Attitude of Jordanian Health Care Workers Toward Surrogacy

Rami Saadeh; Ph.D.1, Nancy Abdulrahim; M.D.2, Mahmoud Alfaqih; Ph.D.3, Yousef Khader; Ph.D.1

1 Department of Public Health and Community Medicine, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan
2 Jordanian Ministry of Health, Amman, Jordan
3 Department of Physiology and Biochemistry, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan

Received November 2019; Revised and accepted March 2020

Abstract

Objective: To assess the attitude of Jordanian health care workers toward surrogacy.

Materials and methods: Three municipalities in Jordan were randomly selected, one from each region: north, south and central of Jordan. A total of: four public hospitals, three private hospitals, one university hospital, 40 health centers and 40 private clinics were included in the study. Healthcare workers in the selected facilities were randomly approached using a self–administered questionnaire to collect data. Distributions of attitude by gender, job title, and physician’s specialty were used to describe participants’ attitude toward surrogacy.

Results: Responses of 382 participants were reported, of whom, 230 (60.2%) were females. Three in every four participants didn’t support legalizing surrogacy in Jordan. Majority reported negative attitude toward commercial surrogacy (85.1%) and noncommercial surrogacy (76.4%). Religious considerations were the main reason (71.1%) for the attitude toward surrogacy. Most items describing attitude toward surrogacy were significantly distributed across different job titles: nurses, medical doctors, and other healthcare workers (p < 0.05).

Conclusion: Negative attitude among health care workers toward surrogacy was mainly driven by religious beliefs. However, there are core cultural changes in the community which might alter the attitude toward surrogacy in the future.

Keywords: Jordan; Attitude; Healthcare Workers; Surrogacy

Introduction

Surrogacy, or surrogate motherhood, is a method of assisted reproduction whereby a woman agrees to become pregnant for the purpose of gestating and giving birth to a child who will be raised by others (1).

Gestational surrogacy, which is to gestates a gamete produced through in vitro fertilization (IVF) of a commissioning couple (2), was reported 25 years ago (3). Since then, gestational surrogacy became a viable treatment for couples who cannot conceive because of a nonfunctional uterus, encounter high risks associated with pregnancy, or experienced failure to conceive naturally or through using other treatment options (4-6).

However, due to its complicated ethical issues, gestational surrogacy is outlawed in many countries worldwide. While banned in many countries, surrogacy is legally practiced but inadequately regulated in some others, driving the need for a better level of regulation (6, 7).

Laws and regulations that prohibit or allow the

Correspondence:
Dr. Rami Saadeh
Email: rasaadeh@just.edu.jo
practice of surrogate pregnancy consider many factors. For example, regulations governing this practice often differentiate between two types of surrogacy: 1) traditional surrogacy where the surrogate mother’s own eggs are fertilized via intrauterine insemination by sperm of the future father and 2) gestational surrogacy where the surrogate mother carries the egg of the intended mother. The latter one uses in vitro fertilization (IVF) to make of the intended mothers’ egg and the intended father’s sperm to produce the embryo (6-9).

Regulations also differentiate between commercial surrogacy where the surrogate mother is paid for pregnancy and altruistic surrogacy where the surrogate mother is reimbursed for the expenses of pregnancy (7).

Attitude toward surrogacy varies worldwide and is influenced by religion, gender, age, socioeconomic status, and knowledge about the procedure. Studies reported conflicting findings about attitude toward surrogacy. For example, permissive attitude toward several new reproductive technologies such as IVF among women was reported in Sweden except for surrogacy (10). Whereas in Germany, comparable rates of approval and disapproval toward surrogacy were reported (11). In Turkey, less acceptance of surrogacy was noted (12). However, in Japan, it is suggested that many factors, including socioeconomic status, affect a person’s ability to clearly express an opinion about surrogacy (13). In contrast, Iranian infertile women believed that surrogacy is better than adoption or not having children; reflecting a positive attitude toward surrogacy in general (14).

It is suggested that acceptance of surrogacy might be affected by gender. In Canada, for example, men were significantly more willing to consider using surrogacy in one study (15). Another in Germany, men and women were not significantly different (11). However, it was reported in Japan that gender differences toward surrogacy could exist but was rather affected by information provided about the procedure (16).

Furthermore, it is suggested that religion has an important impact on people’s attitude toward surrogacy. Because surrogacy is forbidden in Islam, Islamic countries consider surrogacy inadmissible, behold the religious view and not necessary the law (17, 18). Comparatively, the Catholic Church is strongly against all forms of assisted reproduction, particularly those associated with third party assistance or surrogacy. In Egypt, Christians’ beliefs concerning assisted reproduction were found to be identical to Muslims (19, 20). However, surrogacy is not forbidden in the Jewish religion because the value of having a child in this community is viewed to outweigh any ethical concerns counted by reproductive technologies (18). This attitude made Jews one of the leading communities in the research and development of new reproductive technologies.

Attitude toward the use of a third-party-assisted reproduction in Jordan was investigated in one study reporting views of Jordanian medical students. The study indicated a general reluctance toward accepting the concept of surrogate pregnancy, mainly driven by religious beliefs (21). However, the attitude toward surrogacy among health care workers (HCWs) in Jordan was never examined before. This study clarified the level of acceptance, and therefore, what they may stand for in its regulation.

Materials and methods

Study design: A descriptive, cross-sectional study design using a self–administered questionnaire was utilized to collect data between May and August 2019. Cities in Jordan were clustered into the three main regions of Jordan: north, center, and south. One city from each region was randomly selected for data collection. The selected cities were Irbid in the north, Amman in the center, and Karak in the south. There are no predetermined groups of health care workers that were selected for the study but rather participants were invited randomly to participate in the study. Researcher who collected data was trained to ensure that both sampling and data collection were done anonymously and randomly.

Study settings: This study was carried out at health care facilities in the Municipality of Amman, Irbid and Alkarak, Jordan. Four public hospitals, one university hospital and three private hospital located in north, middle and south of Jordan were randomly selected. The 2 public hospitals selected in Amman were: Al Bashir hospital which is the largest public hospital in Jordan and Al Totangi hospital. Both have departments of obstetrics and gynecology. The university hospital was Jordan university hospital which is the oldest teaching hospital in Jordan. The private hospital was Al Amal maternity hospital which contains infertility treatment center and provides reproductive services for over 20 years. Two hospitals were randomly selected in north of Jordan, one public (Princess Basma Hospital) and one private (Ibn Al–Nafis hospital) located in Irbid. Two hospitals were randomly selected in south of Jordan, one public (Alkarak Hospital) and one private (Italian Hospital). In addition, 40 private clinics and 40 health centers were further included to increase the diversity of participants selected (Figure 1).
Sample size calculation: According to the 2018 annual statistical report for the Ministry of Health, the total number of HCWs in private sector in Jordan is 44261; the total number of those working in the public sector is 19307, and 3151 working in university hospitals. The total number of the target population is 66719. Using Epi Info 7 software, the required sample for a population survey with 95% confidence interval and 5 margin of error was 382. Although a 10% attrition rate, which is equal to 39 individuals, should have been added to the required sample, only 382 responses could be sampled because of the high rate no response. Among 500 health care workers approached, only 382 agreed to participate, leading to a response rate of 76.4.

Data collection instruments: The questionnaire was developed based on previous studies that examined the attitude of HCWs who were involved with reproduction services during their medical career (17, 22). However, some items were modified to meet the objectives of this study, and therefore, was validated to ensure that the objectivity of questions were valid. Face and content validation were achieved by the revision of 10 experienced physicians working in the field of obstetrics and reproductive medicine and two epidemiologists who assisted in phrasing the questions. The survey was pilot tested on 20 health care professionals to obtain their input. Their feedback was used to adjust for minor revisions, and responses were used to assess the internal consistency of the questionnaire using Cronbach’s alpha test of reliability, which was 0.78; providing a good reliability.

Study variables: The survey was consisted of 2 sections containing 15 items: socio-demographic information (7 items) and attitude toward surrogacy (8 items). The respondents were informed to rate each statement about their beliefs either as “Agree”, “Cannot decide”, or “Disagree”.

Statistical analysis: Categorical variables were expressed as frequencies with percentages and continuous variables as mean ± standard deviation. Categorical variables were compared using the chi-squared test. All analyses were performed by the two-sided method using IBM Statistical Package for Social Sciences (SPSS) version 23, and the P-value of < 0.05 was set as statistically significant.

Ethical Considerations: The protocol of the study was approved by the institutional review board (IRB) of Jordan University of Science and Technology prior to collection of data. Participants were informed about their right to refuse participating in the study and withdraw at any time. The data was kept confidential and no identifying information was obtained from participants.

Results

Socio-demographic characteristics: A total of 382 forms were completed, of whom 230 (60.2) were females. Age ranged between 20 and 60. The Mean age was 35.3 years (± 9.9). Participants had a wide range of work experience; ranging from one to thirty years, with mean of 10.5 (± 8.25) years. Majority of respondents 365 (95.5) were Muslims, while Christians accounted for 3, and the rest selected “other” religions (0.6). Most of respondents were working in the public sector (55.7), and 126 (33) were
Working in the private sector. Married participants were 267 (69.9), 95 (24.9) were single, 16 (4.2) were separated and only 4 (1) were widows. Medical doctors (including general practitioners, residents and specialist) composed 41.6 of respondents. Table 1 summarizes characteristics of study participants.

Table 1: Characteristics of Study Participants

| Characteristics          | Frequency | %    |
|--------------------------|-----------|------|
| Gender                   |           |      |
| Male                     | 152       | 39.8 |
| Female                   | 230       | 60.2 |
| Total                    | 382       | 100  |
| Religion                 |           |      |
| Islam                    | 365       | 95.5 |
| Christianity             | 11        | 3.0  |
| Other                    | 2         | 0.6  |
| Didn’t respond           | 4         | 0.9  |
| Total                    | 382       | 100  |
| Place of residence       |           |      |
| City                     | 313       | 81.9 |
| Village                  | 67        | 17.5 |
| Didn’t respond           | 2         | 0.6  |
| Total                    | 382       | 100  |
| Place of work            |           |      |
| Health center            | 38        | 9.9  |
| Public hospital          | 175       | 45.8 |
| Private hospital         | 95        | 24.9 |
| University hospital      | 31        | 8.1  |
| Private clinic           | 31        | 8.1  |
| Didn’t respond           | 12        | 2.2  |
| Total                    | 370       | 100  |
| Marital status           |           |      |
| Single                   | 95        | 24.9 |
| Married                  | 267       | 69.9 |
| Separated                | 16        | 4.2  |
| Widow                    | 4         | 1.0  |
| Total                    | 382       | 100  |
| Specialization           |           |      |
| Nurse                    | 123       | 32.2 |
| Midwifery                | 16        | 4.2  |
| General practitioner     | 49        | 12.8 |
| Resident                 | 44        | 11.5 |
| Specialist               | 68        | 17.8 |
| Technician               | 22        | 5.8  |
| Dentist                  | 13        | 3.4  |
| Pharmacist               | 17        | 4.5  |
| Didn’t respond           | 30        | 8.3  |
| Total                    | 382       | 100  |
| What is your specialty   |           |      |
| (both residents &        |           |      |
| specialists)?            |           |      |
| Gynecologist             | 55        | 14.4 |
| Pediatrician             | 20        | 5.2  |
| Other specialty          | 75        | 19.6 |
| Total                    | 150       | 39.3 |

**Participants knowledge and attitude toward surrogacy:** Most participants reported negative attitude towards surrogacy whether it is done for non-commercially, which is free of charge (n = 292 or 76.4), or commercially (n = 325 or 85.1). The main reason behind this belief was religious motivation (n = 274 or 71.7). Although 241 (63.1) know the difference between two types of surrogacy, the majority (n = 311 or 81.4) didn’t support organic (gestational) surrogacy nor genetic (traditional) surrogacy. However, few were supportive to organic surrogacy (n = 37 or 9.7) or genetic surrogacy (n = 4 or 1). Some (n = 24 or 6.3) supported both if needed (Table 2).

Table 2: Participants’ Attitude toward Surrogacy

| Attitude                           | Response  | Frequency | %    |
|------------------------------------|-----------|-----------|------|
| Do you support surrogacy if its   | No        | 292       | 76.4 |
| free of charge (Noncommercial)     |           |           |      |
| Didn’t respond                     | 3         | 0.8       |
| Total                              | 382       | 100       |
| Do you support the commercial      | No        | 325       | 85.1 |
| Surrogacy                          |           |           |      |
| Didn’t respond                     | 3         | 0.8       |
| Total                              | 382       | 100       |
| Do you know the difference between | No        | 137       | 35.9 |
| genetic and organic Surrogacy?     |           |           |      |
| Didn’t respond                     | 4         | 1         |
| Total                              | 382       | 100       |
| Do you support the genetic (Egg    | No        | 311       | 81.4 |
| and womb) or organic (womb only)   |           |           |      |
| Surrogacy?                         |           |           |      |
| Didn’t respond                     | 6         | 1.6       |
| Total                              | 382       | 100       |
| In the event of Surrogacy, do you  | Strange donor | 157    | 41.1 |
| prefer?                            |           |           |      |
| Didn’t respond                     | 138       | 36.1      |
| Total                              | 382       | 100       |
| The reason behind the attitude     | Religious | 274       | 71.7 |
| towards surrogacy motivated by:    |           |           |      |
| Didn’t respond                     | 18        | 4.7       |
| Total                              | 382       | 100       |
| Is it possible to be more positive | No        | 207       | 54.2 |
| toward surrogacy if you know that  |           |           |      |
| it’s the only way to have children?|           |           |      |
| Didn’t respond                     | 9         | 2.4       |
| Total                              | 382       | 100       |
| Do you support legalizing surrogacy | No        | 286       | 74.9 |
| in Jordan?                         |           |           |      |
| Didn’t respond                     | 4         | 1         |
| Total                              | 382       | 100       |
The distribution of participants’ attitude toward surrogacy based on gender, job title, and physicians’ specialty are shown in Tables 3, 4, 5 respectively (Table 3, 4, 5). As shown in Table 3, there was no statistically significant difference between genders in most items of attitude toward surrogacy.

It’s interesting that there was a statistically significant relationship between job titles and most items of attitude toward surrogacy (p < 0.05) (Table 4). Considering the total number of HCWs under each job title, medical doctors were the most supportive of surrogacy (18) among others, and nurses/midwives were the least supportive (2).

Moreover, the attitude of nurses/midwives toward surrogacy was largely driven by religion (85), and absolutely absent by any legal considerations (0). It’s interesting that there was no significant difference among HCWs regarding their knowledge about the difference between genetic and organic surrogacy (p = 0.416).

There was no significant difference between specialists, whether they are gynecologists, pediatricians or other specialties, regarding their attitude toward surrogacy (Table 5).

Discussion

This study focused on assessing the attitude of HCWs toward surrogacy. The importance of this assessment emerged from the crucial role of HCWs in ensuring the applicability and/or the acceptability of these practices in the Jordanian communities, in addition to their ability to advocate for policies that support or refute its permittance.

The ethical, legal, and religious dilemmas associated with surrogacy resulted in conflicting opinions toward it (7, 9, 22).

| Table 3: Attitude toward surrogacy distributed by gender |
|--------------------------------------------------------|
| **Attitude toward surrogacy**                          |
|                                                        |
|                                                        |
| **Attitude toward surrogacy**                          |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **Do you support legalizing surrogacy in Jordan?**     |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **I support the commercial Surrogacy**                 |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **I support surrogacy if its free of charge**          |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **Do you know the difference between genetic and organic Surrogacy?** |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **Do you Support the genetic (Egg and womb) or organic (womb only) Surrogacy?** |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **In the event of Surrogacy, do you prefer:**          |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **The reason behind the attitude towards surrogacy motivated by:** |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
| **Is it possible to be more positive toward surrogacy if you know that it's the only way to have children?** |
|                                                        |
|                                                        |
| **Gender**                                             |
|                                                        |
|                                                        |
| **Total**                                              |
|                                                        |
|                                                        |
| **N (%)**                                              |
|                                                        |
|                                                        |
| **P-value**                                            |
|                                                        |
|                                                        |
|                                                        |
While some communities support the practice of surrogacy to assist millions of infertile couples who lost hope to have children, many others consider it morally unacceptable and unjustified technology (7, 9, 19, 20, 22-24). In this study, results show that about 24 of participants were either positive or neutral toward legalization surrogacy in Jordan. This is different than findings of a recent study of Jordanian medical and paramedical students in which only 5.5 of them supported it and 7.6 were neutral (21). This level of support was close to a Turkish study where only 15.1 of infertile women approved using gestational surrogacy (12). However, other countries showed differently. In a Japanese study, nearly 50 of the respondents initially supported gestational surrogacy. Later, disapproval rate increased after reading a brochure explaining the merits and risks of the technology (13). More information could result into more cautious attitudes. Iran is the only Muslim country that permits surrogacy, both altruistic and commercial, which are legitimizated by law and religious authorities.

An Iranian study assessing citizens’ acceptability to surrogacy showed that many Iranian preferred surrogacies when needed (25).

Some communities are distinguished by their high level of acceptance to surrogacy. For example: 1) a Swedish study demonstrated that 63 of physicians were positive or neutral toward altruistic surrogacy being introduced in Sweden (26), 2) a Romanian study showed that 78 of physicians had high acceptance of ARTs including surrogacy (27), and 3) a British study found that 72 of medical students considered surrogacy as an acceptable form of assisted reproduction (28).

---

*Chi-Square test*
Religion seems to play an important role in determining the attitude toward this and similar issues; since 71.7 of participants referred to religion as the source of their attitude (20, 29). A comparable trend was reported by another Jordanian study showing that religion was a fundamental determinant of attitude toward surrogacy (21). The preservation of lineage, the exclusion of third parties in reproduction, the upbringing of the child’s rights, and the protection from the negative effects of surrogacy are the major reasoning in prohibiting surrogacy in Muslim Sunni community (20, 29). One of the fundamental principles in Sunni Islam is protecting the family lineage. Therefore, all forms of surrogacy are forbidden, including the establishment of sperm or egg banks; reasoned by the consequences of these practices which is the destabilization of the communities through threatening the existence of families (20, 30).

Findings of this study illustrated that medical doctors were the most supportive to surrogacy than other HCWs and nurses were the least supportive (p < 0.05); Table 3 and 4.

Generally, medical doctors are more aware of the cons and pros of these modern medical techniques, and the sustenance of their career relies on such and similar procedures; two possible explanations for the difference between doctors and others.

| Table 5: Attitude toward surrogacy distributed by physicians’ specialty |
|---|
| **Attitude toward surrogacy** | **Gender** | **Total** | **P-value**<sup>a</sup> |
|  | Gender | Gynecologists N (%) | Pediatricians N (%) | Other specialties N (%) | N (%) |
| Do you support legalizing surrogacy in Jordan? | | | | | |
| No | 40 (75.5) | 17 (85.0) | 50 (66.7) | 107 (72.3) |
| Cannot decide | 5 (9.4) | 2 (10.0) | 11 (14.7) | 18 (12.2) |
| Yes | 8 (15.1) | 1 (5.0) | 14 (18.7) | 23 (15.5) |
| I support the commercial Surrogacy | | | | | |
| No | 42 (79.2) | 18 (90.0) | 60 (80.0) | 120 (81.1) |
| Cannot decide | 6 (11.3) | 1 (5.0) | 8 (10.7) | 15 (10.1) |
| Yes | 5 (9.4) | 1 (5.0) | 7 (9.3) | 13 (8.8) |
| I support surrogacy if its free of charge (Noncommercial) | | | | | |
| No | 37 (68.5) | 15 (75.0) | 52 (69.3) | 104 (69.8) |
| Cannot decide | 9 (16.7) | 3 (15.0) | 11 (14.7) | 23 (15.4) |
| Yes | 8 (14.8) | 2 (10.0) | 12 (16.0) | 22 (14.8) |
| Do you know the difference between genetic and organic Surrogacy? | | | | | |
| No | 15 (27.8) | 7 (35.0) | 33 (44.6) | 55 (37.2) |
| Yes | 39 (72.2) | 13 (65.0) | 41 (55.4) | 93 (62.8) |
| Do you Support the genetic (Egg and womb) or organic (womb only) Surrogacy? | | | | | |
| I don't support any of them | 41 (77.4) | 17 (85.0) | 58 (78.4) | 116 (78.9) |
| Organic | 7 (13.2) | 2 (10.0) | 10 (13.5) | 19 (12.9) |
| Genetic | 1 (1.9) | 0 (0.0) | 1 (1.4) | 2 (1.4) |
| I support both if needed | 4 (7.5) | 1 (5.0) | 5 (6.8) | 10 (6.8) |
| In the event of Surrogacy, do you prefer: | | | | | |
| Strange donor | 20 (58.8) | 11 (61.1) | 40 (72.7) | 71 (66.4) |
| Friends | 2 (5.9) | 3 (16.7) | 2 (3.6) | 7 (6.5) |
| Relatives | 12 (35.3) | 4 (22.2) | 13 (23.6) | 29 (27.1) |
| The reason behind the attitude towards surrogacy motivated by: | | | | | |
| Religious | 36 (69.2) | 16 (84.2) | 50 (67.6) | 102 (70.3) |
| Social | 9 (17.3) | 0 (0.0) | 8 (10.8) | 17 (11.7) |
| Legal | 1 (1.9) | 1 (5.3) | 3 (4.1) | 5 (3.4) |
| Other | 6 (11.5) | 2 (10.5) | 13 (17.6) | 21 (14.5) |
| Is it possible to be more positive toward surrogacy if you know that it's the only way to have children? | | | | | |
| No | 28 (54.9) | 11 (55.0) | 38 (50.7) | 77 (52.7) |
| Cannot decide | 14 (27.5) | 7 (35.0) | 23 (30.7) | 44 (30.1) |
| Yes | 9 (17.6) | 2 (10.0) | 14 (18.7) | 25 (17.1) |

<sup>a</sup>Chi-Square test

http://jfrh.tums.ac.ir
legal reasons than women (11). The findings of the German study could explain why nurses/midwifery are the least supportive to surrogacy. Females constitute 80 of nurses in this study. At the same time, female’s attitude toward surrogacy is mainly driven by religious reasons, concluding that nurses, who are mainly females, had negative attitude toward surrogacy because of their religious beliefs. However, medical specialities did not show a significant difference in their attitude, probably because of their small sample size or because doctors share the same attitude motivated by their awareness and medical training, regardless of their specialty.

**Limitations:** The sensitive topics discussed in this study held back many from participating in the study, which resulted in a lower response rate than expected. The small sample size entitles some draw backs, such as: generalizability problem, hindering the existence of possible significant relationships, increasing the probability of error type 2, and decreased power. Another limitation in sampling is that the number of HCWs of different professions who participated in this study was not reflective for their numbers and distribution in hospitals, clinics, and health centers. Thus, proportions based on how personnel are distributed were not considered in sampling and only the total number required for the sample was considered, regardless of the appropriate proportions of each profession.

**Conclusion**

There was a general reluctance among HCWs of this study toward accepting surrogacy, which was mainly driven by religious beliefs; indicating the importance of religion in making familial decisions. However, some medical doctors in this study agreed with legalizing surrogacy in Jordan and supported its use. This indicates that changes toward this practice might occur in the future and movements advocating for its permittance could be witnessed among the medical community in the country.

**Acknowledgments**

There is no conflict of interests among the authors.

**Funding**

None.

**References**

1. Aramesh K. Iran’s experience with surrogate motherhood: an Islamic view and ethical concerns. J Med Ethics 2009; 35: 320-2.
2. Serafini P. Outcome and follow-up of children born after IVF-surrogacy. Hum Reprod Update 2001; 7: 23-7.
3. Utian WH, Sheean L, Goldfarb JM, Kiwi R. Successful pregnancy after in vitro fertilization and embryo transfer from an infertile woman to a surrogate. N Engl J Med 1985; 313: 1351-2.
4. Sheean LA, Goldfarb JM, Kiwi R, Utian WH. In vitro fertilization (IVF)-surrogacy: application of IVF to women without functional uteri. J In Vitro Fert Embryo Transf 1989; 6: 134-7.
5. Shenfield F, Pennings G, Cohen J, Devroey P, de Wert G, Tarlatzis B. ESHRE Task Force on Ethics and Law 10: surrogacy. Hum Reprod 2005; 20: 2705-7.
6. Drabiak K, Wegner C, Fredland V, Helft PR. Ethics, law, and commercial surrogacy: a call for uniformity. J Law Med Ethics 2007; 35: 300-9.
7. Patel NH, Jadea YD, Bhadarka HK, Patel MN, Patel NH, Sodagar NR. Insight into Different Aspects of Surrogacy Practices. J Hum Reprod Sci 2018; 11: 212-8.
8. English ME, Mechanick-Braverman A, Corson SL. Semantics and science: the distinction between gestational carrier and traditional surrogacy options. Womens Health Issues 1991; 1: 155-7.
9. Soderstrom-Anttila V, Wennerholm UB, Loft A, Pinborg A, Aittomaki K, Romundstad LB, et al. Surrogacy: outcomes for surrogate mothers, children and the resulting families-a systematic review. Hum Reprod Update 2016; 22: 260-76.
10. Wennberg AL, Rodriguez-Wallberg KA, Milsom I, Brännström M. Attitudes towards new assisted reproductive technologies in Sweden: a survey in women 30-39 years of age. Acta Obstet Gynecol Scand 2016; 95: 38-44.
11. Stobel-Richter Y, Goldschmidt S, Brahler E, Weidner K, Beutel M. Egg donation, surrogate mothering, and cloning: attitudes of men and women in Germany based on a representative survey. Fertil Steril 2009; 92: 124-30.
12. Baykal B, Korkmaz C, Ceyhan ST, Goktolga U, Baser I. Opinions of infertile Turkish women on gamete donation and gestational surrogacy. Fertil Steril 2008; 89: 817-22.
13. Suzuki K, Hoshi K, Minai J, Yanaihara T, Takeda Y, Yamagata Z. Analysis of national representative opinion surveys concerning gestational surrogacy in Japan. Eur J Obstet Gynecol Reprod Biol 2006; 126: 39-47.
14. Kian EM, Riazi H, Bashirian S. Attitudes of Iranian
infertile couples toward surrogacy. J Hum Reprod Sci 2014; 7: 47-51.
15. Daniluk JC, Koert E. Childless Canadian men’s and women's childbearing intentions, attitudes towards and willingness to use assisted human reproduction. Hum Reprod 2012; 27: 2405-12.
16. Minai J, Suzuki K, Takeda Y, Hoshi K, Yamagata Z. There are gender differences in attitudes toward surrogacy when information on this technique is provided. Eur J Obstet Gynecol Reprod Biol 2007; 132: 193-9.
17. Ahmad NH. Assisted reproduction--Islamic views on the science of procreation. Eubios J Asian Int Bioeth 2003; 13: 59-61.
18. Schenker JG. Assisted reproductive practice: religious perspectives. Reprod Biomed Online 2005; 10: 310-9.
19. Aboulghar M, Serour GI, Mansour RT. Ethical aspects and regulation of assisted reproduction in the Arabicspeaking world. Reproductive BioMedicine Online 2007; 14: 143-6.
20. Serour GI. Ethical issues in human reproduction: Islamic perspectives. Gynecol Endocrinol 2013; 29: 949-52.
21. Mustafa AG, Alzoubi KH, Khabour OF, Alfaqih MA. Perspectives and attitudes of Jordanian medical and paramedical students toward surrogate pregnancy. Int J Womens Health 2018; 10: 617-22.
22. Londra L, Wallach E, Zhao Y. Assisted reproduction: Ethical and legal issues. Semin Fetal Neonatal Med 2014; 19: 264-71.
23. Adamson GD. Global cultural and socioeconomic factors that influence access to assisted reproductive technologies. Womens Health (Lond) 2009; 5: 351-8.
24. Inhorn M. Local Babies, Global Science: Gender, Religion, and In Vitro Fertilization in Egypt. Local Babies Global Science: Gender, Religion, and in Vitro Fertilization in Egypt 2012; 1:310.
25. Ahmadi A, Bandad S. Assisted reproductive technologies and the Iranian community attitude towards infertility. Hum Fertil (Camb) 2017; 20: 204-11.
26. Stenfelt C, Armuand G, Wanggren K, Skoog Svanberg A, Sydsjö G. Attitudes toward surrogacy among doctors working in reproductive medicine and obstetric care in Sweden. Acta Obstet Gynecol Scand 2018; 97: 1114-21.
27. Hostiuc S. Conventional vs unconventional assisted reproductive technologies: opinions of young physicians. J Obstet Gynaecol 2013; 33: 67-70.
28. Bruce-Hickman K, Kirkland L, Ba-Obeid T. The attitudes and knowledge of medical students towards surrogacy. J Obstet Gynaecol 2009; 29: 229-32.
29. Muaygil RA. Reexamining the Prohibition of Gestational Surrogacy in Sunni Islam. Dev World Bioeth 2017; 17: 112-20.
30. Al-Bar MA, Chamsi-Pasha H. Contemporary Bioethics: Islamic Perspective [Internet] Cham(CH). Springer; 2015.