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Survey shows that Swedish healthcare professionals have a positive attitude towards surrogacy but the health of the child is a concern

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ABSTRACT

Aim: In February 2016, Sweden upheld its ban on surrogacy following a Government enquiry. This survey investigated attitudes towards surrogacy among primary health professionals working with children and their experiences of working with families following surrogacy abroad.

Methods: From April to November 2016, nurses, physicians and psychologist working in primary child health care in four counties in Sweden were invited to participate in a cross-sectional online survey about surrogacy.

Results: The mean age of the 208 participants was 49.2 years (range 27–68) and nearly 91% were women. Approximately 60% supported legalised surrogacy. Wanting a conscience clause to be introduced in Sweden was associated with not supporting surrogacy for any groups, while personal experiences of infertility and clinical experiences with families following surrogacy were associated with positive attitudes towards surrogacy for heterosexual couples. The majority (64%) disagreed that surrogate children were as healthy as other children, and many believed that they risked worse mental health (21%) and social stigmatisation (21%).

Conclusion: We found that 60% supported legalised surrogacy, but many expressed concerns about the children's health and greater knowledge about the medical and psychosocial consequences of surrogacy is needed.

INTRODUCTION

Surrogacy refers to when a surrogate mother carries a baby with the intention of giving it away to another person or the commissioning parents (1). In the case of gestational surrogacy, there is no genetic link between the surrogate mother and the child, while in traditional surrogacy, the surrogate mother has a genetic link to the child because she provides her own oocytes (2). In this study, the word surrogacy is used to describe both forms of surrogacy.

In Sweden, various aspects of assisted reproductive techniques are regulated by legislation, and at the moment, no form of surrogacy is allowed to be performed within the Swedish healthcare system. However, formal proposals by members of the Swedish Parliament were presented to the Swedish government in 2013 suggesting that altruistic surrogacy should be allowed. As a result of this, an investigation was initiated by the Government Offices of Sweden about alternative ways to build a family, including surrogacy. In February 2016, Sweden decided to uphold its ban on surrogacy following this investigation (3). The findings stated that the knowledge about the consequences for children born after surrogacy was too weak (3), and there were concerns about the risk of undue pressure on potential surrogate mothers and the risk of commercialisation. The decision received widespread media coverage, both in Sweden and in abroad.

As surrogacy is legal and available in a number of other countries, Swedish citizens have travelled abroad to use surrogacy and then returned home with their child, but until

Key notes

- This survey study investigated attitudes towards surrogacy among 208 physicians, nurses and psychologists in primary child health care.
- The healthcare professionals were relatively positive towards surrogacy being allowed in Sweden, but concerns about the children's health were common.
- Negative attitudes towards surrogacy were associated with wanting a conscience clause to be introduced in Sweden and positive attitudes were associated with personal experiences of infertility and clinical experiences of families following surrogacy.

2016, there were no published statistics available on this trend. The investigation by the Government Offices of Sweden (3) obtained information from a number of agencies, including The National Board of Health and Welfare, The Swedish Migration Agency, The Swedish Tax Agency and Swedish embassies abroad. This showed that Swedish citizens had started using so-called cross-border surrogacy and that the numbers increased between 2010 and 2015. It is now estimated that approximately 50 children are born each year through these arrangements and are subsequently looked after by the Swedish healthcare system (3).

A systematic review study that investigated aspects of surrogacy found no evidence of harm for the surrogate mother, the child or the commissioning mother (2). The obstetric outcomes were similar to those following *in vitro* fertilisation and the children born through surrogacy showed similar rates of preterm birth, low birthweights and birth defects as children born after this treatment and/or oocyte donation. In addition, surrogate mothers displayed no serious psychopathology, except for some problems when they had to relinquish the baby. The children showed no psychological differences compared to children born after other types of assisted reproductive technology or after natural conception and the commissioning mothers did not differ from other mothers with regard to their psychological state. However, the review did highlight that there was a lack of high-quality studies that had systematically examined these issues. Knowledge about surrogacy and its implications for the surrogate mother, the child and the family, is limited among the general population. Earlier research about other patient groups indicated that misconceptions held by the general public may cause stigmatisation and exclusion, which in turn may have a negative effect on healthcare-seeking behaviour, for example among patients with obesity (4) or mental health problems (5).

Few studies have investigated healthcare professionals' attitudes towards surrogacy. A Romanian study of physicians showed high acceptance (78.4%) (6) and a UK study of medical students showed that the majority (72%) regarded surrogacy as an acceptable form of assisted reproduction (7). When we looked at studies investigating healthcare professionals' attitudes towards other aspects of assisted reproduction, we noted that a Danish study found that having a religious background was associated with wanting to preserve donor anonymity, being against selective reduction in multiple pregnancies and not accepting adoption by homosexuals (8). Sweden is mainly a secular society and individuals working within health care do not have the right to refuse care based on personal beliefs or convictions (9), even though there is an ongoing debate about the introduction of a conscience clause. Conscience clauses, which are also known as conscience objections, are legal clauses that permit healthcare professionals to refuse to provide certain medical services on the basis of religious beliefs or moral convictions (10). These are mostly in connection with reproductive matters, such as abortion, contraception and *in vitro* fertilisation treatment, but can also include patient care. The desire to introduce a conscience clause may, therefore, be a factor that is associated with attitudes displayed by healthcare professionals. In addition to their sex and age (11), an individual's healthcare profession (8) and their clinical experience of caring for patients following gamete donation (12) were found to be associated with their attitudes to other assisted reproduction methods.

The aim of this study was to investigate attitudes towards surrogacy among professionals working in primary child health care and their experiences of families following surrogacy. We also wanted to investigate whether any background factors were associated with the attitudes that were displayed.

METHODS

Sweden has a population of nearly 10 million people and child healthcare services are included in the publicly funded free healthcare system. The overall aim of primary child healthcare services was to contribute to the best possible physical, mental and social health of children (13). At the child healthcare centres, paediatricians, nurses and psychologists work together to promote healthy family relationships and prevent risky conditions by adopting different approaches, such as health and parental support calls, home visits, vaccinations and health monitoring. To achieve these goals, all children under the age of six are given regular check-ups at child healthcare centres, typically on 12 occasions, of which 10 occur during the child's first 2 years.

Sample and procedures

Following the announcement in February 2016 that the Swedish Government did not intend to change its legal ban on surrogacy, we emailed 712 nurses, physicians and psychologists between April and November of that year and asked them to participate in a survey on surrogacy. We obtained their details from the mailing lists for primary child healthcare professionals in four counties in Sweden, which included both urban and rural areas and covered a total population of 1.4 million people. The email contained an invitation letter that outlined the study aim and procedure and a web link to the questionnaire. Participation was completely anonymous, as surrogacy is a sensitive subject and we wanted to make sure that participants felt comfortable that any socially undesirable attitudes they expressed were not exposed to a wider audience. As nonresponders were not identifiable, three reminders were sent to all potential participants. Returning a completed questionnaire was regarded as providing informed consent. No ethical approval was needed as the study did not involve patients and, or, medical data.

Measures

A study-specific questionnaire was developed by the research team on the basis of clinical experience, earlier research and theory. In addition, items previously used to measure attitudes among healthcare professionals working

within reproduction medicine were used and adapted to the present study (11,14). In order to ensure that participants had a correct understanding of surrogacy, the questionnaire contained an illustration showing the steps involved in having a child with a surrogate mother. The description also contained a small amount of text describing the process and a statement that no form of surrogacy was currently allowed in Sweden, but that there would continue to be ongoing discussions regarding a change of legislation. The feasibility and face validity of the questionnaire were evaluated by one physician, one midwife and four registered nurses and their comments led to minor changes and clarifications. The questionnaire consisted of 30 items covering four domains: attitudes towards the legalisation and financing of surrogacy, attitudes towards the family and the child's health following surrogacy abroad, clinical experiences of surrogacy and knowledge about surrogacy.

Attitudes towards legalising and financing surrogacy were measured by seven items, and the participants were asked to indicate the extent to which they agreed with a number of statements. These included whether infertile heterosexual couples should be allowed to legally pursue surrogacy in Sweden and whether they should be able to receive surrogacy free from the publicly funded healthcare system. The answers were given on a five-point Likert scale that ranged from strongly disagree to strongly agree. For the analyses, the responses were dichotomised into negative attitudes and neutral and positive attitudes.

Attitudes towards the family and the child's health were measured by 11 items. Statements were used to measure attitudes towards families created through surrogacy, such as whether the parents were more dedicated to surrogate children than other children. The respondents were also asked about whether they felt the physical and mental health of surrogate children differed from other children; for example, whether they had worse psychological health. The answers were given on a five-point Likert scale ranging from strongly disagree to strongly agree, and the responses were dichotomised into agree or disagree or neutral.

The respondents' clinical experiences of meeting families following surrogacy were assessed by five items. Participants were asked to indicate whether they had encountered families with children born through surrogacy in their clinical work and, if they had done so, how they perceived the parents' needs for support in comparison with other parents' needs. Answers were given on a five-point Likert scale ranging from much lower to much higher. Those who reported somewhat higher and much higher were asked whether they had referred any of these families to specialist care for problems associated with the mode of conception and, if so, to what kind of specialist care.

Knowledge about surrogacy was measured by two items. Participants were asked to indicate whether there was anything about surrogacy that they wanted to know more about and, in that case, what they wanted to know. Confidence in their knowledge of surrogacy was assessed by one statement that asked whether they felt they had sufficient knowledge about surrogacy and its implications for the child and family in order to provide adequate care. The answers were given on a five-point Likert scale ranging from strongly agree to strongly disagree, and the responses were dichotomised into agree and disagree.

The background variables included age, sex and profession, namely physician, psychologist or registered nurse, and their personal experiences of infertility in their own family or among friends. In addition, they were asked to indicate whether they agreed that a conscience clause should be introduced for healthcare professionals. It was explained that this was a provision whereby healthcare workers could refuse to handle cases that were contrary to their personal convictions.

Data analysis

The statistical analyses were conducted with SPSS statistics, version 22 (IBM Corp, New York, NY, USA), and the significance level was set at $p < 0.05$. ANOVA was used to test group differences in age, and the chi-square test was used to identify group differences between sex and education. Multiple regression models were used to identify factors associated with attitudes. The relationship between dependent variables, all the attitudes that were displayed, and the independent variables was tested in univariable logistic regressions. Independent variables were chosen based on previous research and theory. Earlier research had shown that sex, age, education, previous experience of the patient group and religious beliefs were associated with the attitudes that healthcare professionals had reported with regard to other areas of reproductive medicine (8,11,12,15). In addition, we assumed that personal experiences of infertility would have an impact on attitudes. The independent variables that were significantly correlated with any of the displayed attitudes – profession, personal experience of infertility, clinical experience of caring for families following surrogacy and wanting a conscience clause – were then entered into multiple logistic regression models. This generated one model for each of the 18 attitudes. The multivariable models were evaluated with Nagelkerke's R2 and the percentage of cases correctly classified. The model that explored attitudes about whether it was best for the child to keep the method of their conception secret was invalid due to uneven distribution and was discarded. Answers to questions with an open response format were analysed using thematic content analysis (16), where words or phrases reflecting the same content were combined to form categories.

RESULTS

Of the 712 healthcare professionals who were invited to take part in the study, 208 (29.3%) completed the questionnaire and 189 (90.9%) were women. The response rates varied between the different professional groups who were invited to take part: 140 (35.5%) of the registered nurses responded, together with 49 (17.3%) of the physicians and 19 (55.9%) of the psychologists (df 2, chi-square 38.947, $p < 0.001$). The participants had a mean age of 49.2 years

with a standard deviation of (SD) of 10.45 years and a range of 27-68, with no differences in the ages between the professional groups (Table 1) or between the men and women (mean age 48.8 versus 49.2, t (192)=0.153, p = 0.878). Just under half (47.6%) of the participants reported personal experience of infertility. The desire for a conscience clause for healthcare professionals to be introduced in Sweden was more common among the physicians than the registered nurses (30.6% versus 16.4%, df 1, chi-square 4.343, p = 0.037). None of the psychologists wanted a conscience clause to be introduced.

Attitudes towards legalisation and financing

More than half of the healthcare professionals reported positive or neutral attitudes towards surrogacy being allowed for different groups in Sweden (Table 2), with variations between which parenting groups should have access to surrogacy. However, there was less support for public funding of surrogacy. The majority of the participants (87.4%) indicated that they were positive or neutral towards the child having the right to obtain information about the identity of their surrogate mother at a mature age.

Multivariable regression models showed that wanting a conscience clause to be introduced in Sweden was strongly associated with a negative attitude towards surrogacy being allowed for certain parenting groups and publicly funded surrogacy and these were measured using odds ratios (OR) and 95% confidence intervals (95% CI). The results were as follows: heterosexual couples (OR 4.03, CI 95% 1.65–9.85), female couples (OR 3.48, CI 95% 1,47–8.27), male couples (OR 4.04, CI 95% 1.68–9.72), single women (OR 3.10, CI 95% 1.29–7.44), single men (OR 2.81, CI 95% 1.17–6.75) and publicly funded (OR 4.85, CI 95% 1.55–15.11). Having personal experience of infertility was associated with respondents being more positive or neutral towards surrogacy being allowed for heterosexual couples (OR 2.00, CI 95% 1.03–3.89), single women (OR 1.92, CI 95% 1.01–3.62), single men (OR 1.97, CI 95% 1.05–3.71) and towards surrogacy being publicly funded (OR 2.20, CI 95% 1.13–4.30). Also, having cared for families who had used surrogacy was associated with being more likely to be positive or neutral towards surrogacy being allowed for heterosexual couples (OR 5.69, CI 95% 1.22–26.64). Which professional group the respondent belonged to had no independent impact on the attitudes they displayed.

Table 1 Demographics details of the participants

Characteristics	Registered nurse (n = 140)	Physician (n = 49)	Psychologist (n = 19)	p†
Age (mean, SD)	49.8 (10.32)	48.5 (10.30)	46.8 (11.78)	NS
	n (%)	n (%)	n (%)	
Sex‡				
Female	139 (99.3)	32 (65.3)	18 (94.7)	<0.001
Male	0	17 (34.7)	1 (5.3)	
Own experience of infertility				
Yes	59 (42.1)	27 (55.1)	13 (68.4)	0.048
No	81 (57.9)	22 (44.9)	6 (31.6)	
Wanting a conscience clause‡				
Yes	23 (16.4)	15 (30.6)	0	0.009
No	115 (82.1)	34 (69.4)	19 (100)	

†Between professional groups.
‡Percentages do not add up to the total due to missing values.

Attitudes towards the family and the child's health

Just over one-third (36.4%) of the healthcare professionals agreed that children born through surrogacy were as healthy as other children (Table 3), but one in five felt that such children risked worse mental health (21.1%) and social stigma (20.6%). The majority (79.0%) agreed that it was important that the parents were honest with the children about the mode of conception, but 16.0% believed that this information would damage the relationship between the parents and child. Half of the healthcare professionals (52.6%) believed that it was good for the child to learn the identity of the surrogate mother, but 9.7% believed that contact between the child – when it was mature enough – and the surrogate mother would be harmful for the child or family.

Multivariable regression models showed that respondents wanting a conscience clause were associated with them being more likely to agree that the child's relationship with the parent could be damaged if they learnt about how they were conceived (OR 2.69, CI 95% 1.04–6.93) and that any contact with the surrogate mother could be harmful for the child and/or the family (OR 3.79, CI 95% 1.18–12.17). Physicians were more likely to agree that children born to surrogate mothers were as healthy as other children (OR 2.25, CI 95% 1.05–4.82) than registered nurses and psychologists. Having personal experience of infertility or having met families who had used surrogacy had no independent impact on the attitudes displayed.

Clinical experiences and knowledge

We found that 16 (7.7%) of the participants, 11 nurses and five physicians, had clinical experience of families who had used surrogacy to have a child. None of the psychologists had any clinical experience of families who had used surrogacy. Of those who had met this specific patient group, five (31.2%) felt that the families had needed more support than other parent, and two had referred the child and/or the family to specialist care, but did not specify what type. Of the total group, 48.x% felt that they did not have sufficient knowledge to be able to provide adequate care for families following surrogacy. This differed between the professional groups: 70.6% of the psychologists felt they had insufficient knowledge, compared to 51.7% of the registered nurses and 27.5% of the physicians (df 2, chi-square 10.855, p = 0.004).

Of the total group of 208 participants, 52.3.x% indicated that they wanted to know more about surrogacy. Thematic analysis of the responses to the open-ended questions identified three areas where the professionals needed increased knowledge. In the area of the questionnaire

Table 2 Proportion of professionals who agree with, or were neutral about, the legalisation and financing of surrogacy[†]

Attitudes[‡]	Totaln (%)	Registered nursen (%)	Physiciann (%)	Psychologistn (%)
Surrogacy for infertile heterosexual couples should be allowed	103 (58.2)	72 (60.5)	20 (50.0)	11 (61.1)
Surrogacy for same-sex female couples should be allowed	104 (58.8)	73 (61.3)	20 (50.0)	11 (61.1)
Surrogacy for same-sex male couples should be allowed	102 (57.6)	71 (59.7)	20 (50.0)	11 (61.1)
Surrogacy for single women should be allowed	93 (52.8)	64 (53.8)	19 (48.7)	10 (55.6)
Surrogacy for single men should be allowed	90 (51.1)	61 (51.3)	19 (48.7)	10 (55.6)
The child should have the right to know the surrogate mother's identity	153 (87.4)	101 (86.3)	35 (87.5)	17 (94.4)
Surrogacy should be publicly funded	69 (39.0)	49 (41.2)	11 (27.5)	9 (50.0)

[†]All participants did not answer all questions.
[‡]Indicating 3 to 5 on a five-point Likert scale (neutral/agree/strongly agree).

Table 3 Proportion of healthcare professionals who agreed[†] with statements about families created through surrogacy

Attitudes[‡]	Total	Registered nurse n (%)	Physician n (%)	Psychologist n (%)
Children conceived through surrogacy display the same problems as adopted children	44 (25.0)	30 (25.4)	9 (22.5)	5 (27.8)
Surrogate children are as healthy as other children	64 (36.4)	39 (33.1)	21 (52.5)	4 (22.2)
Surrogate children risk worse physical health	15 (8.5)	11 (9.3)	1 (10.0)	0
Surrogate children risk worse mental health	37 (21.0)	26 (22.0)	9 (22.5)	2 (11.1)
Parents are more involved with their surrogate children than in other families	30 (17.3)	22 (19.0)	7 (17.9)	1 (5.6)
Surrogate child may experience social stigmatisation	36 (20.6)	23 (19.7)	8 (20.0)	5 (27.8)
It is good for mature children to be told the identity of their surrogate mother	92 (52.6)	60 (50.8)	20 (51.3)	12 (66.7)
It is best for the surrogate child if the method of their conception is kept secret throughout their life	2 (1.1)	1 (0.8)	1 (2.6)	0
It is important that the parents are honest with the surrogate child about how they were conceived	139 (79.0)	92 (78.0)	31 (77.5)	16 (88.9)
The surrogate child's relationship with their parents could be damaged if they learn about their conception	28 (16.0)	22 (18.6)	5 (12.8)	1 (5.6)
Contact between the mature child and surrogate mother (can be harmful for the child and/or the family	17 (9.7)	13 (11.0)	1 (5.0)	2 (11.1)

[†]All participants did not answer all questions.
[‡]Indicating 4 to 5 on a five-point Likert scale (agree/strongly agree).

covering the procedures and regulation of surrogacy, the healthcare professionals indicated that they wanted to know more about the procedures surrounding surrogacy, as well as the legal aspects, especially those concerned with the rights of the child, surrogate mother and commissioning parents. They also wanted to be updated on any ongoing discussions about how surrogacy would be regulated if it were to be introduced in Sweden. In the area covering the health of the surrogate mother, child and family, the healthcare professionals stated that they wanted to know more about the child's physical and mental health, but also about the experiences of surrogacy from the viewpoint of the surrogate mother, the child and parents. In addition, they wanted to know more about how the families with a surrogate child functioned and if there were any differences compared to other family groups, for example with regard to parent–child attachment. In the area covering the role of the healthcare professional, the participants wanted to be able to benefit from other professionals' clinical experiences of caring for families with a child born through surrogacy, as they felt this would help them to learn how to approach them. They also called for information about their specific

role as primary healthcare professionals and for guidelines regarding the care of families with a surrogate child and how to monitor the child and family.

DISCUSSION

The present study showed that about half of the healthcare professionals we surveyed supported legalised surrogacy in Sweden, even though less than half supported surrogacy being publicly funded. Overall, a relatively large proportion believed children born through surrogacy were less healthy than other children and one in five feared that these children would risk worse mental health and social stigmatisation than children not born through surrogacy.

In February 2016, a Swedish Government investigation concluded that it was best to not introduce surrogacy in Sweden, mainly due to the lack of evidence about the impact on surrogate children, the potential risk of women facing undue pressure to become surrogate mothers and the risks of commercialisation (3). The decision, and the reasons behind it, was widely discussed in the media, and this study was carried out in April to November of that year. The findings of our study, that more than half of the healthcare professionals (58%–59%) were still positive about surrogacy being allowed in Sweden, are intriguing, given that the government decided that the Swedish surrogacy ban should remain in force. When we compared our findings with earlier research, we found that surrogacy was more acceptable among Swedish healthcare professionals than in the UK (7) and Romania (6), where between 72% and 78% of healthcare professionals regarded surrogacy as an acceptable form of assisted reproductive technology. However, it is important to remember that both the UK and Romania are countries where surrogacy is already allowed and regulated. Interestingly, the decision not to introduce surrogacy in Sweden disagreed with the recommendation of the Swedish National Council on Medical Ethics, which stated that altruistic surrogacy would be an ethically acceptable method of assisted reproductive technology (17). The debate in Sweden regarding surrogacy is continuing.

An interesting finding from the present study was that if surrogacy was allowed in Sweden, the healthcare professionals did not feel that it should discriminate between the different parenting couples that wanted to use surrogacy, with homosexual couples being just as acceptable as infertile heterosexual couples. This was contrary to a Romanian study that found that physicians only favoured assisted reproductive technology being made available for heterosexual couples (6). The present study finding suggests that the healthcare professionals not only perceived the traditional meaning of infertility as an acceptable indication for surrogacy, but also the inability to conceive in same-sex relationships. However, fewer of the healthcare professionals felt that surrogacy should be extended to single men and women, which could be an indication that they considered that a child should have two parents.

The present study found that professionals who had met families following surrogacy we more likely to accept surrogacy for heterosexual couples than other professionals, which indicates that their clinical experiences had made them more positive towards this mode of conception. The effect of previous clinical experience on attitudes was also reported in a study that found that Swedish nurses who had prior experience of donor families were more positive towards financial compensation for sperm donors (12). However, in the present study, 31% of the 16 professionals who had met families with a child born through surrogacy indicated that the families needed more support than other families. When we looked at the total cohort, we found that 63.6% of the healthcare professionals believed that children born through surrogacy were not as healthy as other children and that 21.0% believed that surrogate children risked worse mental health than other children. This belief was contradicted by the results of a longitudinal study that found that the absence of a gestational link between the parents and children in families who had used surrogacy did not have a negative impact on the child's psychological development (18,19). Similarly, a systematic review found that there was no evidence of worse physical or psychological health among children born after surrogacy when they were compared with other children born through other types of assisted reproductive technology (2). However, the review pointed out that the studies that they included from this area had significant methodological limitations, such as small sample sizes, lack of controls and low response rates. Also, no studies were available on children born after surrogacy was carried out away from their home country or on those growing up with homosexual fathers.

The present study found that 48% of the healthcare professionals felt that they did not have sufficient knowledge to be able to provide adequate care for families following surrogacy. They also indicated that they need more knowledge about surrogacy and the health of the surrogate mother, the child and family, as well as guidelines on how to care for the family group. Similarly, a study among Swedish social workers (20) showed that the lack of clear guidelines about what laws were applicable when they were contacted by commissioning parents who wanted to become the legal parents of a surrogate child led them to handling the cases in different ways and with great uncertainty. These findings, combined with the discrepancies between beliefs about the child's health and previous research findings, highlight the need for educational interventions for healthcare professionals working in child health care, as well as the development of adequate guidelines on surrogacy.

The present study showed that 20.6% of the healthcare professionals believed that children born after surrogacy risked social stigmatisation and other studies have shown that donor conception (21) and surrogacy (22) have been associated with stigmatisation. A Swedish study found that commissioning parents struggled with their feelings about using a surrogate mother in another country because of the media focus on the exploitation of such women (23). The

descriptions of how the commissioning parents found ways to justify their choice to use surrogacy suggests that they experienced stigmatisation because they used an assisted reproductive technology method frowned upon by the media and society as a whole. It has been suggested that changing laws that permit a previously prohibited practice may have an impact on feelings of stigmatisation (22). However, the investigation initiated by the Swedish Government found that the evidence-based knowledge about the health of children was too weak. This, together with concerns about the risks of coercion and commercialisation, led to the decision not to legalise surrogacy in Sweden (3). This decision may have had a negative impact on the public's view of surrogacy, which in turn may increase the risk of stigmatisation. The finding in our study that healthcare professionals believed that children born after surrogacy risked social stigmatisation, may stem from the ongoing discussions about surrogacy in Sweden and their beliefs may, therefore, provide a valid point. We were unable to find any Swedish studies that investigated the stigmatisation of children born through surrogacy, but a UK study found that most children were positive about their surrogacy when they were 10 years old (24). However, surrogacy has been legal in the UK since 1985 and the situation there is very different to a country like Sweden where surrogacy is not permitted. Therefore, there is a need to investigate the experiences of children born through cross-border surrogacy in situations when surrogacy is not allowed in the parents' home country.

The present study found a strong association between wanting a conscience clause to be introduced in Sweden and low acceptance of surrogacy being allowed and publicly funded. This was contrary to the findings of a US study, where there was no correlation between religious background and a willingness to restrict access to surrogacy (25). However, the US study was conducted among directors at assisted reproductive technology clinics and it is reasonable to assume that such postholders would not have religious or moral qualms about the practice. A Swedish PhD thesis that investigated the juridical possibilities for healthcare professionals to act in accordance with their religion or beliefs found that even though healthcare professionals in Sweden have no legal right to refuse to provide care because of religious or moral reasons, there are no expressed prohibitions either (9). In the present study, wanting a conscience clause was also associated with believing that the child's relationship with his or her parents could be damaged if the child learnt about the mode of their conception. This was in line with a Danish study that found that those who identified themselves as being non-Protestants, namely having another religion or indicating that they were strong believers, wanted to preserve donor anonymity compared to those who were not (8). Other studies found that most parents used a surrogacy plan to tell the child about the mode of their conception (2) and the level of disclosure was higher among families who had used surrogacy than in any of the families who had used other modes of assisted reproductive technology (15). It is reasonable to assume that parents may turn to primary child healthcare professionals for advice on disclosure. If they do, it is important that those healthcare professionals provide a professional and nonbiased attitude towards the issue and do not let their concerns about disclosure affect the advice they give to the parents. Religious and moral values have been found to have an impact on how healthcare professionals perform their work and, therefore, there is a risk of conflict between the healthcare professional's desire to act in accordance with their own personal conviction and the patient's right to receive good care (9). However, healthcare professionals have a responsibility to continually update their medical knowledge and to provide evidence-based care (9), as well as to provide their patients with adequate information about their situation (9). In relation to the present study findings, healthcare professionals are obliged to keep up to date on disclosure issues and inform patients about them. Research about disclosure has shown that the most frequent reason for disclosure was to avoid possible harm if the child found out about the surrogacy from other people and wanting to be honest to the child (26). A longitudinal study of surrogacy in the UK found less positive mother–child interactions when the children were 7 years old (19) and one possible explanation for this finding was the child's increased understanding of surrogacy. However, when the children were 14, there were more positive family relationships and higher levels of adolescent wellbeing among children who had been told about their biological origins before the age of seven, compared to those who had learned about it at a later age (26).

The present study was designed to encourage greater participation by guaranteeing anonymous participation, thereby avoiding the risk that participants would provide socially desirable responses rather than their honest views, but the design also made it impossible to analyse any differences between responders and nonresponders. The response rate was relatively low (29.3%), with the lowest response rate among physicians and the highest rate among psychologists. Information about the study was sent to all individuals included in the email lists at the selected primary child healthcare centres, but there was no information about how many of these were clinically active. The study inclusion continued from April to November 2016, and it is possible that some of the individuals in the email lists were absent from work due to parental leave or sick leave during the study period. Low response rates are a common problem in studies among healthcare professionals, and it is well known that there is a risk of selection bias when healthcare professionals interested in alternative reproductive methods participate to a higher extent than those with no special professional interest. However, the response rate of the present study was about equal to, or exceeded, the response rates of earlier published survey studies among healthcare professionals in Europe and the USA (27–30). Our study reached sufficient power in order to enable multivariable regression analysis and this meant that we were able to identify factors associated with the attitudes displayed by participants. However, as less than

10% of the participants were male, it is possible that the results would have been different if the distribution between the sexes had been more even. Also, a relatively high number of the respondents (47.6%) had personal experience of infertility compared to the general population, where approximately 15% have fertility problems. This may indicate that some of the participants were particularly interested in infertility problems and surrogacy compared to nonresponders, which may have had an impact on the results.

CONCLUSION

Healthcare professionals who worked within primary child health care in Sweden appeared to be relatively positive towards surrogacy being allowed in Sweden, even though they were concerned that children born through surrogacy may suffer worse health. As surrogate children already exist in the Swedish healthcare system because they were conceived in countries where surrogacy is legal, it is important to increase the knowledge that healthcare professionals have about the health of surrogate children and the issues faced by families in Sweden following surrogacy. Targeted organisational and educational interventions may contribute to improving healthcare professionals' confidence in how to care for families who have used surrogacy.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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