The surrogate mother may herself decide who should attend the delivery	43 (92)	21 (96)	22 (79)	0.121
Postpartum				
The surrogate mother should have the right to keep the child if she wishes to. A 30-day rule should apply.	5 (13)	7 (35)	11 (48)	0.007
- A 30-day rule should apply if the surrogate mother contributed with her own oocyte	14 (37)	12 (57)	13 (59)	0.159
- A 30-day rule should apply even if the gametes comes from the commissioning parents	4 (10)	6 (29)	10 (42)	0.013
- A 30-day rule should apply even if donor gametes have been used	4 (11)	6 (32)	12 (50)	0.003
The surrogate mother probably needs psychological support after childbirth and when relinking the child	43 (100)	21 (100)	24 (86)	0.008

[a] All participants did not answer all questions; [b] Indicating 1 to 3 on a five-point Likert scale (Strongly agree/Agree/Neutral);
[c] Between professional groups