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# Characteristics of women visiting an infertility clinic and their interest in preimplantation sex selection in the north of Jordan

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#### ABSTRACT

*Objectives*: To describe the characteristics of women attending a fertility clinic for infertility treatment and to determine their interest in the use of preconception sex selection and its associated factors. *Methods*: A cross-sectional study was conducted among women who presented to the fertility clinic in the IVF center for infertility treatment. A total of 335 women were included in the study and interviewed using the study questionnaire, which included information on patients' demographics, obstetric and infertility history, child gender preference, and interest in preconception sex selection.

Results: A total of 155 (46.3%) women had primary infertility and 180 (53.7%) had secondary infertility. While preference for a boy was reported by  $50 \, (14.9\%)$  participants and preference for a girl was reported by seven (2.1%), the majority of women (83.0%) had no preference for gender. A total of  $59 \, (17.6\%)$  women showed an interest in using preconception sex selection. In the multivariate analysis, women who preferred a boy were more likely to be interested in preconception sex selection (OR = 3.52) compared to women who had no preference for gender. Trying to conceive for  $\geq 2$  years was associated with an 80% increase in the odds of being interested in preconception sex selection.

Conclusions: The majority of women (83.0%) had no gender preference. Less than one fifth of women (17.6%) showed an interest in using assisted method for sex selection. Preference for a boy and trying to conceive for  $\geq 2$  years were significantly associated with increased odds of being interested in using preconception sex selection.

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### 1. Introduction

Infertility is defined as the inability to conceive after one year of unprotected regular intercourse [1]. In Jordan, infertility affects 15–20% of healthy couples seeking to have children [2]. Infertile couples seek help for causes of their infertility, and for the treatments that are available. The many factors that may affect the outcome of infertility treatment include the age of the woman, duration of infertility, previous pregnancy and live birth. In Jordan, little is known about the characteristics of women visiting infertility clinics: only a few studies have described sex selection [3,4], and no study has investigated opinions and concerns among infertile couples about preconception sex selection for non-

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medical reasons. The present study aimed to describe the characteristics of women attending a fertility clinic for infertility treatment and determine their interest in the use of preconception sex selection and its associated factors.

# 2. Materials and methods

# 2.1. Study design

A cross-sectional study was conducted among women who presented to the fertility clinic in the IVF center for infertility treatment at King Abdulla University Hospital (KAUH) between August 2009 and December 2009. A total of 405 women who attended the clinic during the study period were invited to participate in the study after they were informed of its purpose. Of those, 362 (89.4%) agreed to participate in the study. Questionnaires of seven participants were excluded because of missing data in the main research questions (more than 10% of questions were left an unanswered), leaving a total of 335 consecutive women to be included in the analysis. The questionnaire consisted of 26 items

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seeking information about the demographic characteristics of infertile women, obstetric and infertility history, conception, gravidity, parity, number of children and their gender, years of being infertile, causes of infertility, past form(s) of assisted reproduction, child gender preferences and interest in using preconception sex selection. The questionnaire was pilot tested to ensure face validity with the assistance of one infertility physician. two non-infertility physicians, three faculty nursing educators from the midwifery and maternity department and three infertility patients. The questionnaires were filled in using face-to-face interviews. All participants filled in the questionnaire before they received the infertility treatment. Signed informed consent was obtained from all participants before they filled in the questionnaire. Approval from the Institutional Review Board (IRB) at Jordan University of Science and Technology was obtained before conducting the study.

# 2.2. Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 16.0). Categorical variables were described using percentages. Chi-square test was used to compare the characteristics of women according to an interest in using preconception sex selection. Binary logistic regression was used to determine factors associated with an interest in using preconception sex selection. The final regression model was reached by the backward elimination method and included variables that had a statistically significant contribution to the model. Multicollinearity was checked by examining the standard errors for the "B" coefficients. There was no evidence of a multicollinearity problem because none of the independent variables in the analysis had a standard error larger than 2.0. The goodness-of-fit was assessed using Deviance Chi-square test and the test showed that the model fits the data well. The odds ratios (ORs) and 95% confidence intervals (CIs) were reported. A Pvalue of <0.05 was considered statistically significant for all analyses.

### 3. Results

The study included a total of 335 women who visited the infertility clinic at the time of data collection. Their age ranged from 19 to 47 years with a mean of 30.8 (SD = 5.7) years. Less than half the women (44.8%) were 30 years old or younger. Table 1 shows the socio-demographic, obstetric, and relevant characteristics of women. Regarding the reproductive history, 155 (46.3%) women had primary infertility and 180 (53.7%) had secondary infertility. The causes of infertility were related to male factors in 110 (32.8%), unexplained in 142 (42.4%), and related to female factors in 73 (21.8%). Among the female factors, anovulation 35 (47.9%) was the most common cause.

Preference for a boy was reported by 50 (14.9%) participants and for a girl by seven (2.1%). The majority of women (83.0%) had no preference for gender. A total of 59 (17.6%) women showed an interest in using preconception sex selection. The proportions of women who were interested in preconception sex selection to choose the gender of future children according to socio-demographic and relevant characteristics are shown in Table 2. In the univariate analysis, only gender preference was significantly associated with an interest in the preconception sex selection. In the multivariate analysis, gender preference and duration of time trying to conceive were significantly associated with an interest in preconception sex selection to choose the gender of future children. Women who preferred a boy were more likely to be interested in preconception sex selection (OR = 3.52) compared to women who had no preference regarding gender. Trying to

**Table 1**Socio-demographic, obstetric and relevant characteristics of infertile women presenting for fertility treatment (*n* = 335).

Characteristics	Number (%)
Age (years)	
19–30	150 (44.8)
31–47	185 (55.2)
Educational level	
High school or less	132 (39.4)
More than high school	203 (60.6)
Monthly income	
≤US\$ 400	155 (46.3)
>US\$ 400	180 (53.7)
Household composition	
Living with husband in private home	267 (79.7)
Living with family in law	68 (20.3)
Gravidity	
Never pregnant	155 (46.3)
One pregnancy or more	180 (53.7)
Having ≥1 live births	132 (39.4)
Having at least one boy	92 (27)
Having at least one girl	101 (30.9)
Duration of time trying to conceive (year)	
<2	146 (43.6)
≥2	189 (56.4)
Current or past form(s) of assisted reproduction	
None	206 (61.5)
Activate ovulation	62 (18.5)
IUI	30 (9.0)
IVF	19 (5.7)
Combination of two or more	18 (5.3)
Gender preference	
A boy	50 (14.9)
A girl	7 (2.1)
No preference	278 (83.0)
Interested in assisted reproduction to choose the gender of the future children	
Yes	59 (17.6)
No	276 (82.4)

conceive for  $\geq 2$  years was significantly associated with increased odds of being interested in preconception sex selection, by 80% (Table 3).

#### 4 Comments

Only 17.6% of infertile women in our sample showed an interest in using preconception sex selection. This study also showed that women who preferred to have a boy were more likely to be interested in using sex selection technology. This finding is in agreement with findings of previous research in Germany [5] which reported that 19% of 742 infertile couples (nearly all respondents (736/742) were female) were in favor of preconception sex selection. People were willing to use preconception sex selection if they had a preference for either a boy or a girl [5]. Similar results were seen in studies on non-infertile Jordanian women [3] and medical doctors [4]. Al-Akour et al. [3] found that 13.5% of Jordanian women believed that sex selection should be legally acceptable. Also, those with a preference to have boys were more likely to be interested in sex selection. Khassawneh et al. [4] found that the 23.2% of participants wanted to use sex selection technology to choose their future children. In contrast, studies from the USA [6,7] showed that about 50% of infertile patients may consider selecting the sex of their next child. In one study, women with only daughters significantly showed an interest in selecting a male child, whereas those with boys showed an interest in selecting a female child. Based on representative social surveys conducted in Germany, the United Kingdom, and the USA, this study argues that the fear of threatening sex ratio distortion is unproven [8]. In Jordan, Kilani and Haj Hassan [9] reported that families are willing to use sex selection technology if they have

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